

Second Year MBBS

Department of Medical Education

Curriculum

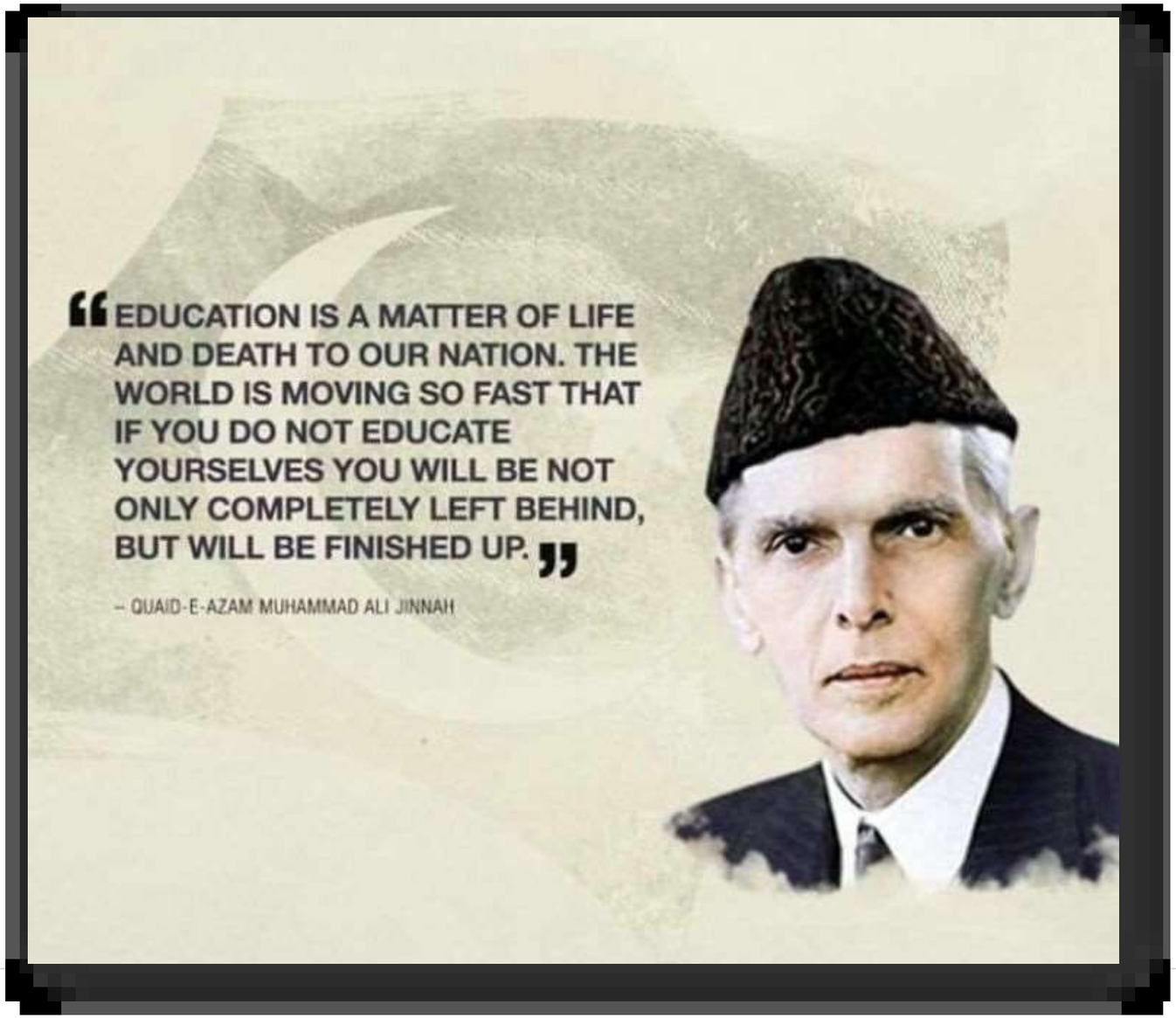
2026

Curriculum



Dedicated to Hazrat Muhammad (S.A.W)

Quote by Quaid-e-Azam Muhammad Ali Jinnah



RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

Preamble

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

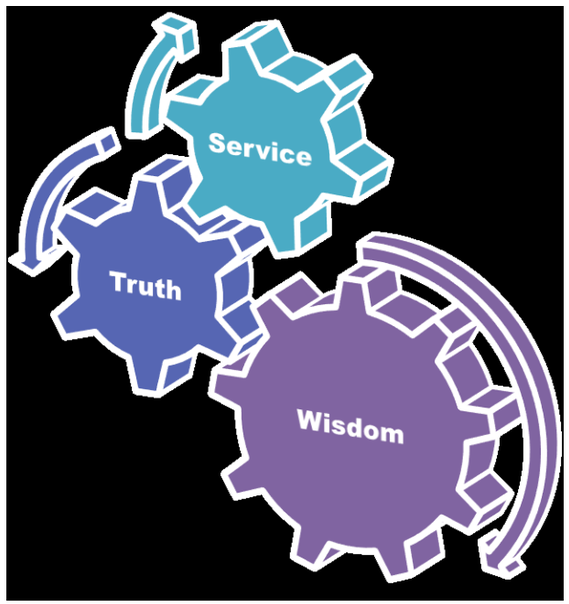
The Clinically Oriented Integrated Modular Curriculum transcends traditional disciplinary silos by promoting horizontal and vertical integration across basic, para-clinical, and clinical sciences. Learning experiences are contextualized around clinical problems and patient-centered care, fostering early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

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

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

University Moto, Vision, Values & Goals

RMU – 12



Vision and Values

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

Mission Statement

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

Goals of the Undergraduate Integrated Modular Curriculum

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

The RMU-12 Undergraduate Medical Program is designed to:

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

RMU – 12 Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

Competency Framework

Competency

PMDC



Figure 1

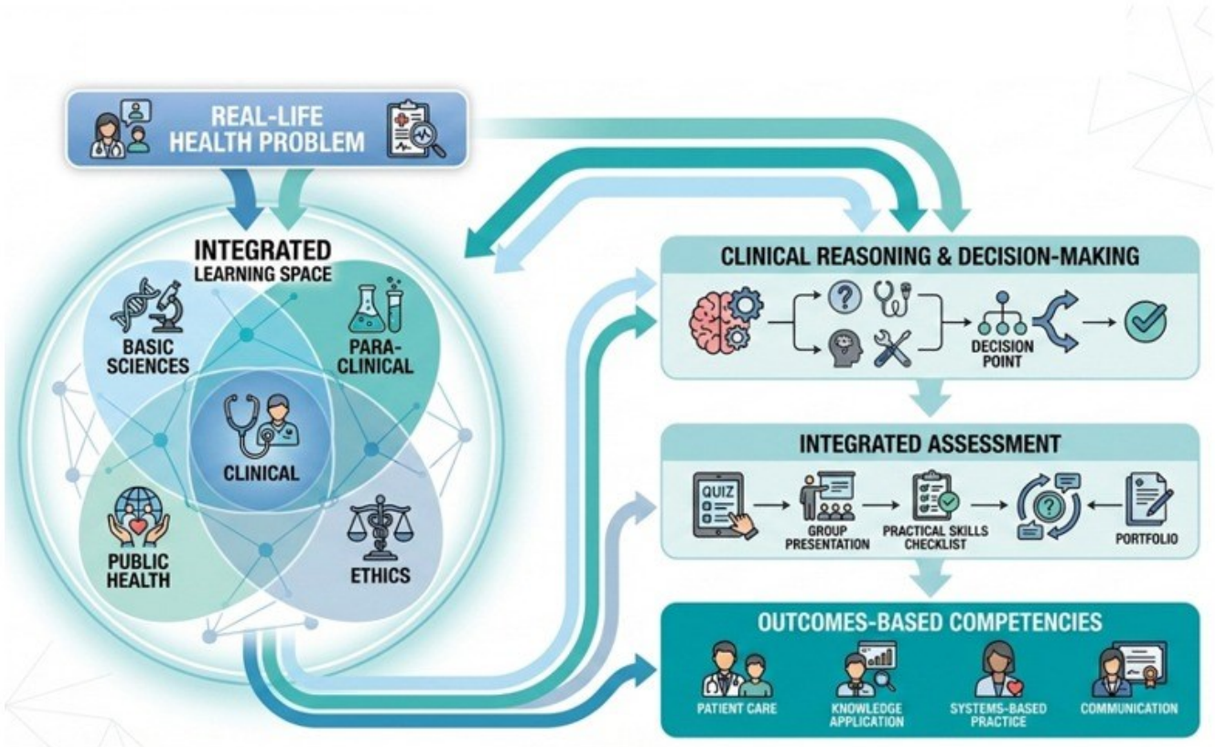
References

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





Foundation

- Pre-clinical sciences
- Harden Level 8 (Complementary)
  MBBS Year (1 & 2)

The Bridge

- Para-clinical sciences
- Harden Level 9,10 (Multidisciplinary & Interdisciplinary)
  MBBS Year (3 & 4)

The Workplace Entrustment — Embeded Internship

- Clinical sciences
- Harden Level 11 (Transdisciplinary)
  MBBS Year 5

Figure 2

RMU – 12 Structured Framework of Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

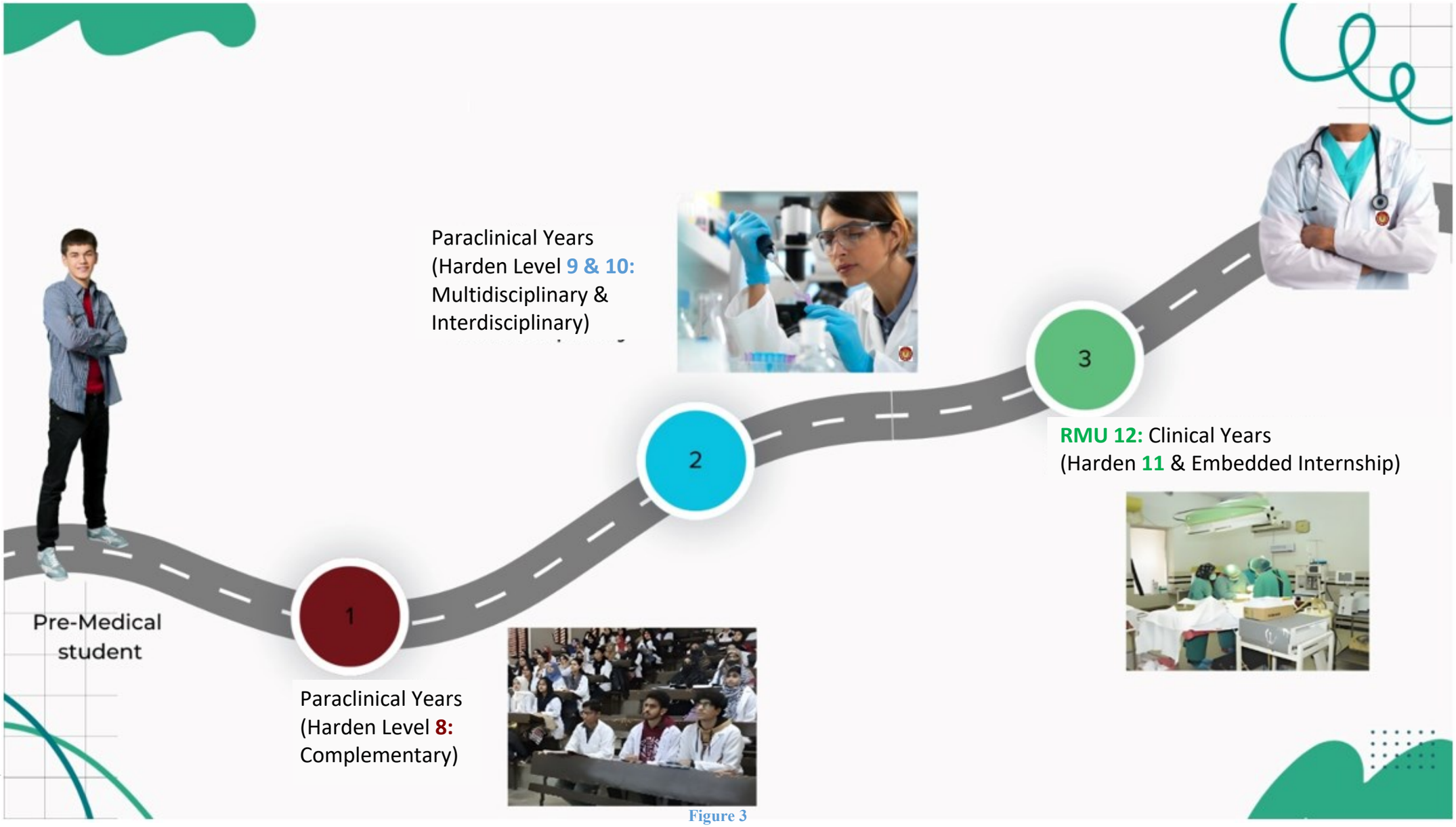


Figure 3

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

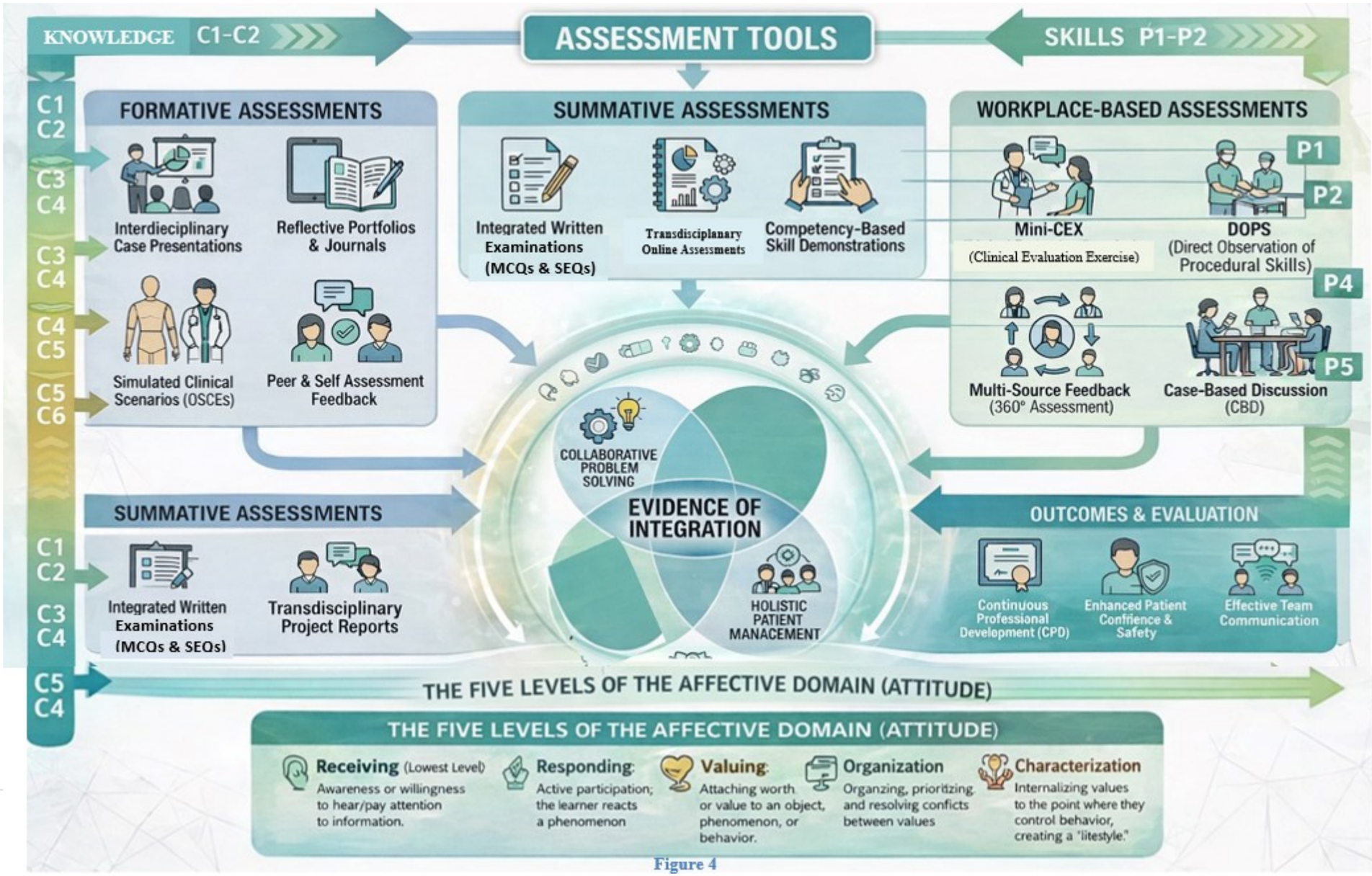


Figure 4

RMU – 12 Structured Framework of Integrated Modular MBBS Curriculum 2026

Isolation to Beyond Boundaries

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

Phase	Curricular Highlights
Pre House-job Internship	**Undergraduate Internship** The Pre House-Job Internship is a structured, supervised transition phase that consolidates clinical skills and professional readiness before the statutory house job. Learning is workplace-based and centred on clearly defined Entrustable Professional Activities aligned with international standards. Assessment relies on programmatic workplace-based tools and entrustment decisions to ensure safe, consistent performance and smoother transition into supervised clinical practice.
Clinical Sciences The Workplace Entrustment	**Transdisciplinary** Clinical education is embedded within real patient care and organised around EPAs and graded responsibility. Students learn as supervised members of clinical teams. Assessment is workplace-based and progression is guided by entrustment decisions supported by portfolios.
Paraclinical Sciences The Bridge	**Multidisciplinary and Interdisciplinary** Pre-clinical sciences are organised around clinical problems and system themes with interdisciplinary learning outcomes and team-based teaching. Instruction uses case-based learning, simulation and integrated laboratories to promote cross-disciplinary reasoning, while advanced units introduce task-based competencies and EPAs using a spiral design. Assessment emphasises integrated performance through OSCEs, workplace-linked tools and portfolios, with progression informed by aggregated evidence rather than single examinations.
Pre-Clinical The Foundation	**Complementary** Basic Medical Sciences are organized into system and theme-based modules with coordinated teaching across disciplines. Subject teaching is aligned through module-level outcomes and planned integrated sessions that reinforce related concepts. Assessments include items to test applied understanding, supported by interdisciplinary planning to ensure coherence.

MBBS Year 1&2 — MBBS Year 3&4 — MBBS Year 5

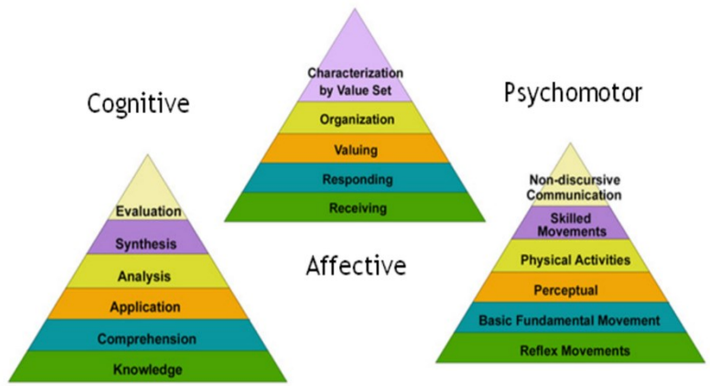
Rawalpindi Medical University has adopted a staged curricular framework that reflects a progressive movement along Harden's integration ladder, culminating in going beyond the ladder to **RMU 12**. The curriculum is designed to ensure that knowledge acquired in the early years is not isolated or terminal,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



Blooms Taxonomy

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.

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

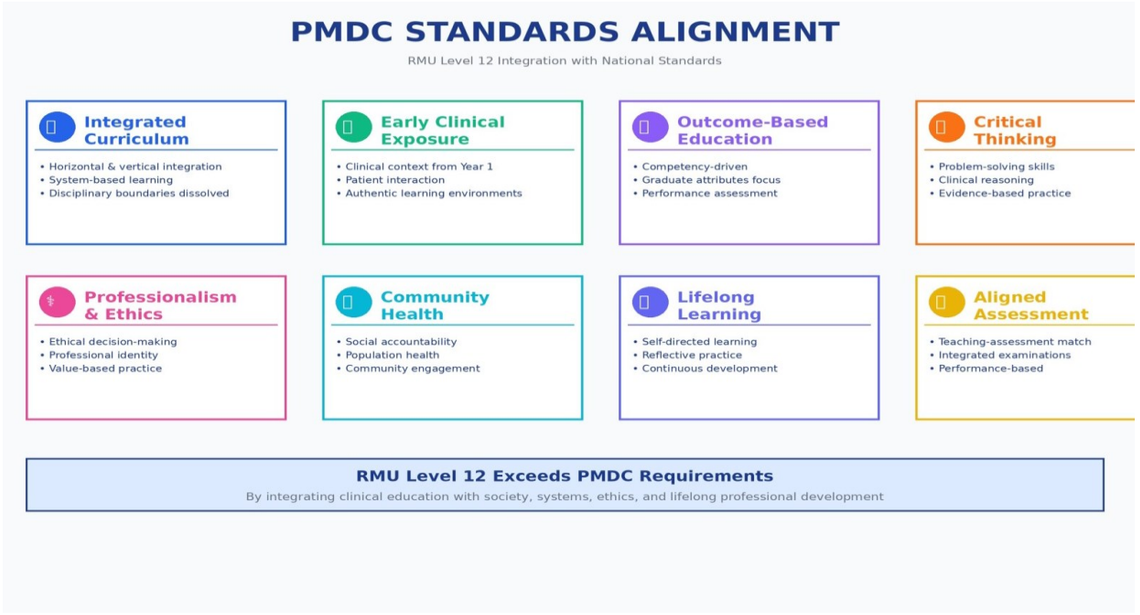
Across all phases, the curriculum is underpinned by faculty development and continuous quality assurance. The staged movement from complementary through multidisciplinary and interdisciplinary learning to transdisciplinary clinical practice ensures that graduates are not only knowledgeable, but also 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.

1. Foundations of Integration

1.1 PMDC Standards for Medical Education

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

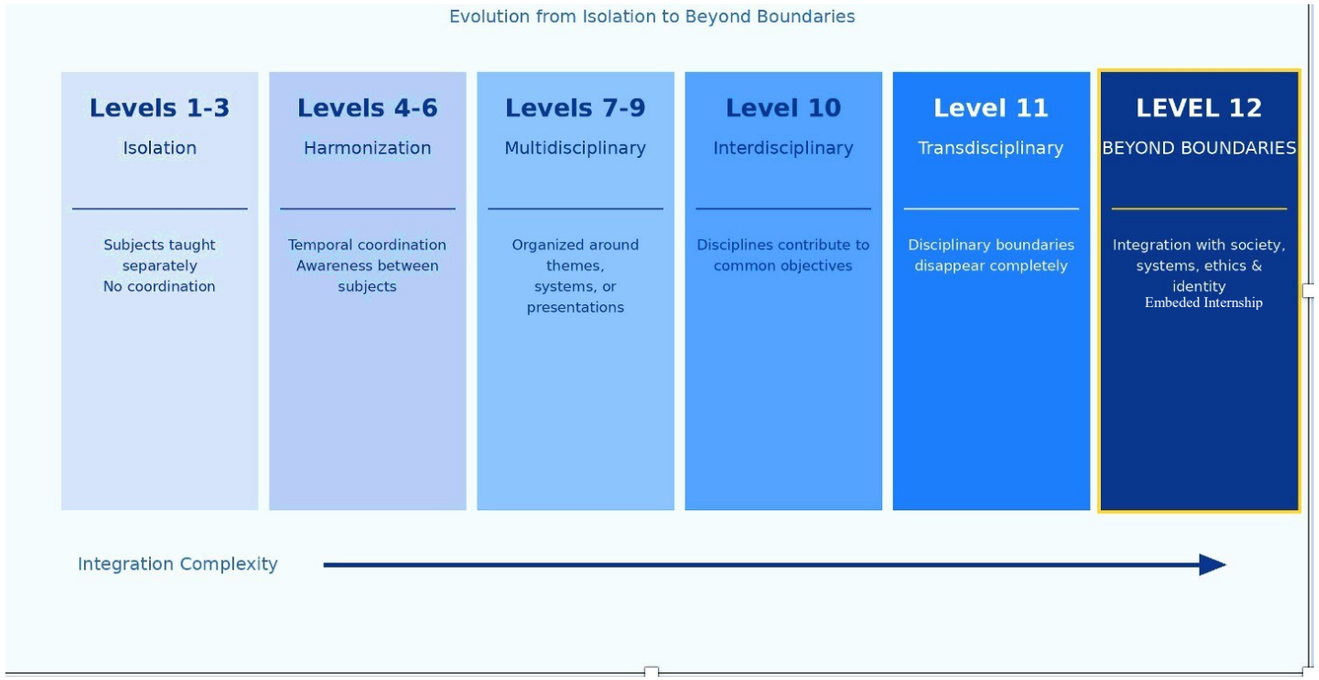
- **Integrated Curriculum:** Horizontal integration (across disciplines) and vertical integration (across years)
- **Early Clinical Relevance:** Clinical context introduced from initial years
- **Outcome-Based Education:** Focus on graduate competencies rather than content coverage
- **Critical Thinking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



1.2 Harden's Integration Ladder: Overview

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

Harden's Integration Ladder → RMU → RMU – 12 Beyond Boundaries



2. RMU Level 12 - Beyond Boundaries

2.1 Conceptual Definition

RMU Level 12: Beyond Boundaries Integration

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

2.2 Why Level 12 Exists

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

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

2.3 Five Pillars of Level 12 Integration

A. Societal Integration: Patient-in-Society Problems

Level 11: Patient-centered clinical problems

RMU Level 12: Patient-in-society problems

RMU Implementation:

- Community-based medical education

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

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

B. Value-Based Integration: Contextual Ethics

Level 11: Ethics integrated within cases

RMU Level 12: Ethics embedded longitudinally in real decisions

RMU Implementation:

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

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

C. System-Level Integration: Healthcare Systems & Leadership

Level 11: Focus on individual patient care

RMU Level 12: Focus on healthcare systems and governance

RMU Implementation:

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



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

D. Knowledge Creation: Beyond Synthesis

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

RMU Implementation:

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

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

E. Temporal Integration: Lifelong Professional Identity

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

RMU Implementation:

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



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

3. Alignment with PMDC Standards

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

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

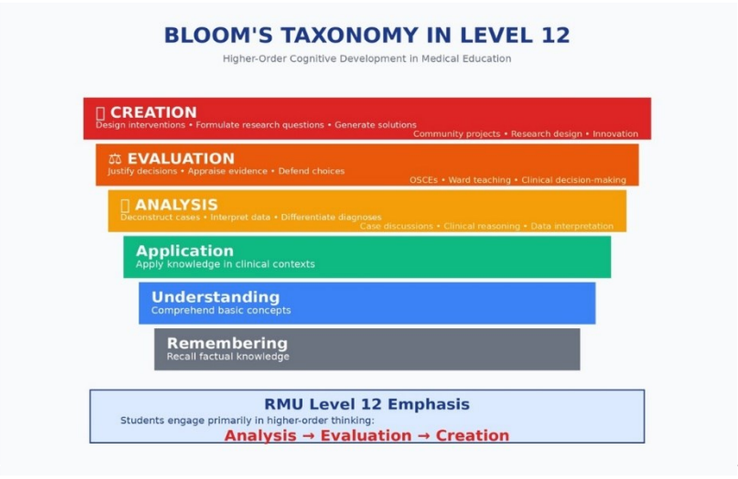
4. Bloom's Taxonomy & Higher-Order Thinking

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

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

4.1 Learning Activities Mapped to Bloom's Levels

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



GRADUATE OUTCOMES

Level 12 Integration Produces Adaptive Professionals

CORE COMPETENCIES

Clinical Excellence
- Evidence-based practice
- Diagnostic reasoning
- Patient safety

Professionalism
- Ethical decision-making
- Patient-centered care
- Accountability

Communication
- Effective patient interaction
- Interprofessional collaboration
- Cultural competence

Population Health
- Community engagement
- Preventive focus
- Health promotion

ADAPTIVE CAPABILITIES

Systems Thinking
- Health systems understanding
- Policy awareness
- Resource management

Research Literacy
- Critical appraisal
- Knowledge generation
- Evidence synthesis

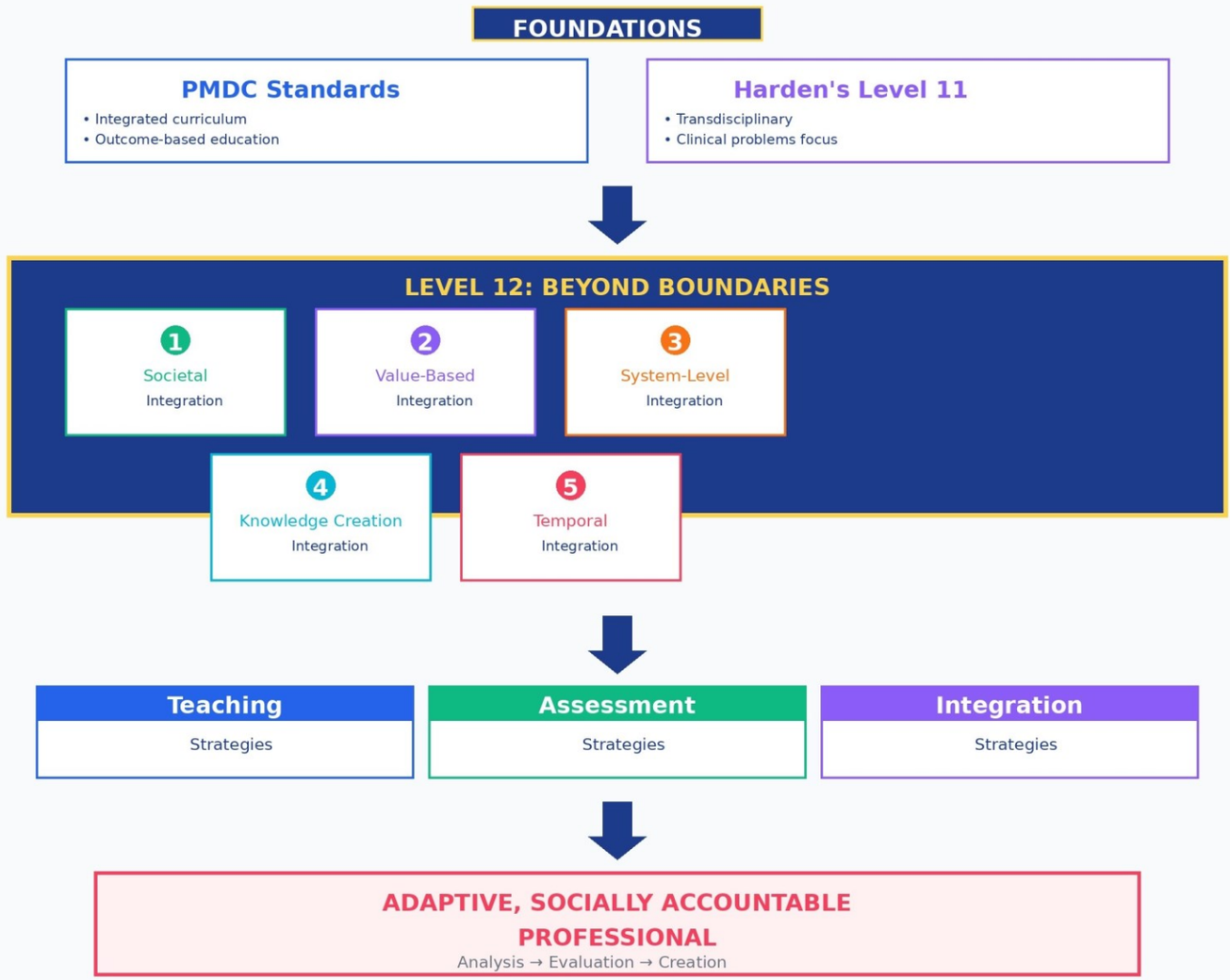
Lifelong Learning
- Self-directed growth
- Reflective practice
- Adaptive expertise

Leadership
- Innovation
- Change management
- Team development

ADAPTIVE, SOCIALLY ACCOUNTABLE PROFESSIONAL

RMU LEVEL 12 FRAMEWORK

Complete Conceptual Flow



Conclusion

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

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

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

Key Takeaways for Educators

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

Clinico - Concept Connect Session ($C^3$6)

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

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.

3. Integrated Discussion

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

4. Application and Reflection

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

Implementation Strategy

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

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

Educational Value

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

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

Example of Clinico - Concept Connect (C³6) Session

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

Clinico -Concept Connect (C³6) Session

Clinical Case Scenario: A lady with progressive fatigue

A 22-year-old woman presents to the outpatient clinic with progressive fatigue, muscle weakness, and episodes of dizziness, particularly after prolonged fasting. She reports poor exercise tolerance and occasional nausea. There is no history of infection or chronic illness. A sibling has a similar condition.

On examination, she appears thin but alert. Vital signs are stable. Mild proximal muscle weakness is noted. There is no organomegaly.

Laboratory and Molecular Findings

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

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

Educational Relevance to Theme

This case allows learners to trace disease progression:

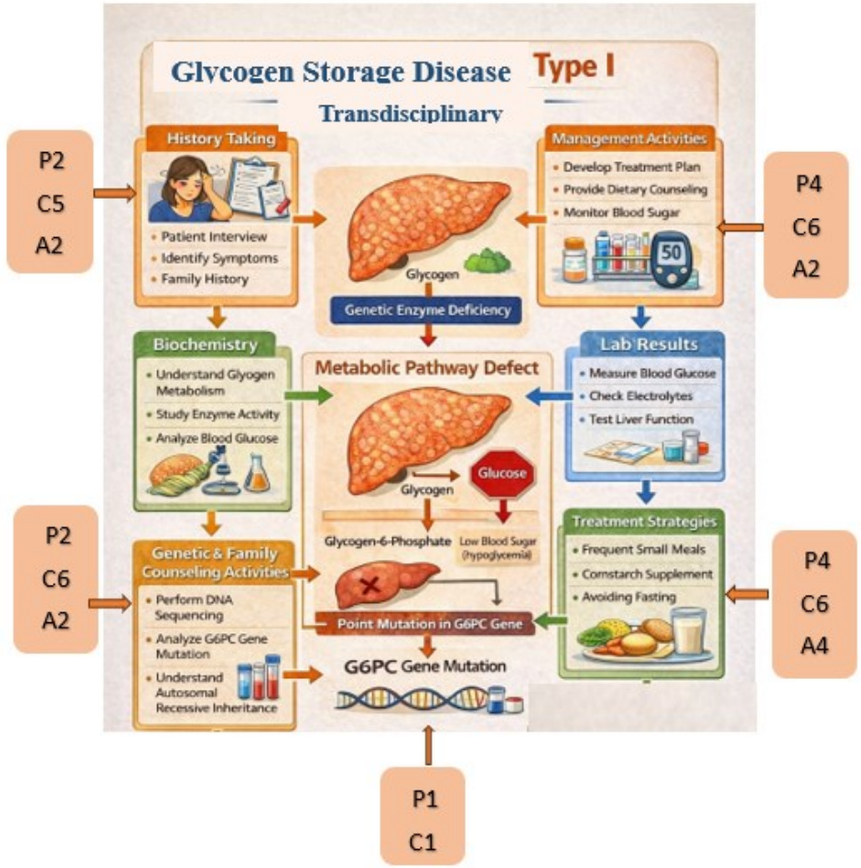
Gene mutation → Altered protein structure → Enzyme dysfunction → Metabolic failure → Clinical presentation

It reinforces:

- Gene expression and mutation

Harden Level 11

Transdisciplinary



Transdisciplinary Integration (Harden Level 11)

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

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

Learning Objectives

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

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

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

Integration Framework

Harden Level 9 – Multidisciplinary Integration

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

Disciplines Involved

- **Anatomy**
  - Liver and skeletal muscle structure involved in glucose metabolism
  - Anatomical basis of muscle weakness and exercise intolerance
- **Biochemistry**
  - Enzyme kinetics, regulation, and metabolic pathways
  - Impact of genetic mutations on enzyme activity
- **Medicine**
  - Clinical evaluation of fasting hypoglycemia
  - Diagnostic reasoning in inherited metabolic disorders

- **Surgery**
  - Peri-procedural metabolic considerations
  - Role in diagnostic evaluation where indicated

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

Explicit EPA Mapping

EPA-1: Interpret Clinical and Laboratory Data

Entrustment Level: 1–2

Students interpret fasting glucose levels and enzyme assays under supervision.

EPA-2: Apply Basic Science to Clinical Reasoning

Entrustment Level: 1

Students explain how molecular mutations produce clinical disease.

EPA-3: Communicate Findings in a Structured Manner

Entrustment Level: 1–2

Students present the case during group discussions.

EPA-4: Demonstrate Professionalism and Teamwork

Entrustment Level: 1

Students engage respectfully in multidisciplinary learning.

Mapping to Harden Levels

- **Level 8 (Complementary):**

  Coordinated teaching of genetics, biochemistry, and anatomy around a shared theme
- **Level 9 (Multidisciplinary):**

  Parallel disciplinary analysis of the same clinical case
- **Level 10 (Interdisciplinary):**

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

Teaching–Learning Strategy

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

Assessment Alignment

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

Summary Statement

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

Table of Contents

Table of Contents

SECTION-I (Contributors & Developing Team) ……18
Members of Syndicate 19
Deans of Faculties & Professors 20
Contributors 21
SECTION-II (Preamble) ……25
What is Curriculum?……26
What is a Integrated Medical Curriculum? 27
SECTION-III (RMU Undergraduate Competency Framework) ……40
RMU Undergraduate Competency Model 41
SECTION-IV (Structured Framework of Clinically Oriented Integrated Modular Curriculum) ……50
First to Final year MBBS Framework 51
First Year Academic Calendar 2024 52

Contact Hours First Year MBBS 53
Second Year Academic Calendar 2024 54
Contact Hours Second Year MBBS 55
SECTION-VI (Teaching & Learning Methodologies / Strategies 67
Prof. Umar's Model Integrated Lecture 68
Small Group Discussion (SGD) 69
Seld Directed Learning (SDL) 70
Case Based Learning (CBL) 70
SECTION-VII (First Year MBBS) 71
Block-I (Foundation + MSK-I Module) 72
Module I - Foundation Module 73
Module II–MSK-I Module 131
Block-II (MSK-II + Blood & Immunity Module) 175
Module III – MSK-II Module 176
Module IV- Blood and Immunity Module 222
Block-III (CVS + Respiratory Module) 269
Module V – CVS Module 270
Module VI – Respiratory Module 329
SECTION-VIII (Second Year MBBS) 376
Block-IV (GIT + Renal Module) 377
Module I – GIT Module 378
Module II – Renal Module 434
Block-V (Reproduction + CNS Module) 472
Module III – Reproduction Module 473

Module IV – CNS Module……..518
Block-VI (Special Senses + Endocrinology Module)……..……587
Module V – Special Senses Module……..588
Module VI – Endocrinology Module……..634
ECTION-V (Spirally Integrated Courses/ General Education (GEC) Courses) ……..……..……..56
Introduction 57
Alignment of RMU Spiral Courses as per HEC Undergraduate Policy 2023 & Guidelines of PMDC 2024 ……59
SECTION-IX ……..……..……..679
Learning Resources……..680
SECTION-X (Assessment Polices) ……..……..……,……683
Formative Assessment……..684
Summative Assessment……..634
Internal Assessment ……..……687
Table of Specification (TOS) for Module Examination for First & Second Year MBBS……..……..……..688
SECTION-XI (Feedback and Evaluation) ……..……..……699
Internal Feedback……..…..700
Formal Feedback..... 700

SECTION-I

Contributors & Developing Team

- Members of Syndicate
- Deans of Faculties & Professors

- **List of Contributors**

Members of Syndicate

Sr. No	Members
1.	The Minister for SHC & ME Department, Punjab / Pro Chancellor, Rawalpindi Medical University, Rawalpindi.
2.	The Secretary to Government of the Punjab, SHC & ME Department, Lahore
3.	The Secretary to Government of the Punjab, Finance Department, Lahore
4.	The Secretary to Government of the Punjab, Higher Education Department, Lahore
5.	The Secretary to Government of the Punjab, Law & Parliamentary Affairs Department, Lahore
6.	The Chairman Higher Education Commission, Sector H-9, Islamabad
7.	Prof. Fareed Minhas, Ex, Professor of Psychiatry, RMC, Rawalpindi.
8.	Prof. Syed Irfan Ahmed, Ex-Professor of Medicine, RMC, Rawalpindi
9.	Syed Bakhtiyar Kazmi, Partner KPMG Taseer Hadi & Co

10.	Dr. Muhammad Saqib Abbasi, Rawalian Alumini
11.	The Medical Superintendent, Holy Family Hospital, Rawalpindi
12.	The Principal, College of Nursing Holy Family Hospital, Rawalpindi
13.	The Vice Chancellor Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi
14.	The Vice Chancellor National University of Science & Technology (NUST), Islamabad

Deans of Faculties & Professors

Sr. No	Name	Department	Sr. No	Name	Department	Sr. No	Name	Department
1.	Prof. Dr. Muhammad Umar	Vice Chancellor	**19.**	Prof. Dr. Asad Tameez-ud-Din	Psychiatry	**37.**	Dr. Hasnain Khan	Plastic Surgery
2.	Prof. Dr. Jahangir Sarwar Khan	Principal	**20.**	Prof. Dr. Zein El Aamir	Urology	**38.**	Dr. Obaid ur Rehman	Orthopedics
3.	Prof. Dr. Muhammad Khurram	Medicine	**21.**	Prof. Dr. Wafa Omer	Pathology	**39.**	Dr. Muhammad Mujeeb Khan	Infection Disease
4.	Prof. Akram Randhawa	Pharmacology	**22.**	Dr. Jawad Zaheer	Anesthesia	**40.**	Dr. Aneela Jamil	Biochemistry
5.	Prof. Rai Muhammad Ashgar	Peads	**23.**	Dr. Ashraf Mehmood	Neurosurgery	**41.**	Dr. Muhammad Asad	Cardiology
6.	Prof. Shagufta Saeed	Gynae/Obs	**24.**	Dr. Ahmed Hassan	ENT	**42.**	Dr. Shawana Sharif	Dermatology
7.	Prof. Riaz Ahmed Sheikh	Orthopedic Surgery	**25.**	Dr. Sadia Chaudhry	ENT	**43.**	Dr. Faran Maqbool	, Medicine
8.	Prof. Dr. Mobina Ahsan Dodhy	Pathology	**26.**	Dr. Muhammad Shahzad Manzoor	, Medicine	**44.**	Dr. Abeera Zareen	Anesthesia
9.	Prof. Dr. Naeem Akhtar	Pathology	**27.**	Dr. Faryal Azhar	Surgery	**45.**	Dr. Hina Sattar	Peads
10.	Prof. Dr. Samia Sarwar	Physiology	**28.**	Dr. Usman Qureshi	Surgery	**46.**	Dr. Raja Asif Masood	Nephrology
11.	Prof. Dr. Nousheen Qureshi	ENT	**29.**	Dr. Saima Ambreen	Medicine	**47.**	Dr. Sadia Azam Khan	Family Medicine
12.	Prof. Dr. Naveed Akhtar Malik	Surgery	**30.**	Dr. Sadia Khan	Gynae	**48.**	Dr. Rehman Rasool	, Orthopedics

13.	Prof. Dr. Waqas Raza	Surgery	**31.**	Dr. Rubaba Abid	Gynae	**49.**	Dr. Saad Riaz	Orthopedics
14.	Prof. Dr. Tallat Farkhanda	Gynae /Obs	**32.**	Dr. Humera Noreen	Gynae	**50.**	Dr. Israr Liaquat	Peads
15.	Prof. Dr. Nasir Khan	Radiology	**33.**	Dr. Tanveer Husain	Gastroenterology	**51.**	Dr. Arshad Rabbani	Medicine
16.	Prof. Dr. Ayesha Yousaf	Anatomy	**34.**	Dr. Hasnain Khan	Plastic Surgery	**52.**	Dr. Hasnain Khan	Plastic Surgery
17.	Prof. Dr. Ifra Saeed	Anatomy/DME	**35.**	Dr. Mudassar Faiz Gondal	Peads Surgery	**53.**	Dr. Obaid ur Rehman	Orthopedics
18.	Prof. Dr. Fuad Ahmad Khan Niazi	, Ophthalmology	**36.**	Dr. Asma Khan	Pharmacology	**54.**	Dr. Muhammad Mujeeb Khan	Infection Disease

List of Contributors

Department of Medicine	**Department of Surgery**	**Department of Plastic Surgery**
Prof. Muhammad Umar Vice Chancellor	Professor. Dr. Jahangir Sarwar Khan (Principal)	Assistant Prof. Dr. Husnain Khan
Professor. Dr. Muhammad Khurram	Professor. Dr. M. Waqas Raza	**Department of Gastroenterology**
Associate Prof. Dr. Shahzad Manzoor	Professor. Dr. Anis Ahmed	Associate. Prof. Dr. Tanveer Hussain
Associate Prof. Dr. Saima Ambreen	Associate. Prof. Dr Usman Qureshi	Assistant. Prof. Sadia Ahmed
Associate Prof. Dr. Muhammad Arif	Associate Prof. Dr. Gohar Rasheed	**Department of Cardiology**
Associate. Prof. Dr. Lubna Meraj	Associate Prof. Dr. Faryal Azhar	Assistant. Prof. Dr. Muhammad Asad
Assistant Dr. Mujeeb Khan	Associate Prof. Dr M. Zafar Iqbal	**Department of Obs/Gynae**
Assistant. Prof. Dr. Faran Maqbool	Assistant. Prof. Dr. Muhammad Atif	Professor. Dr. Tallat Farkhanda
Assistant Prof. Nida Anjum	Assistant. Prof. Dr Huma Sabir Khan	Associate. Prof. Dr Sadia Khan
Department of ENT	Assistant Prof. Dr. Syed Rahat Hassan	Associate. Prof. Dr. Humera Noreen
Professor. Dr. Nousheen Qureshi	Assistant Prof. Dr. Asifa Dian	Associate. Prof. Dr. Rubaba Abid Naqvi
Associate Prof. Dr. Ahmad Hassan Ashfaq	**Department of Pediatrics Surgery**	Associate Prof. Dr Sobia Nawaz
Associate Prof. Dr. Sadia Chaudhry	Associate Prof. Dr. Mudasser Faiz Gondal	Assistant. Prof. Dr. Humaira Bilqis

Assistant. Prof. Dr. Haitham Akaash	Assistant Prof. Dr. Mahwish Khan	Assistant. Prof. Dr. Saima Bibi
Assistant. Prof. Dr. Muhammad Arshad	**Department of Pediatrics**	Assistant. Prof. Dr Maliha Sadaf
Assistant Prof. Dr. Ashar Alamgir	Assistant Prof. Dr. Hina Sattar	Assistant. Prof. Dr Khansa Iqbal
Assistant Prof. Dr. Tabassum Aziz	Assistant Prof. Dr. Aqeela Ayub	Assistant Prof. Dr. Amara Arooj
Assistant Prof. Dr. Nida Riaz	Assistant Prof. Dr. Jawaria Zain	Assistant. Prof. Dr. Shama Bashir
Department of Psychiatry	Assistant Prof. Dr. Asad Shabbir	Assistant Prof. Dr. Aqsa Ikram
Prof. Dr. Asad Tamis ud Din	Assistant Prof. Dr. Israr Liaqat	Assistant. Prof. Dr. Nighat Naheed
Associate Prof. Dr. Muhammad Kashif	**Department of Urology**	Assistant. Prof. Dr. Farah Deeba
Assistant Prof. Dr. Mahmood Ali Khan Jafri	Associate Prof. Dr. Zain-ul-Aamir	Dr. Ismat Batool S.R BBH
Assistant Prof. Dr. Sadia Majid	Associate Prof. Dr. Zeeshan Qadeer	**Department of Orthopedics**
Assistant Prof. Dr. Qurat ul Ain	**Department of Dermatology**	Associate Prof. Dr. Obaid-Ur-Rahman
Assistant Prof. Dr. Azeem Khan	Assistant Prof. Dr. Shawana Sharif	Assistant Prof. Dr. Rehman Rasool Akhtar
Department of Neurosurgery	**Department of Pathology**	Assistant Prof. Dr. Saad Riaz
Associate Prof. Dr. Ashraf Mahmood	Professor. Dr. Naeem Akhtar	Assistant Prof. Dr. Muhammad Hassan
Assistant Prof. Dr. Soban Sarwar Gondal	Professor. Dr. Mobina Ahsan Dodhy	**Department of Anesthesiology**
Department of Radiology	Associate Prof. Dr. Mudassira Zahid	Associate Prof. Dr. Jawad Zahir
Professor Dr. Nasir Khan	Assistant Prof. kiran Fatima	Assistant Prof. Dr. Abeera Zareen
Associate Prof. Dr. Hina Hanif Mughal	Assistant Prof Fatima Tuz Zahra	Assistant. Prof. Dr. Waqas Anjum
Assistant Prof. Dr. Anum Zahoor	Assistant Prof. Dr. Rabbia Khalid Latif	Assistant Prof. Dr. Anum Malik
Assistant Prof. Dr. Faisal Mehmood	Dr. Abid Hassan APMO	Assistant Prof. Dr. Ayesha Mansoor
Assistant Prof. Dr. Hina Hafeez Abbasi	Dr. Uzma Zaffar APWMO	**Department of Pharmacology**
Assistant Prof. Dr. Beenish Nadeem	Dr. Jaweriya Qaiser APWMO	Prof. Dr. Akram Randhawa
Assistant Prof. Dr. Riffat Raja	Dr. Faiza Zafar S.W.D	Associate Prof. Dr. Asma Khan
Dr. Aniqa Saleem S.R, HFH	Dr. Syed Iqbal Haider S.D	Assistant Prof. Dr. Attiya Munir
Dr. Saba Binte Kashmir S.R HFH	Dr. Syed M. Ali S.D	Assistant Prof. Dr. Zunera Hakim

Dr. Jehangir Khan	Dr. Mehreen Fatima DEMO	Assistant Prof. Dr. Sfanila Akhter
Dr.Sana Yaqoob S.R	Dr. Nida Fatima Syed DEMO	Dr. Arsheen Arshad DEMO
Dr. Nadiha Maryam S.R BBH	Dr. Sara Rafi DEMO	DR. Muhammad Zaheer shaikh DEMO
Department of Physiology	Dr Syeda Aisha DEMO	Dr. Omaima Asif DEMO
Professor Dr. Samia Sarwar	Dr. Muhammad Shabih Haider Demo	Dr. Zoofashan Fatima Demo
Associate Dr. Faizania Shabbir	Dr. Unaiza Aslam S.W.D	Dr. Memuna Kanwal Demo
Assistant Prof. Dr. Sidra Hamid	Dr. Kiran Ahmad S.D	Dr. Haseeba Talat DEMO
Associate Prof. Faizania Shabir	Dr. Rabia Anjum	Dr. Rubina Kauser S.D
Dr. Sheena Tariq APMO	Dr. Saroor-e-Syma DEMO	Dr. Uzma Umar S.D
Dr. Fareed Ullah Khan S.D	Dr. Faiza Sahar SWMO	Dr. Ayesha Anwar
Dr. Kamil Tahir S.D	Dr. Tahira Jabeen	Qurat-ul-Ain
Dr. Uzma Kiani S.W.D	Dr. Mahjabeen	Dr. Saba Sarfaraz
Dr. Fahad Anwar Demonstrator	Dr. Laraib Khatoon	**Department of Biochemistry**
Dr. Jawad Hasan Demo	Dr. Saira Karim	Assistant Prof. Dr. Aneela Jamil
Dr. Nazia Mumtaz Demo	Dr. Khuzeema Tanveer	Dr. Rahat Afzal APWMO
Dr. Aneela Yasmeen S.D	**Department of Anatomy**	Dr. Kashif Rauf S.D
Dr. Shazia Nosheen S.D	Professor Dr. Ayesha Yousaf	Dr Nayab Ramzan S.W.D
Dr. Uzma Kiani DEMO	Professor Dr. Ifra Saeed	Dr. Romessa Naeem DEMO
Dr. Najamul Sehar Javed	Associate Prof. Dr. Mohtasham Hina	Dr. Almas Ajaz S.D
Department of Eye.	Assistant Prof. Dr. Arsalan Manzoor Mughal	Dr. Uzma Zafar
Prof. Dr. Fauad Ahmad Khan Naizi	Assistant Prof. Dr. Maria Tasleem	Dr. Rohina Khalid
Assistant Prof. Dr. Ambreen Gul	Dr. Gaiti Ara Saeed APWMO	Dr. Sana Latif
Assistant Prof. Dr. Sidra Jabeen	Dr. Saadia Baqir APWMO	**Department of Nephrology**
Department of Community Medicine	DR. ALI RAZA, S.D	Assistant Prof. Dr. Sana Kifayat
Prof. Dr. Arshad Sabir	Dr. Muhammad Tariq Furqan S.D	Assistant Prof. Dr. Noman Butt

Associate Prof. Dr. Khola Noreen	Dr. Sajjad Hussain S.D	Assistant Prof. Dr. Asmara Asrar
Associate Prof. Dr. Sana Bilal	Dr. Kashif Ashraf S.D	**Department of Forensic Medicine**
Assistant Prof. Dr. Rizwana Shahid	Dr. Qurat ul Ain Sharif S.W.D	Associate Prof. Dr. Romana Malik
Assistant Prof. Dr. Afifa Kulsoom	Dr. Saira Aijaz S.W.D	Assistant Prof. Dr. Filza Ali
Assistant Prof M. Imran Younas	Dr. Minahil Haq Demo	Dr. Shahida Bashir APWMO
Assistant Prof. Gul Mehar Javaid	Dr. Urooj Shah DEMO	DR. Gulzaib Pervaiz APWMO
Assistant Prof. Dr. Farrah Pervaiz	Dr. Zeneara Saqib DEMO	Dr. Naila Batool APWMO
Assistant Prof. Dr. Mehwish Riaz	**Department of Medical Education**	Dr. Syeda Fatima
Dr. Farhan Hassan S.D	Prof. Dr. Ifra Saeed (Director DME)	Dr. Shahrukh Khan S.D
Dr. Abdul Qudoos S.D	Asso. Dr. Arsalan Manzoor Mughal (Additional Director of Assessments)	Dr. Urooj Shah DEMO
Dr. Asif Maqbool Butt Demo	Dr. Farzana Fatima (Assistant Director DME OTB)	Dr. Roohina Saeed
Dr. Imrana Saeed S.D	Dr. Omaima Asif (Assistant Director DME NTB)	**Department of Critical Care**
Dr. Narjis zaidi S,D	Dr. Maryam S.W.M.O	Associate Prof. Dr. Abrar Akbar
Dr. Moniba Iqbal PGT	Dr Saira Aijaz Demonstrator	**Department of Family Medicine**
Dr. Bushra Farooq PGR		Assistant Prof. Dr. Sadia Azam Khan
Dr. Zaira Azhar PGR		**Department of Neurology**
Dr. Saba Maryam PGR		Assistant Prof. Dr. Waqas Ahmed
Dr. Ayesha zujaja PGR		**Department of Pulmonology**
Dr. Maria Jabeen PGR		Assistant Prof. Dr. Zaid Umar
Dr. Mehreen Noor PGR		

SECTION-II

Foreword to Curriculum 2024

- Introduction
- Levels of Integration
- PMDC Seven Star Doctor Competencies
- Contextualization in the curriculum

- **Context Facets of Curriculum 2024 at Rawalpindi Medical University**
- **Process of Curriculum Development**
- **Curricular Organization and Structure**

Introduction

Welcome to the fourth edition of the Clinically Oriented Integrated Modular Curriculum for the MBBS students at Rawalpindi Medical University. This revised version is tailored to integrate clinical insights from the very beginning, ensuring a more practical and application-focused approach to the fundamental medical sciences. At Rawalpindi Medical University, we are committed to providing a curriculum that not only covers the essential theoretical knowledge but also emphasizes the development of critical clinical skills necessary for future medical professionals. This curriculum is designed to foster a deep understanding of human biology and the pathophysiological processes, combined with hands-on clinical experiences that contextualize theoretical knowledge in real-world medical settings.

Version IV of the curriculum incorporates the latest advancements in medical education and reflects changes in the medical landscape, ensuring our students are well-prepared to meet the challenges of modern healthcare environments. With a focus on interdisciplinary learning and ethical practice, we aim to equip our students with the competence and compassion required to excel in their future careers.

We trust that this curriculum will inspire and challenge you to reach new heights in medical education and beyond. Welcome to a journey of learning that promises to be as rewarding as it is demanding.

What is curriculum?

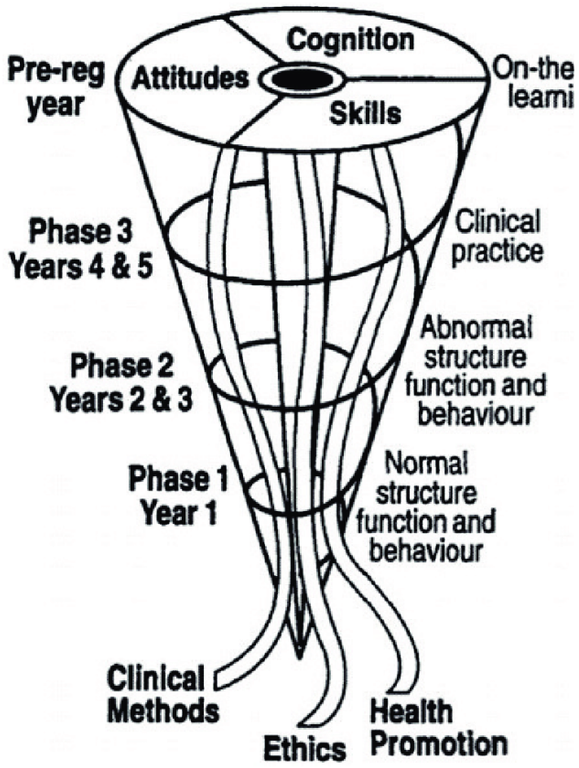
According to definition curriculum can be classified into five categories:

1. Curriculum as a product - program, document, electronic media, or multimedia
2. Curriculum as a program of study - usually courses offered, curriculum sequences of study instandards as benchmarks, gateways,
3. Curriculum as intended learnings - goals, content, concepts, generalizations, outcomes
4. Curriculum as experiences of the learner - activities, planned and unplanned.
5. Hidden curriculum - what students learn that isn't planned - unless you plan for this - or is itpossible?

What is a Integrated Medical Curriculum?

Shoemaker defines an integrated curriculum as “education that is organized in such a way that it cuts across subject matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study.” There is an ongoing discussion aboutwhether medical curriculum should be discipline based or integrated.

Most curricula for medical education have been integrated horizontally and vertically–-vertically between basic and clinical sciences. The Flexnerian curriculum has disappeared to permit integration between basic sciences and clinical sciences, which are taught throughout the curriculum. We have proposed a different form of integration where the horizontal axis representsthe defined learning outcomes and the vertical axis represents the teaching of the sciences throughout the courses. We believe that a mere integration of basic and clinical sciences is not enough because it is necessary to emphasize the importance of humanism as well as health population sciences in medicine. It is necessary to integrate basic and clinical sciences, humanism,and health population in the vertical axis, not only in the early years but also throughout the curriculum, presupposing the use of active teaching methods based on problems or cases in small groups.



A Spiral Curriculum

The method of teaching medicine, since Flexner's days, implies that students should first learn basic and biomedical sciences and then move to clinical sciences; however, this is not how patientsare presented. A common criticism of this approach is that students will not see the relevance of basic and biomedical sciences applied to clinical practice, and it is preferable to encourage studentsto think as doctors from the day they enter medical school.

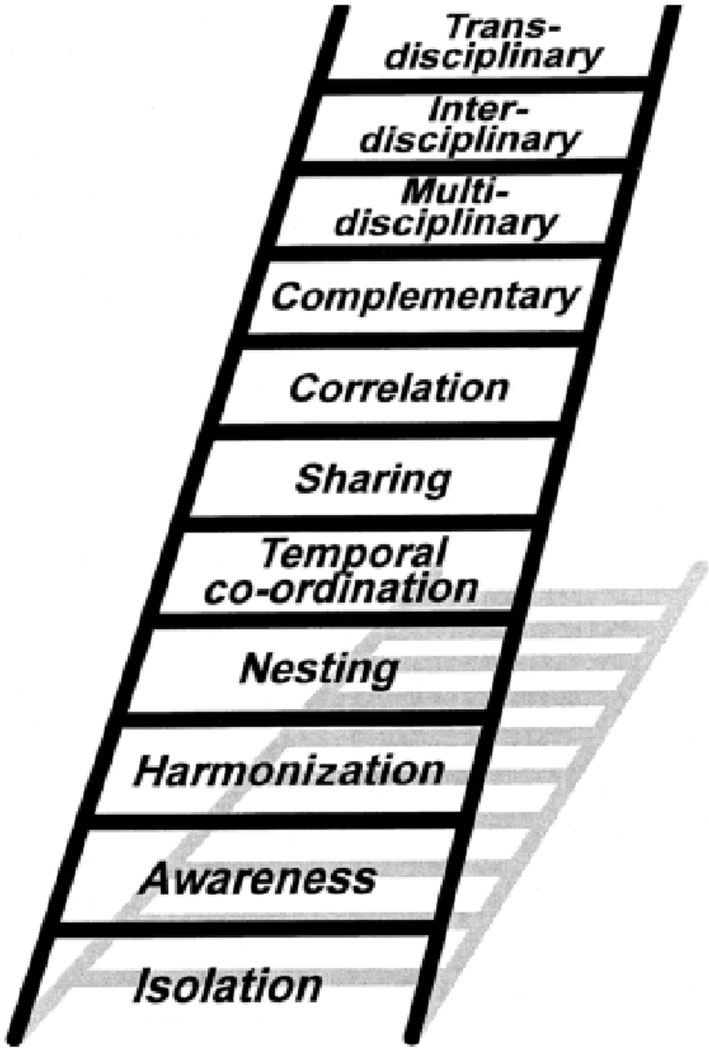
Integration is therefore of key importance for medical education because basic science learning isplaced in the context of clinical and professional practice and is considered by students to be moremeaningful and relevant. In the vast majority of curriculum reforms, vertical integration combinesbasic and clinical sciences, early clinical experience, clinician–scientist partnerships, and incorporation of sciences in the later years of the course. This is undoubtedly an advantage, but isbased on a biologist's vision of the health-illness process

Levels of Integration

At Rawalpindi Medical University, our curriculum for the MBBS program adheres to the sophisticated model of Correlation, recognized as level 7 on Harden's scale of integration. This approach is foundational throughout the initial four years of the medical education journey. Our emphasis predominantly remains on discipline-specific education, where courses focused on individual subjects constitute the majority of the curriculum. This traditional structure ensures a robust foundation in the core medical sciences.

Within this discipline-oriented framework, we introduce an innovative element—an integrated teaching session. These sessions are strategically designed to bridge various subjects by identifying and connecting areas of mutual relevance. This method facilitates a holistic learning experience by correlating distinct disciplines and embedding them within a clinical context. This integration enhances the students' understanding and application of medical concepts, making the learning process both comprehensive and applicable to real-world scenarios.

As our students progress through their education, the degree of clinical teaching intensifies. This gradual increase is deliberate, ensuring that by the time our students reach their final year, they are well-prepared to engage in extensive clerkships. Year V is exclusively devoted to these clerkships, offering students hands-on, practical experience in a variety of clinical settings. This exposure is crucial for the development of competent and empathetic future physicians who are equipped to meet the diverse needs of their patients and the healthcare system at large.



Harden's Integration Ladder

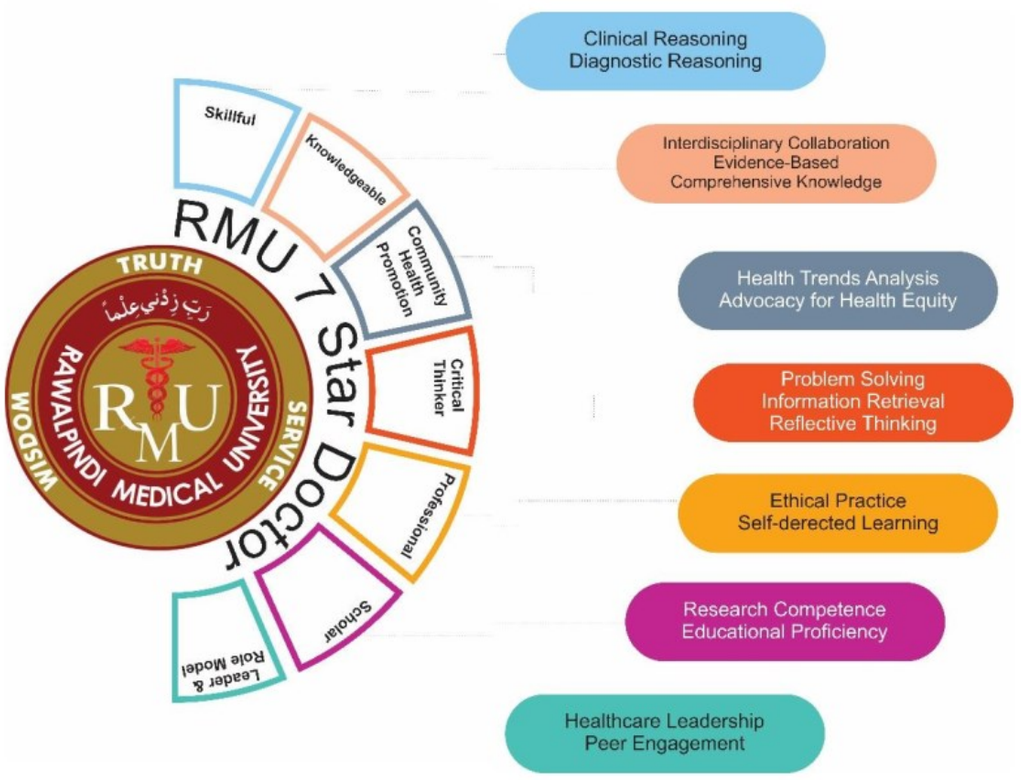
PMDC Seven Star Doctor Competencies

At RMU we aim to produce seven-star doctor according to PMDC Competencies having the generic competencies of “Skill,Knowledge, Community Health Promoter, Critical Thinker, Professional, Scholar, Leader and Role Model”, Rawalpindi Medical University has introduced modular integrated undergraduate curriculum as being first public sector university. These competencies are further outlined by various enabling traits specifying knowledge, skills, and attitude.

Contextualization in the curriculum

It involves incorporating both local needs and global standards. This ensures the curriculum's relevance to the local community while adhering to international benchmarks. For health professionals, this is crucial as it equips students to effectively serve diverse populations in real-world healthcare settings.

Content identification, contextualization, and validation during curriculum development require a balanced consideration of local and global requirements, overseen by relevant leaders and experts. To this end, Rawalpindi Medical University has engaged subject experts and medical educationists, planning to incorporate feedback from local stakeholders to address the current needs effectively.



RMU 7 Star Doctor

In Pakistan, the shift towards contextualization is essential, particularly due to the country's unique healthcare challenges like infectious diseases, malnutrition, and maternal and child mortality, compounded by socioeconomic factors. The prevalence of various diseases, limited healthcare resources, and cultural diversity necessitate a customized approach to medical education.

Contextualizing the curriculum is expected to positively influence graduate performance. By blending basic and clinical subjects, introducing early clinical exposure, and emphasizing practical, context-aware learning, graduates will be better equipped to tackle health challenges in their communities, enhancing their competence, confidence, and ability to deliver high-quality healthcare.

Context Facets of Curriculum 2024 at Rawalpindi Medical University

Rawalpindi Medical University adheres to globally recognized best practices in curriculum development. The Department of Medical Education at RMU has structured the process of syllabi identification, thematic structuring, content validation, and contextualization. This process integrates existing teaching and learning practices with global recommendations for change.

Key perspectives for the context of change include:

•The exponential growth in course content due to educational advancements, technological innovations, and scientific discoveries requires prioritization, removal of outdated concepts, and modern information transfer methods.

•Evolving societal expectations of healthcare workers necessitate balancing patient satisfaction with health system responsiveness. The curriculum should address societal needs, healthcare access, resource equity, and system awareness.

•The post-pandemic era's shift towards hybrid learning and online methodologies necessitates a curriculum that accommodates these new educational paradigms.

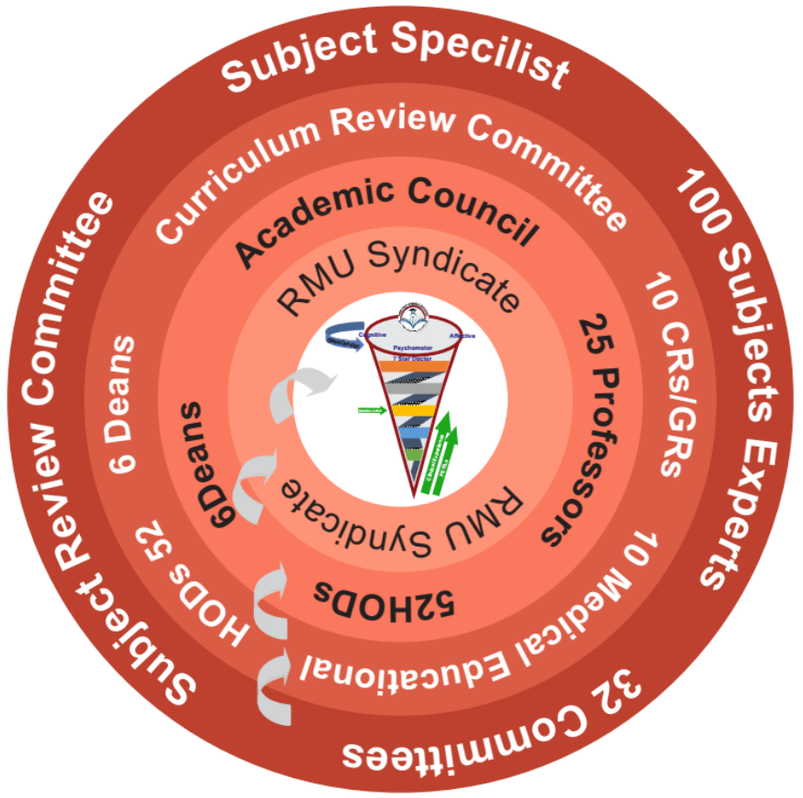
•The curriculum revision is aligned with global standards of Basic Medical Education and conforms to national regulations, ensuring international recognition and employability.

•The curriculum incorporates training in the affective domain to address societal expectations, legal awareness, and community interaction. This includes a dedicated ‘spiral’ for affective training, with assessments for the ‘PERLs’ domain.

•Student-centered approaches, such as Problem-Based Learning, electives, self-directed learning, and portfolio development, empower students in their educational journey.

Process of Curriculum Development

The curriculum development process at Rawalpindi Medical University was an intricate and well-orchestrated endeavor, meticulously designed to create an advanced and relevant curriculum. This process maintained a strong linkage with existing educational norms and professional practices while introducing innovative elements. Here's a more detailed breakdown of the process:



Process of Curriculum Development at RMU

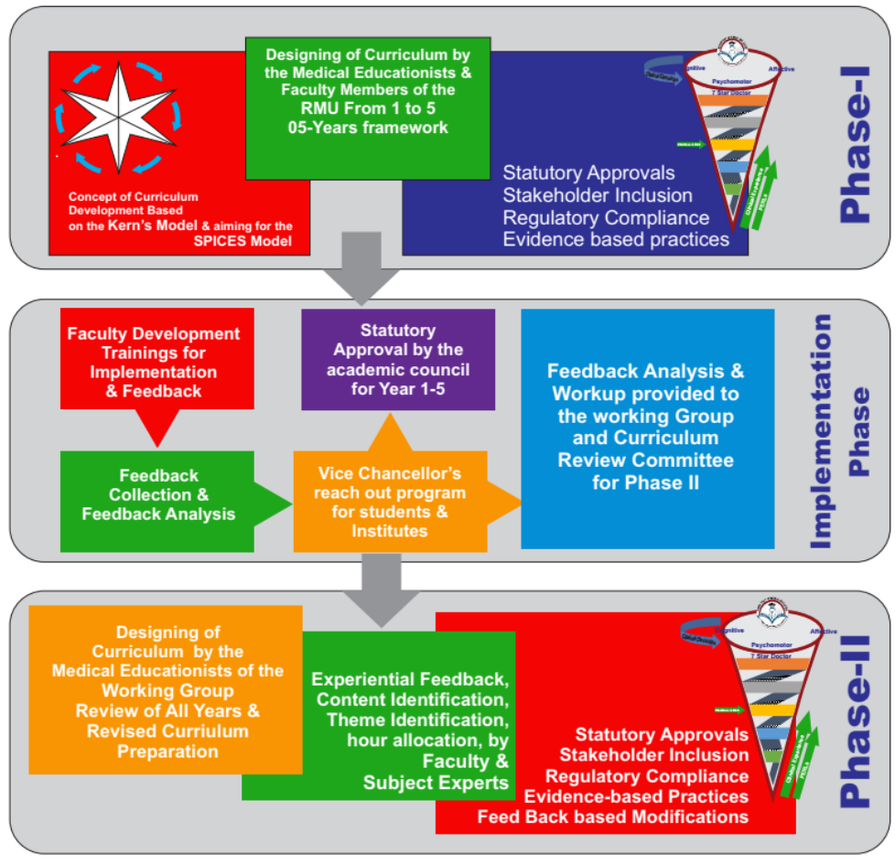
1. **Syllabi Development and Expert Consultation**: The first stage involved the formation of subject-specific advisory committees, engaging over 34 experts. Each committee focused on curating and refining the syllabi for their respective subjects. Their primary task was to incorporate all critical elements pertinent to each subject while discarding any obsolete or irrelevant content.
2. **Curricular Committee Review**: The next phase brought together a 26-member Curricular Steering Committee, consisting of medical educationists This committee played a pivotal role in scrutinizing and endorsing the overarching structure for a 'Modular Integrated Curriculum' spanning five years. Their focus areas included the identification and placement of modules, clerkship planning, and ensuring that the curriculum aligned seamlessly with various assessment techniques.
3. **Theme Identification and Modular Design**: In this phase, 18 medical educators engaged in a dynamic and collaborative exercise. They meticulously arranged syllabi elements into specific modules according to these themes. This step was crucial in determining the topics for each learning objective and allocating appropriate hours for each curriculum component.

4. **Finalization of Modules**: A select group comprising Lead Medical Educationists and members from the Department of Medical Education undertook the final step of module finalization. This involved setting the structure, themes, time allocation, syllabi content, and emphasizing clinical relevance for each module.

5. **Statutory Approval and Integration**: The finalized modules and their associated assessment policies underwent a rigorous approval process through the Academic Council, and the Syndicate. Feedback and recommendations gathered during this statutory process were meticulously integrated into the curriculum guidelines.

6. **Adaptive and Feedback-Oriented Approach**: Recognizing the importance of adaptability and continuous improvement, the university incorporated a system for regular feedback and curricular evaluations. This system ensures that the curriculum remains dynamic, accommodating necessary updates and refinements as needed.

7. **Curriculum 2024 - A Modular Integrated Outcome-Based Approach**: The developed Curriculum is a testament to a comprehensive, outcome-based educational strategy. This strategy enables affiliated colleges to implement the curriculum effectively, respecting each institution's unique identity and vision, despite variations in available resources.



Phases of Curriculum Development

8. **Integrative and Contemporary Educational Strategies**: The curriculum emphasizes both horizontal integration across various disciplines and vertical integration throughout different educational stages. This integrative approach is in line with modern educational theories, like Meizrow's concept of transformative learning and strategies for early clinical exposure. Such an approach is aimed at promoting professional growth and practical knowledge application among students.

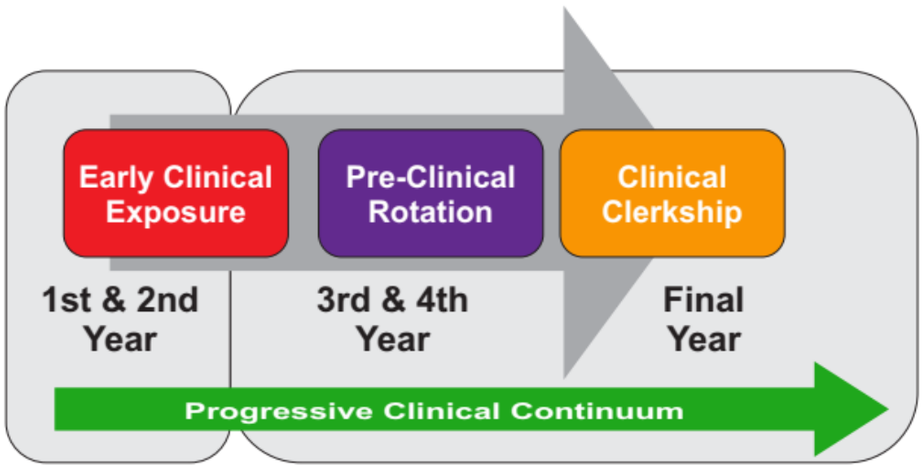
In essence, the curriculum development at Rawalpindi Medical University was a detailed, step-by-step process involving extensive expert input, iterative refinement, and a focus on adaptability and modern educational practices

Curricular Organization and Structure

RMU will follow the Correlation approach, corresponding to level 7 of Harden's levels of integration. The emphasis remains on disciplines or subjects, with subject-based courses occupying most of the curriculum time. Within this framework, an integrated teaching session or course is introduced, in addition to the subject-based teaching. This session brings together areas of interest common to each of the subjects. Although the teaching is discipline-based, topics are correlated and taught within a clinical context for better understanding and application of concepts. However, clinical teaching increases gradually with advancing years. The fifth year of the MBBS program is dedicated to clerkships.

Integrated Curriculum Design of RMU MBBS Program

Two designs of the MBBS curriculum are acceptable by PMDC. System Based (Preferred) with horizontal and vertical integration. The curriculum of each Clinical Discipline must emphasize–Health Promotion and Disease Prevention‖, besides Curative Health Care. RMU has opted for system based modular curriculum.

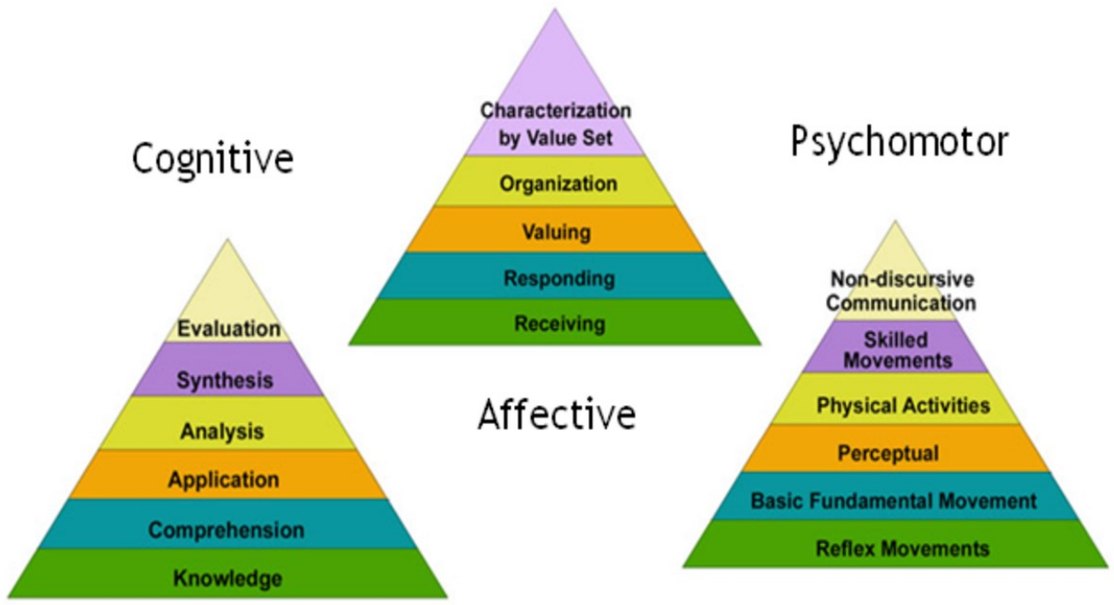


Integrated Curriculum Design

The Module: Module is the smallest unit of Curriculum both in the System- Based and Subject-Base (topic-based) Curricula. Modules are taught as a continuous block or as a longitudinal theme and assessments is carried out at the end of each module. The System-Based Curriculum made up of —Modules, where each module is based upon organ-system(s) of the body. In each module, the Basic and Clinical Sciences are taught and learned in an integrated manner.

Components of a Module:

1)Title of Module/System 2) Learning Objectives, 3) Allocated Time in weeks/Hours and Credit Hours, 4) the name of the Coordinator, 5) Teaching Faculty (regular/visiting) 6) Learning Sites, 8) Modes of Information Transfer, 9) List of the Recommended Books, 10) Assessment strategies, and 11) Strategies for Monitoring and Improvement.



Integrated Curriculum Design

Learning Objectives: Learning Objectives are defined for each module. They are Specific, Measurable, Achievable, Relevant to the desired competencies (Outcomes) of the PMDC Curriculum and Time bound (SMART), related to level of the learner and the three main domains.

Level of the Learner: While developing the curriculum, the learning objectives are according to the desired level of the learner, and formative and summative assessment is done to assess the knowledge, skills and attitudes to be achieved for that level.

Roles and Responsibilities:

a. The RMU MBBS curriculum in the first four years is delivered in a System-Based Modular Format with clinical relevance and early clinical Exposure. However, in the third and fourth years, students will gain clinical exposure through rotations in the wards and outpatient departments (OPDs), and in the fifth year through clerkships.

b. The curriculum is delivered by modular teams consisting of multidisciplinary basic science faculty and relevant clinical faculty.

d. The planning and delivery is coordinated by Module Team who will guide module coordinators of their respective modules for efficient implementation.

e. The Modular Coordinator is responsible for teaching and assessment during each module. The coordinator will be appointed by the Heads of Departments (HODs) in coordination with the Health Professions Education (HPE) team.

f. The Clinical Coordinator is responsible for placement, teaching, and assessment during clinical rotations

SECTION-III

RMU Undergraduate Competency Framework

- **RMU Undergraduate Competency Model**
- **Outcomes of the Undergraduate Integrated Modular Curriculum**

The focus of this curriculum is on the roles of a general physician, as identified by the PMDC. These roles include being skillful, knowledgeable, a community health promoter, a critical thinker, a professional and role model, a researcher, and a leader. The competencies emphasized in the first and second years align with these roles.



RMU Competency Framework

RMU Undergraduate Competency Model

The Rawalpindi Medical University (RMU) Undergraduate Competency Model is designed to prepare medical students to meet the evolving challenges of modern healthcare. Grounded in the principles of patient-centered care, ethical practice, and community engagement, this model outlines the core competencies that every RMU graduate must attain. These competencies are carefully aligned with the needs of Pakistan's healthcare system and the broader global context, ensuring that RMU graduates are not only skilled clinicians but also ethical leaders, compassionate caregivers, and innovative problem-solvers.

The RMU Undergraduate Competency Model emphasizes a holistic approach to medical education, integrating scientific knowledge with practical skills, critical thinking, and a deep commitment to lifelong learning. Each competency is complemented by specific sub competencies that provide a clear roadmap for students' development, guiding them from foundational knowledge to advanced clinical practice.

Through this competency-based framework, RMU aims to cultivate graduates who are capable of delivering high-quality, safe, and effective care, while also advancing the health and well-being of the communities they serve. By adhering to these competencies, RMU students will be equipped to excel in diverse medical environments, adapt to the rapidly changing landscape of healthcare, and contribute positively to the society they serve.

Competency 1: Patient Care Deliverer

The "Patient Care Deliverer" competency focuses on the practical aspects of delivering patient care. It emphasizes the importance of applying clinical skills, knowledge, and compassion in providing high-quality healthcare to patients. Students are expected to develop a strong foundation in patient-centered care, practice-based learning, and a commitment to continuous improvement in their clinical practice.

- **Practice-Based Learning:** Students should engage in continuous learning through practical experience, applying evidence-based medicine and reflecting on their clinical practice to improve patient care.
    - Apply evidence-based medicine in clinical practice.
    - Reflect on clinical experiences to improve patient care.
    - Engage in self-directed learning to enhance clinical skills.
- **Service Orientation:** A commitment to serving others is fundamental to the practice of medicine. Students should prioritize the well-being of patients and the community, demonstrating a strong dedication to providing compassionate and effective care.
    - Demonstrate a commitment to patient-centered care.
    - Engage in community service activities.
    - Reflect on the role of service in medical practice.

Competency 2: Ethical & Professional

The "Ethical & Professional" competency encompasses the foundational principles of medical ethics and professional behavior. It requires students to uphold the highest standards of legal and ethical responsibility in their practice. They must demonstrate empathy, integrity, and accountability, treating all individuals with respect and maintaining a commitment to continuous improvement.

- **Professional & Ethical & Legal Responsibility:** Students are expected to understand and apply ethical principles and legal requirements in medical practice. They should be able to identify and analyze ethical dilemmas in healthcare settings and make decisions that prioritize patient well-being.
    - Explain ethical frameworks in medical decision-making.
    - Apply legal standards in patient care.
    - Demonstrate professionalism in all interactions.
- **Capacity for Improvement:** Students should continuously strive to improve their clinical skills, knowledge, and patient care practices through self-assessment and reflective learning.
    - Assess personal strengths and weaknesses.
    - Implement strategies for self-improvement.
    - Seek feedback from peers and mentors.
- **Empathy:** Understanding and sharing the feelings of patients is crucial for building trust and providing compassionate care. Students must develop the ability to empathize with patients from diverse backgrounds.
    - Demonstrate empathy in patient interactions.
    - Reflect on the emotional and psychological aspects of patient care.
    - Integrate empathy into clinical practice.
- **Integrity:** Students must practice medicine with honesty and adhere to moral and ethical principles, ensuring that their actions align with the values of the medical profession.
    - Maintain honesty in patient interactions.
    - Uphold ethical standards in clinical decision-making.
    - Demonstrate transparency in communication with patients and colleagues.
- **Accountability:** Medical students must be accountable for their actions, taking responsibility for their decisions and outcomes in patient care.

    - Take responsibility for clinical decisions.
    - Reflect on the outcomes of patient care.
    - Ensure accountability in teamwork.
- **Respect:** Respect for patients, colleagues, and the broader healthcare team is fundamental. Students should treat everyone with dignity and consideration, regardless of differences in background or beliefs.
    - Demonstrate respect in patient interactions.
    - Collaborate respectfully with team members.
    - Address cultural differences in a respectful manner.

Competency 3: Scholar & Life-Long Learner

The "Scholar & Life-Long Learner" competency highlights the importance of continuous learning and scholarly inquiry in medical practice. Students are encouraged to engage in scientific research, develop critical thinking skills, and commit to lifelong learning to stay current in their field and contribute to the advancement of medical knowledge.

- **Living Systems:** Students should have a deep understanding of living systems and their functions, enabling them to apply this knowledge to patient care.
    - Explain the principles of living systems.
    - Apply knowledge of living systems to clinical practice.
    - Evaluate the impact of living systems on health and disease.
- **Human Behavior:** Understanding human behavior is crucial for effective patient care and communication. Students should be able to analyze behavioral factors that influence health and apply this understanding in clinical settings.
    - Analyze the impact of behavior on health outcomes.
    - Apply behavioral principles in patient care.
    - Reflect on the role of behavior in health and disease.
- **Diagnose and Manage:** Students must be proficient in diagnosing and managing medical conditions, using evidence-based approaches to ensure the best possible outcomes for patients.
    - Diagnose medical conditions accurately.

    - Develop management plans for patient care.
    - Evaluate the effectiveness of treatment interventions.
- **Scientific Inquiry:** Engaging in scientific inquiry is essential for advancing medical knowledge. Students should be able to conduct research, critically appraise evidence, and contribute to the scientific community.
    - Conduct research on medical topics.
    - Critically appraise scientific literature.
    - Disseminate research findings effectively.
- **Quantitative Reasoning:** Quantitative reasoning skills are necessary for interpreting data and making informed decisions in medical practice. Students should be able to analyze and apply quantitative data in clinical settings.
    - Interpret quantitative data in clinical practice.
    - Apply statistical methods to medical research.
    - Reflect on the role of quantitative reasoning in decision-making.
- **Critical Thinker:** Developing critical thinking skills is vital for solving complex medical problems. Students should be able to analyze information, evaluate evidence, and make reasoned decisions in patient care.
    - Analyze clinical scenarios critically.
    - Evaluate evidence in medical practice.
    - Make informed decisions based on critical thinking.

Competency 4: Team Worker & Communicator

The "Team Worker & Communicator" competency emphasizes the importance of effective communication and teamwork in healthcare settings. Students are expected to develop strong oral and written communication skills, work collaboratively as part of a healthcare team, and demonstrate leadership when necessary. Reliability, adaptability, and resilience are key qualities that support their ability to function effectively in diverse and dynamic clinical environments.

- **Oral and Written Communication:** Students must be able to convey medical information clearly and effectively, both verbally and in writing, to patients, families, and colleagues.

    - Communicate medical information clearly.
    - Develop patient-centered communication strategies.
    - Write accurate and comprehensive patient records.
- **Team Member:** Students should actively participate as members of the healthcare team, contributing to collective problem-solving and decision-making processes.
    - Collaborate effectively with team members.
    - Participate in interdisciplinary case discussions.
    - Contribute to team-based patient care.
- **Team Leader:** When required, students should be able to take on leadership roles within the healthcare team, guiding and coordinating the efforts of others.
    - Lead a healthcare team in clinical settings.
    - Make decisions as a team leader.
    - Facilitate effective team communication.
- **Reliability and Dependability:** Students must consistently demonstrate reliability and dependability in fulfilling their clinical responsibilities, ensuring that they are trusted members of the healthcare team.
    - Fulfill clinical duties reliably.
    - Demonstrate dependability in patient care.
    - Maintain consistency in performance under pressure.
- **Resilience & Adaptability:** Students need to develop resilience to cope with the challenges of medical practice and adapt to changes in clinical settings.
    - Demonstrate resilience in stressful situations.
    - Adapt to changes in clinical practice.
    - Reflect on challenges and adapt strategies accordingly.

Competency 5: Community Health Promoter

The "Community Health Promoter" competency focuses on the role of medical students in promoting health within the community. It involves educating and empowering communities, conducting assessments, and engaging with diverse populations to address public health challenges. Cultural competence and advocacy are essential in promoting health equity and improving community health outcomes.

- **Health Education and Promotion:** Students should be able to design and implement health education programs that address the specific needs of the community.
    - Develop health education materials.
    - Implement community health promotion activities.
    - Evaluate the effectiveness of health education programs.
- **Community Assessment and Engagement:** Students must be capable of assessing the health needs of communities and engaging with community members to identify and address public health issues.
    - Conduct community health assessments.
    - Engage with community stakeholders.
    - Identify public health priorities based on community needs.
- **Cultural Competence:** Understanding and respecting cultural differences is crucial in providing effective community health promotion. Students should be able to work with diverse populations and tailor health interventions accordingly.
    - Demonstrate cultural sensitivity in community interactions.
    - Adapt health interventions to cultural contexts.
    - Reflect on cultural influences in health behaviors.
- **Advocacy and Empowerment:** Students should advocate for policies and practices that promote community health and empower individuals and communities to take control of their health.
    - Advocate for community health initiatives.
    - Empower individuals to make informed health decisions.
    - Promote policies that address social determinants of health.

Competency 6: Quality & Safety Practitioner

The "Quality & Safety Practitioner" competency emphasizes the importance of patient safety and quality improvement in healthcare. Students are trained to understand and apply patient safety principles, comply with regulatory requirements, and collaborate with interdisciplinary teams to ensure the highest standards of care.

- **Patient Safety Principles:** Students must understand and apply patient safety principles to prevent medical errors and enhance the quality of care.
    - Identify potential safety risks in clinical practice.
    - Implement strategies to prevent medical errors.
    - Evaluate the effectiveness of patient safety interventions.
- **Regulatory Compliance:** Knowledge of and adherence to regulatory standards is essential in maintaining patient safety and quality care. Students must be familiar with relevant regulations and ensure compliance in their practice.
    - Understand and apply healthcare regulations.
    - Ensure compliance with legal and regulatory standards.
    - Reflect on the impact of regulations on patient safety.
- **Interdisciplinary Collaboration:** Effective collaboration with professionals from various disciplines is necessary to achieve optimal patient outcomes. Students should develop skills in working within interdisciplinary teams to enhance patient care.
    - Collaborate with interdisciplinary teams in patient care.
    - Contribute to interdisciplinary case discussions.
    - Reflect on the impact of interdisciplinary collaboration on patient outcomes.

Competency 7: Digital & Artificial Intelligence Literate

The "Digital & Artificial Intelligence Literate" competency prepares students to navigate the rapidly evolving landscape of digital health and artificial intelligence. Students are trained to use AI-based systems ethically and effectively in diagnosis and decision-making, ensuring that technological advancements are integrated into patient care responsibly.

- **Technology and AI-Based Diagnosis and Decision-Based Systems:** Students should be proficient in using technology and AI tools for diagnosis and decision-making, ensuring that these tools enhance patient care.
    - Use AI-based tools for diagnosis.

    - Evaluate the effectiveness of technology in clinical decision-making.
    - Integrate digital tools into patient care responsibly.
- **Ethical Usage of AI:** Ethical considerations are paramount when using AI in healthcare. Students must understand the ethical implications of AI and ensure that its application respects patient rights and autonomy.
    - Identify ethical issues in AI usage.
    - Apply ethical principles to AI-based decisions.
    - Reflect on the impact of AI on patient care.

This framework ensures that undergraduate medical students at Rawalpindi Medical University are well-prepared to excel as competent, ethical, and compassionate healthcare professionals. By meeting these competencies and their corresponding learning objectives, students will be equipped to navigate the complexities of modern medical practice and contribute meaningfully to patient care and community health.

Outcomes

Outcomes of the Undergraduate Integrated Modular Curriculum

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

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

SECTION-V

Teaching Strategies

Introduction

The teaching strategies employed in the MBBS curriculum at Rawalpindi Medical University emphasize interactive and student-centered learning methods. A variety of instructional approaches are integrated into the program, ensuring that students not only grasp theoretical knowledge but also apply it in practical, real-world scenarios. The Large Group Interactive Sessions (LGIS) serve as the backbone of this approach, where the professor introduces critical medical topics using multimedia tools like patient videos, interviews, and clinical exercises. This format encourages active participation, allowing students to engage directly with complex concepts and clinical conditions .

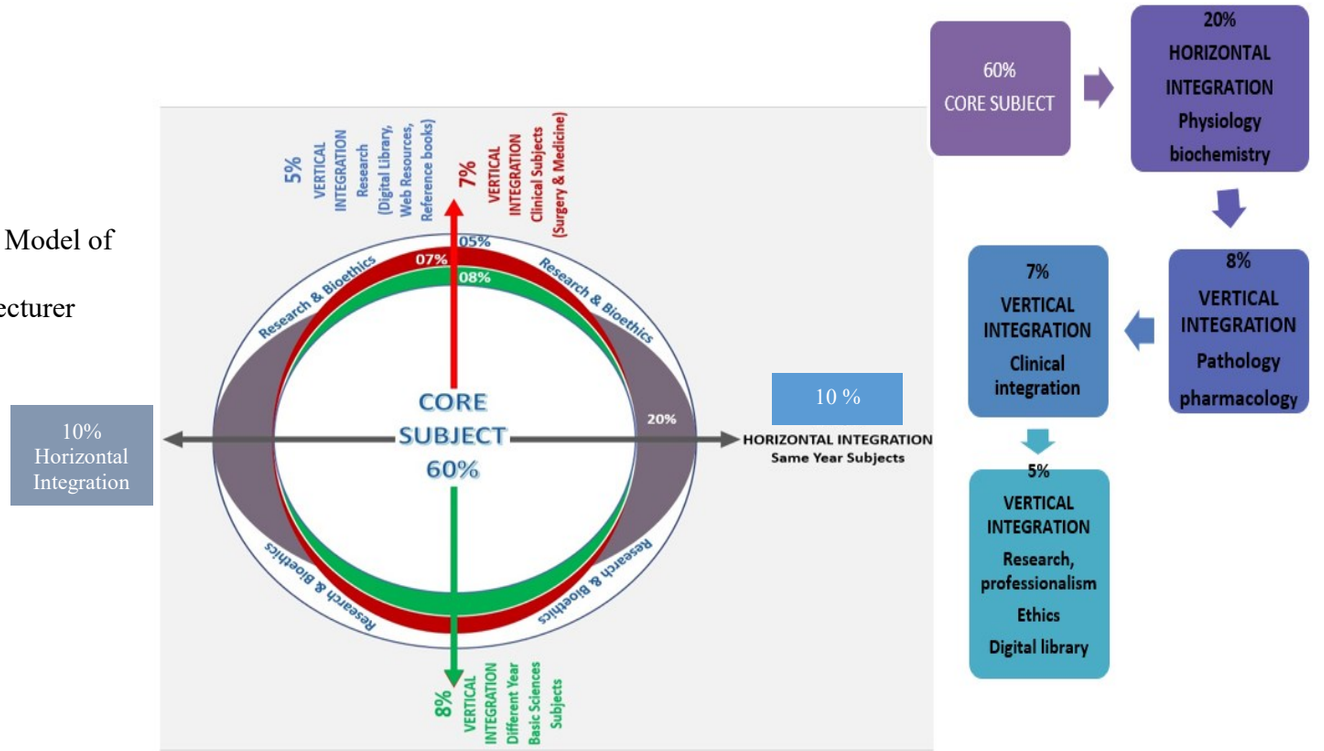
In addition to LGIS, Small Group Discussions (SGD) play a crucial role in deepening students' understanding. These sessions involve structured exercises, such as patient case discussions or topic presentations, designed to promote peer-to-peer learning and critical thinking. The facilitator's role is to guide discussions, ask probing questions, and ensure that students apply their knowledge to real-world medical challenges. The small group format helps students clarify core concepts, acquire new skills, and develop the professional attitudes necessary for clinical practice .

The curriculum also incorporates Self-Directed Learning (SDL) and Problem-Based Learning (PBL), both of which foster autonomy and critical inquiry. In SDL, students take charge of their own learning by exploring predefined objectives and resources. This independent study approach empowers them to develop skills in managing their time and resources effectively. PBL, on the other hand, places students in group settings where they collaboratively solve open-ended clinical problems. This method emphasizes analytical thinking, communication, and collaboration, all key components in medical education and practice.

Finally, practical learning is reinforced through Skill Labs and Clinical Practicals, where students perform hands-on exercises to develop procedural skills. This experiential learning is essential for bridging the gap between theory and practice, ensuring that students gain the confidence and technical ability needed for clinical rotations. These strategies collectively create a well-rounded and engaging educational environment that prepares students to become competent, empathetic physicians .

Large Group Interactive Session (LGIS)

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



Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementation of Small Group Discussions

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

Self-Directed Learning (SDL)

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

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

  ii.OSPE station

PBL (SDL)

- 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.

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

Case Based Learning (CBL)

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

Practical Sessions/Skill Lab (SKL)

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

SECTION-IV

Five Year Structured Framework of Clinically Oriented Integrated Modular Curriculum 2024

About the Structured Framework

The five-year structured framework for the MBBS program at Rawalpindi Medical University follows a highly integrated approach in both horizontal and vertical alignment of subjects. In the first year, core subjects like Anatomy, Physiology, and Biochemistry are taught alongside foundational modules. The year is divided into blocks covering musculoskeletal systems (MSK I & II), blood and immunity, cardiovascular systems (CVS), and respiratory systems. These blocks are also spirally integrated with general education cluster courses such as Ethics and Artificial Intelligence, as well as early clinical exposure to provide a balanced mix of theory and clinical practice. In each block, core subjects are vertically integrated with preclinical subjects like Community Medicine, Pathology, and Pharmacology and clinical subjects like medicine, surgery, gynecology and pediatrics.

In the second year, students delve deeper into systems such as the gastrointestinal tract (GIT), renal system, reproductive system, and central nervous system (CNS). Vertical integration becomes more pronounced, with clinical exposure integrated into practical aspects of these modules. Horizontal integration continues with courses like Behavioral Sciences and Bioethics, and students continue to take spirally integrated courses like Family Medicine and Digital Literacy. The curriculum maintains continuity by revisiting previously covered topics through spiral integration, reinforcing concepts across the academic years.

In the third year, the MBBS curriculum at Rawalpindi Medical University introduces students to more advanced clinical and biomedical concepts. Key systems covered include the gastrointestinal (GIT) and hepatobiliary systems, parasitology, microbiology, and hematology. Horizontally, students continue to engage with clinical subjects like pathology, pharmacology, and community medicine. The curriculum remains horizontally integrated, combining clinical rotations with system-based learning ensuring that theoretical knowledge is continuously reinforced with practical clinical exposure. Spirally integrated subjects like research methodology and bioethics further complement the learning process by revisiting concepts from earlier years.

In the fourth year, the curriculum intensifies with modules in otorhinolaryngology (ENT), ophthalmology, endocrinology, population health, renal medicine, and psychiatry. Horizontal integration ensures that core clinical concepts are covered alongside biomedical sciences, while vertical integration deepens students' practical knowledge as they spend more time in clinical settings. Modules on population health and reproductive health introduce broader public health perspectives. Spirally integrated courses continue to reinforce learning outcomes, addressing essential soft skills, leadership, and ethics.

The final year focuses almost entirely on clinical clerkships in medicine and allied specialties, surgery and allied fields, gynecology, and pediatrics, representing the culmination of the horizontal and vertical integration model. Students apply their knowledge and skills comprehensively in real-world clinical environments. They work directly with patients under supervision, allowing them to gain hands-on experience. Spirally integrated subjects continue to emphasize ethical decision-making, professionalism, and patient safety. This year ensures that students are fully prepared for their future roles as competent, ethical, and compassionate healthcare providers.

Structured Framework of Clinically Oriented Integrated Modular Curriculum 2024

Sr. No	Class	Module	Duration	Block
1.	First Year MBBS	Foundation Module	6 weeks	Block-I
		MSK-I Module	5 weeks	
		MSK-II Module	5 weeks	Block -II
		Blood & immunity Module	5 weeks	
		CVS Module	6 weeks	Block -III
		Respiration Module	5 weeks	
		General Education Cluster Module	1 week	
2.	Second Year MBBS	Gastrointestinal tract Module	5 weeks	Block-IV
		Renal module	5 weeks	
		Reproduction Module	4 weeks	Block -V
		Central nervous system module	6 weeks	
		Special Senses Module	4 weeks	Block -VI
		Endocrinology Module	5 weeks	
3.	Third Year MBBS	Foundation 1	4 weeks	Block- VII
		Foundation II	4 weeks	
		GIT, Hepatobiliary & Parasitology	5 weeks	Block - VIII
		Microbes & Antimicrobials	7 weeks	
		Hematology, Immunology & Research	5 weeks	Block - IX
		CVS & Respiration	5 weeks	
4.	Fourth Year MBBS	Otorhinolaryngology 1	2.5 weeks	Block- X
		Otorhinolaryngology II	3 weeks	
		Ophthalmology I	2.5 weeks	Block - XI
		Ophthalmology II	3 weeks	
		Endocrinology	5 weeks	Block -XII
		Population Health & Reproduction	6 weeks	
		Renal	4 weeks	Block – XIII
		CNS & Psychiatry	6 weeks	
5.	Final Year MBBS	Medicine & Allied	12 weeks	Block- XIV
		Surgery & Allied	12 weeks	Block- XV
		Gynae & Peads	12 weeks	Block- XVI

SECTION-IV

Structured Framework of Second Year MBBS Curriculum

- Introduction
- Second Year Academic Calendar 2024
- Contact Hour Distribution for Core, Clinical and Spiral Subjects

Introduction

The second year MBBS teaching framework at Rawalpindi Medical University spans over 32 weeks of instruction, divided into three major blocks. In the first block (Block IV), the curriculum focuses on the gastrointestinal tract (GIT) and renal system modules, with 5 weeks allocated to each. This block comprises 38% of the total teaching hours. Anatomy, Physiology, and Biochemistry continue as core subjects, and the content is integrated with relevant clinical subjects like Community Medicine and Pathology. The GIT module alone receives a significant portion of teaching hours, emphasizing the complex interplay between biochemical digestion processes and anatomical structures like the digestive tract and associated organs.

In Block V, the focus shifts to the reproductive system and the central nervous system (CNS). The reproductive system is taught over 4 weeks, while the CNS module extends to 6 weeks. This block accounts for 31% of the total teaching hours. The core subjects remain horizontally integrated across these modules, with vertical integration provided through clinical applications in fields like Psychiatry, Medicine, and Surgery. The CNS module particularly emphasizes the physiological functions and biochemical aspects of the brain and spinal cord, linking these theoretical concepts with clinical cases in neurology and psychiatry.

The final block (Block VI) in the second year covers special senses and endocrinology, with each module lasting 4 and 5 weeks, respectively. This block contributes 31% of the total teaching hours. Anatomy, Physiology, and Biochemistry are again taught in an integrated manner with clinical disciplines such as Pathology, Medicine, and Pediatrics. In the endocrinology module, students explore the intricate hormonal feedback mechanisms and biochemical processes that regulate body systems, applying this knowledge in clinical settings involving diabetes, thyroid disorders, and other endocrine pathologies.

Overall, the second year builds upon the foundational knowledge from the first year by increasing the complexity of system-based modules and integrating more clinical exposure. Vertical integration through subjects like Pharmacology and Pathology ensures that students understand how basic sciences are applied in diagnosing and treating diseases. Spirally integrated courses such as Behavioral Sciences and Family Medicine continue to reinforce soft skills and holistic patient care, preparing students for more advanced clinical rotations in their third year.

Second Year Academic Calendar 2024

Blocks	Block-I								Block II						Block III					Schedule of Send Up and Professional Examination			
Module	GIT Module	Module Assessment	Renal (04 Weeks)						Reproduction	Summer Vacation	CNS				Special Senses	Module Assessment	Endocrinology	Module Assessment	Block Assessment	Prep leaves for send up	Send up	Prep Leaves for Professional Examination	Professional Examination
			Spring Vacation	Renal	Renal	Student Week	Renal	Module Assessment			Module Assessments	CNS Module	Module Assessment	Block Assessment									
Duration in Weeks / Days	05 Weeks	03 Days	08 Days	First Week	Second Week	06 Days	Third & Fourth Weeks	06 Days	04 Weeks	17th June – 20th July 2024	06 Days	05 Weeks	06 Days	03 Days	03 Weeks	06 Days	04 Weeks	06 Days	04 Days	10 Days	13 Days	20 Days	24 Days
Dates	26th -Feb – 30th March 2024	01st April – 03rd April, 2024	05th April – 13th April 2024	18th April – 20th April 2024	22nd April – 27th April 2024	29th April – 04th May 2024	06th May – 16th May 2024	17th May – 23rd May 2024	24th May – 28th May 2024	29th May – 26th June 2024	22nd July – 27th July 2024	29th July – 31st August 2024	02nd Sep – 07th Sep 2024	09th Sep – 11th Sep 2024	12th Sep – 2nd Oct 2024	03rd Oct – 10th Oct 2024	11th Oct – 08th Nov 2024	09th Nov – 15th Nov 2024	16th Nov – 20th Nov 2024	21st Nov – 30th Nov 2024	01st Dec – 13th Dec 2024	14th Dec 2024 – 01st Jan 2025	02nd Jan 2025 – 25th Jan 2025

*Note: All dates are subject to change.

Contact Hour Distribution for Core Subjects

Second Year MBBS

Teaching Hours 2nd Year MBBS							
Blocks	**Modules**	**Anatomy**	**Physiology**	**Biochemistry**	**Total**	**Total Hours**	**Percentage**
Block-IV	GIT	103	118	29	250	414	38
	Renal	50	86	28	164		
Block-V	Reproduction	58	74	22	154	339	31
	CNS	45	113	27	185		
Block-VI	Special Senses	74	24	55	153	333	31
	Endocrinology	74	30	76	180		
Total Hours Per Subject		404	445	237	1086		
Percentage		38	37	41	22		100

Discipline Wise Clinical Teaching Hours for Second Year MBBS

Sr. No	**Discipline**	**Contact Hours**
1.	Psychiatry	1
2.	Community Medicine	10
3.	Medicine	15
4.	Bioethics	9
5.	Surgery	17
6.	Pathology	10
7.	Pharmacology	3
8.	Radiology	7
9.	Pediatrics	5
10.	Family Medicine	4
11.	Quran Translation	11
12.	Islamiyat	12
13.	Pak Studies	10
14.	Research Club activity	5
15.	Eye	4
16.	ENT	3
17.	Behavioral Sciences	3
18.	Gynae/Obstetrics	4
Total Hours		**103 Hours**

SECTION-VI

BLOCK-IV

- **Module VII - Gastrointestinal Module**
- **Module VIII - Renal Module**

Block-I

Module No. 1 – Gastrointestinal Tract

Duration 6 Weeks

GIT Module Team

Module Name	:	GIT Module
Duration of module	:	06 Weeks
Coordinator	:	Dr. Uzma Kiyani
Co-coordinator	:	Dr. Minahil Haq
Reviewed by	:	Module Committee

Module Committee	
Vice Chancellor RMU	Prof. Dr. Muhammad Umar
Director DME	Prof. Dr. Rai Muhammad Asghar
Convener Curriculum	Prof. Dr. Naeem Akhter
Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
Additional Director DME	Prof. Dr. Ifra Saeed
Chairperson Physiology	Prof. Dr. Samia Sarwar
Chairperson Biochemistry	Dr. Aneela Jamil
Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
Focal Person Physiology	Dr. Sidra Hamid
Focal Person Biochemistry	Dr. Aneela Jamil
Focal Person Pharmacology	Dr. Zunera Hakim
Focal Person Pathology	Dr. Asiya Niazi
Focal Person Behavioral Sciences	Dr. Saadia Yasir
Focal Person Community Medicine	Dr. Afifa kalsoom
Focal Person Quran Translation Lectures	Dr. Uzma Zafar
Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team	
Coordinator	Dr. Uzma Kiyani (Senior Demonstrator of Physiology)
DME Focal Person	Dr. Sidra Hamid (DHPE)
Co-coordinator	Dr. Shazia Nosheen (Senior Demonstrator of Physiology)
Co-Coordinator	Dr. Minahil Haq (Senior Demostrator of Anatomy)
Co-coordinator	Dr. Uzma Zafar (APWMO of Biochemistry)

DME Implementation Team	
Director DME	Prof. Dr. Rai Muhammad Asghar
Implementation Incharge 1st & 2nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
Module planner & Implementation Coordinator	Dr. Sidra Hamid
Editor	Muhammad Arslan Aslam

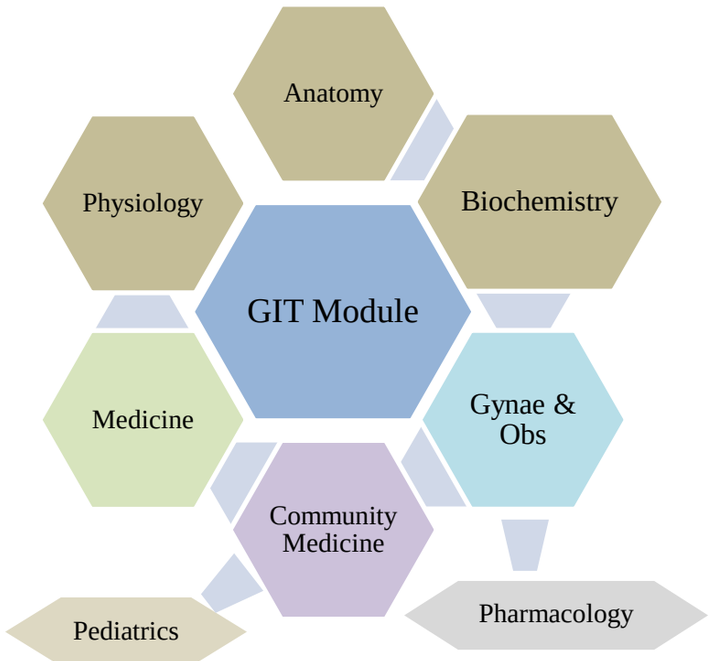
Integration					
Themes					
Block	**Module**	**General Anatomy**	**Embryology**	**Histology**	**Gross Anatomy**
1	Anatomy	-	Tongue, Body Cavities, Gastrointestinal System	Digestive Tract & associated organs (Junqueira)	Oral Cavity, Abdomen and associated visceras
	Biochemistry	Carbohydrate metabolism, GIT digestive juices, Digestion and absorption, GIT Hormones LFTs, Jundice & Nutrition,			
	Physiology	General Principles of Gastrointestinal Function—Motility, Nervous Control, and Blood Circulation Propulsion and Mixing of Food in the Alimentary Tract Secretory Functions of the Alimentary Tract, Digestion and Absorption in the Gastrointestinal Tract Physiology of Gastrointestinal Disorders			
	Orientation Session				
	Department of Medical Education (DME)	• Orientation Session on Curricular Reform RMU & Feedback of Year 2023 • Student Session on Standardization of Teaching Strategies			
	Spiral Courses				
	The Holy Quran Translation	The Holy Quran Translation Component • Imaniat I • Ibadat I • Ibadaat-II • Imaniyaat-II • Ibadaat-III • Imaniat-III			
	Pak Studies/Islamiyat	• Tehreek-E-Pakistan Islaahi Tehreekain • Akhirat-I • Toheed • Qayam e Pakistan, Aghraaz o Maqasid • Tehreek-e-Aligarh, Sir Syed Ahmad Khan • Akhirat -II			
	Bioethics & Professionalism	• Pakistan Medical & dental council Code of Ethics			
	Research (IUGRC)	• Introduction to descriptive statistics (Research-I) • Classification of different types of Data (Research-II)			

		• Scales of Data measurement (Research-III) • Measures of central Tendency (Research-IV) • Compute & Interpret measures of central tendency (Research-V) • Measure of dispersion/ Secondary data Analysis (Research-VI)
	Radiology & Artificial Intelligence	• Medical imaging of abdomen- I • Medical imaging of abdomen-II
	Family Medicine	• Common Abdominal diseases
	Behavioral Sciences	• Eating Disorders
	Vertical Integration	
	Clinically content relevant to GIT module • Concept of health & disease (Community medicine) • Epidemiology of infectious diseases & Basic Concepts (Community medicine) • Peptic ulcer (Medicine) • Jaundice (Medicine) • Irritable Bowel Syndrome (Medicine) • Antidiarrheal drugs & drugs for Peptic Ulcer Disease (Pharmacology) • Acute & Chronic Diarrhea (Pediatrics) • Common GIT problems in pregnancy (Hyperemesis gravidarum, GERD, Constipation, hemorrhoids) (Gynae and OBS)	
Clinical Relevance		
	• Clinical Presentation and Management of Peptic Ulcer Disease • Mechanisms of Malabsorption Syndromes (e.g., celiac disease) • Diagnosis and Management of Gastroesophageal Reflux Disease (GERD) • Pathophysiology of Inflammatory Bowel Diseases (e.g., Crohn's disease, ulcerative colitis) • Clinical Features of Appendicitis and Surgical Decision-Making • Gastrointestinal Bleeding: Causes and Initial Management • Jaundice: Differentiation and Clinical Evaluation • Liver Cirrhosis and its Complications (e.g., ascites, hepatic encephalopathy) • Gallstones: Pathogenesis and Surgical Indications • Mechanisms of Diarrhea and Dehydration Management	

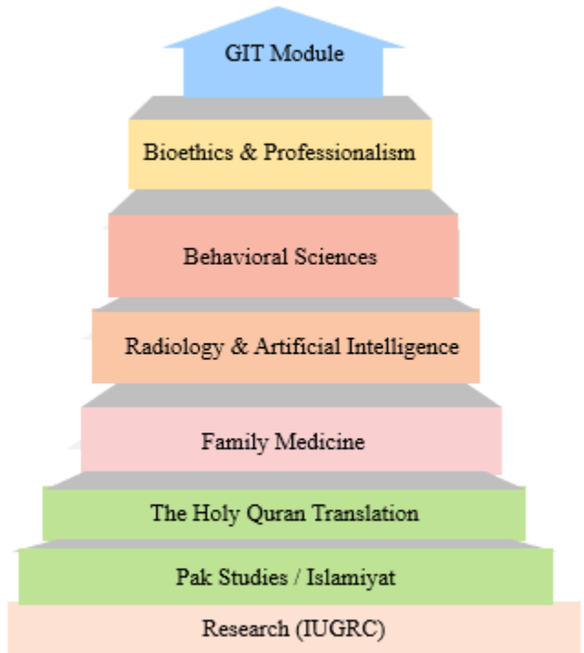
Implementation of Terms of Reference (TORS)

- Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are predefined as per the guidelines of PMDC and to be strictly followed.
- The hours mentioned within each module are the mandatory minimum required.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these. However, the level of cognition can be kept at a higher level.
- The Table of Specifications provided will be used for the three papers of the first professional examination.
- The same table of specifications should be used for the respective block exams for internal assessment.
- The criteria defined for continuous internal assessment is to be followed for each module and block respectively

Integration of Disciplines in GIT Module



Spiral /General Education Cluster Courses



Module No. 1 - GIT

Rationale: GIT module has been designed to unravel the basic structure function of the alimentary system along with its embryological development and anomalies. The composition of the food is complex and little of it is water soluble. Therefore, it cannot enter body fluids. Hence it needs to be broken down into its chemical components before it can be absorbed. Four activities of the GIT tract can be identified for this process to occur. These are:

Motility: The term is used to describe the movements of the GIT tract. These movements are responsible for breaking down and pushing the food along the alimentary tract and to its destination as feces.

Secretion: Different secretion of the GIT are concerned with breakdown of food into its digestive particles

Digestion: Break down of food into small pieces. It is produced by the mechanical activity of the alimentary tract. The surface of the food is exposed to enzymatic activity.

Absorption: The transfer of nutrients or the digestive products from the lumen to blood or the lymph.

Disruption of any of its activities can lead to disease states such as pain, peptic ulceration, diarrhea & constipation.

Coordination of all these functions is brought about hormones of GIT and exocrine pancreas.

Module Outcomes

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

Knowledge

- Explain the structural & developmental organization of GIT.
- Explain the composition, functions, mechanism & control of following gastrointestinal secretions: salivary, gastric, pancreatic, biliary, small & large intestines.
- Explain the swallowing and motility patterns in the GIT & its role in mixing, propulsion & evacuation of feces.
- Describe the mechanism of absorption of various nutrients and their role in malabsorption syndrome.
- Explain the physiological anatomy, biochemistry functions and dysfunctions of Liver.
- Explain the formation, function & control of secretion of bile.
- Explain the GIT hormones (structure, function) & their role in secretion and motility.
- Apply the knowledge of the basic sciences to understand pathophysiology of common GIT diseases.
- Appreciate concepts & importance of
    - **Family Medicine**

- **Biomedical Ethics**
- **Artificial Intelligence**
- **Research**

Skills

- Dissect various parts of GIT, and related structures including peritoneum, to demonstrate their gross Anatomy and relationship to each other.
- Identify different organs of GIT under microscope and on model.

Attitude

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

This module will run in 6 weeks duration. The content will be covered through introduction of topics. 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!

s

Syllabus of Gastrointestinal Tract (Module No. 1)

Anatomy				
Theory				
Topic	**Learning Objectives** **At the end of lecture students should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Embryology				
Embryology Development of Tongue	• Describe the development of pharyngeal apparatus	C2	LGIS	SAQ MCQ VIVA OSPE
	• Enlist the sources for development of different parts of tongue.	C1		
	• Explain the development of tongue along with its nerve supply.	C2		
	• Describe the congenital anomalies associated with tongue	C2		
	• Describe the developmental basis of physiological and biochemical mechanisms involved in perception and transmission of taste sensation	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• Practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care • Read relevant research articles • Use HEC digital library	C3 C3 C3		
Embryology Development of Body cavities I & II	• Enumerate different body cavities	C1	LGIS	SAQ MCQ VIVA OSPE
	• Describe division of embryonic body cavity	C2		
	• Discuss formation and significance of pleuropericardial membranesand pleuroperitoneal membranes	C2		
	• Describe muscular ingrowth from Lateral body walls	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		

	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Embryology Development of Salivary glands	• Explain different stages of development of salivary glands	C2	LGIS	SAQ MCQ VIVA OSPE
	• Enlist the sourse for development of different type of salivary gland	C1		
	• Explain development of its nerve supply	C2		
	• Describe the congenital anomalies associated with salivary glands	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Embryology Development of Esophagus	• Discuss the formation of tracheoesophageal septum and its importance	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe salient features of esophageal development	C2		
	• Describe congenital anomalies of esophagus	C2		
	• Describe the developmental basis for the physiological and biochemical mechanisms involved in the process of swallowing	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
	• Explain the development of stomach	C2		

Embryology Development of Stomach	• Discuss rotations and positional shifts of stomach & their effect on nerve supply and peritoneal attachments	C2	LGIS	SAQ MCQ VIVA OSPE
	• Explain formation of omental bursa.	C2		
	• Describe congenital anomalies of stomach	C2		
	• Describe the developmental basis for the physiological and biochemical mechanisms involved in the process of digestion in the stomach	C2		
	• Discuss pernicious anemia	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Embryology Liver	• Describe formation of hepatic diverticulum	C1	LGIS	SAQ MCQ VIVA OSPE
	• Describe histogenesis of liver during intrauterine life	C1		
	• Describe formation of various ligaments of liver.	C1		
	• Discuss congenital abnormalities of liver	C3		
	• Describe the developmental basis for the physiological and biochemical mechanisms involved in the process of detoxification in the liver	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		

Embryology Gall bladder, pancreas and Biliary apparatus	• Discuss development of Gall bladder	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe /congenital anomalies of gall bladder	C2		
	• Discuss development and congenital anomalies of pancreas	C2		
	• Describe development of extrahepatic biliary apparatus and its parts with abnormalities	C2		
	• Describe the developmental basis for the physiological and biochemical mechanisms involved in the process of production of bile and pancreatic vsecretions	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Embryology Development of small intestine	• Describe development of mid gut, midgut loop and rotation of midgut loop.	C2	LGIS	SAQ MCQ VIVA OSPE
	• Explain physiological umbilical hernia and return of mid gut to abdomen.	C2		
	• Describe fixation of intestines and transformations in peritoneal dispositions after mid gut loop return.	C2		
	• Describe congenital anomalies and clinical correlation of mid gut development.	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
	• Enlist parts of large intestine.	C2		

Embryology Development of large intestine	• Describe partitioning of cloaca and cloacal membrane.	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe development of anal canal.	C2		
	• Describe congenital anomalies of large intestine.	C3		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology				
Histology Tongue	• Discuss surfaces of tongue with their histological features	C1	LGIS	SAQ MCQ VIVA OSPE
	• Describe different papillae of tongue with their location & features	C2		
	• Explain histological features of taste buds	C2		
	• Discuss leukoplakia and oral thrush	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology Salivary glands	• Enlist major salivary glands	C2	LGIS	SAQ MCQ VIVA OSPE
	• Explain histological structure of salivary glands	C2		
	• Discuss different cells forming parenchyma of salivary glands	C2		
	• Discuss histology of duct system	C2		
	• Differentiate between major salivary glands on histological basis	C2		

	• Discuss effects of viral infections on salivary glands	C3		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology General organization of GIT	• Describe the developmental basis of physiological and biochemical mechanisms involved in perception and transmission of taste sensation	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe the histological characteristics of each layer with functional significance	C2		
	• Discuss associated clinicals (megacolon, chagas disease)	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology Esophagus	• Describe the histological layers of esophagus.	C2	LGIS	SAQ MCQ VIVA OSPE
	• Compare between various portions of esophagus histologically.	C2		
	• Discuss GERD	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		

	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology Stomach	• Describe the histological layers of different parts of stomach	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe histological differences of different parts of the gastric glands	C2		
	• Describe the structure and function of different cells of gastric glands	C2		
	• Explain clinical conditions associated with stomach histologically	C2		
	• Discuss pernicious anemia	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology Liver	• Discuss in detail the histological organization of liver	C2	LGIS	SAQ MCQ VIVA OSPE
	• Explain the structure of liver lobule, portal triads& hepatic acinus and its functional importance	C2		
	• Discuss histological features of hepatocytes.	C2		
	• Explain Hepatic cords, central vein, portal triad, hepatic venules, hepatic arterioles, bile duct & liver sinusoids.	C2		
	• Discuss the blood supply of the liver.	C2		
	• Explain different cells of the liver tissue	C2		
	• Describe clinical aspects of liver on histological grounds	C2		
	• Discuss cirrhosis, fatty liver	C2		
	• Discuss jaundice	C2		

	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
	• Correlate with the clinical conditions	C3		
Histology Pancreas & Gall Bladder	• Differentiate between exocrine and endocrine pancreas.	C2	LGIS	SAQ MCQ VIVA OSPE
	• Discuss the cellular structure and function of exocrine pancreatic acinus and ducts.	C2		
	• Discuss acute & chronic pancreatitis and pancreatic cancer	C2		
	• Explain the histological features of the gallbladder.	C2		
	• Discuss cholelithiasis	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology Small Intestine	• Differentiate the histological features of duodenum, jejunum and ileum	C2		
	• Discuss the location and function of villi, crypts of liberkuhn and	C2		
	• microvilli in different parts of small intestine	C2		
	• Discuss different cells lining the epithelium of small intestine	C2		
	• Discuss histological aspects of celiac disease and crohn disease	C2		
	• Correlate with the clinical conditions	C3		

	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology Large Intestine I (General Histological Features)	• Describe histological features of parts of large intestine.	C2		
	• Discuss cells lining the epithelium	C2		
	• Explain concept of tenaei coli.	C2		
	• Differentiate histological structure of the large intestine from the small intestine.	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
	• Correlate with the clinical conditions	C3		
Histology Large Intestine II (Histological Features of different parts)	• Describe histological features of appendix, caecum, rectum and anal canal			
	• Discuss clinical conditions (Colorectal cancer)			
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		

Topic	Learning Objectives Students Should Be Able To	C/P/A	Teaching Strategy	Assessment Tool
Topographical organization of Gastrointestinal tract	• Enlist components of gastrointestinal tract	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Mark the planes dividing the abdomen into nine quadrants	P		
	• Enumerate the parts of GIT lying in the various quadrants • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C1 C3 C3 C3 C3 C3 C3		
Oral Cavity, tongue and salivary glands,	• Define the boundaries of oral cavity	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Tabulate the Extrinsic and Intrinsic muscles of the tongue, anatomical location and clinical importance of tongue	C2		
	• Brief Introduction of salivary glands with their anatomical location • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C1 C3 C3 C3 C3 C3 C3		
Anterolateral abdominal wall	• Explain the layers of abdominal wall.	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Explain the fascia and muscles of abdominal wall.	C2		
	• Describe nerve supply of anterior and lateral abdominal wall.	C2		
	• Explain the segmental sympathetic supplies	C2		
	• Abdominal Hernias • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C1 C3 C3 C3 C3 C3 C3		
	• Describe Formation of rectus sheath	C2		
	• Enlist contents of rectus sheath	C2		
	• Discuss associated clinical anatomy	C2		

Rectus sheath,	• Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 C3 C3 C3 C3 C3 C3	Skill lab	SAQ MCQ VIVA OSPE
Inguinal Region & Inguinal Hernias	• Describe Walls of Inguinal Canal	C2		
	• Explain Deep & Superficial Inguinal Ring	C2		
	• Enumerate Structures passing through the inguinal canal	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Enlist Coverings of spermatic cord	C1		
	• Explain Mechanics of the inguinal Canal	C2		
	• Describe boundaries of Hassalbachs triangle	C2		
	• Define hernia	C1		
	• Differentiate indirect from direct inguinal hernia • Map outline of inguinal canal on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 P+A C3 C3 C3 C3 C3		
Testes, scrotum	• Define Anatomy of Testes and Scrotum	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Differentiate between Protective Coverings of Testes & scrotum	C2		
	• Enumerate Nerve & blood supply of these Structures	C1		
	• Discuss the parts of epididymis	C2		
	• Discuss Spermatocoele, Varicocoele, Hematocoele, hydrocoele, Testicular torsion • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3 C3		
	• Define peritoneum	C1		

Peritoneum & Peritoneal Cavity	• Explain the different folds of peritoneum.	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Describe greater and lesser sacs	C2		
	• Enlist the intra and retroperitoneal viscera	C1		
	• Discuss vertical tracings of peritoneum • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3		
Subdivisons of Peritoneal Cavity	• Describe arrangement of peritoneum in transverse & Longitudinal section of abdomen	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Describe arrangement of peritoneum in transverse section of male pelvis	C2		
	• Explain arrangement of peritoneum in transverse section of female pelvis	C2		
	• Explain the layers, folds, recesses and compartments of peritoneum with their clinical importance	C2		
	• Describe peritonitis	C2		
	• Enumerate the signs and symptoms of peritonitis	C3		
	• Treat peritonitis by antibiotics and peritoneal dialysis • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 C3 C3 C3 C3 C3 C3		
Esophagus	• Discuss gross features of abdominal part of esophagus	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enumerate their peritoneal & visceral relations.	C1		
	• Explain blood supply, lymphatic drainage & nerve supply of esophagus	C2		
	• Discuss Esophageal varices • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3		

Stomach	• Explain gross features of stomach.	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Discuss blood supply, lymphatic drainage & nerve supply of stomach	C2		
	• Explain peritoneal & visceral relations of stomach	C2		
	• Discuss greater and lesser omentum	C2		
	• Describe formation and boundaries of epiploic foramen • Map outline of stomach on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3		
Small Intestine (Duodenum)	• Describe the different parts ofduodenum with their anatomical differences	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enumerate the relations of different parts of duodenum	C1		
	• Discuss its clinical importance • Map outline of duodenum on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3		
Small Intestine (Jejunum and Ileum)	• Describe jejunum and ileum with their anatomical features	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Discuss mesentery and its attachment	C2		
	• Discuss its clinical importance • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3		
	• Enlist various parts of large intestine	C1		
	• Demonstrate gross anatomical features of different parts of large intestine	C2		

Large Intestine & Appendix	• Enlist intra and retroperitoneal parts of large intestine	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Discuss gross features of caecum	C2		
	• Describe gross anatomy of appendix	C2		
	• Enlist different anatomical positions of vermiform appendix.	C1		
	• Mark McBurney's point	P		
	• Demonstrate McBurney's incision	P		
	• Discuss common features, differential diagnosis of acute appendicitis and appendicectomy • Map outline of Transverse and descending colon on simulatrs patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use HEC digital library	C3 P+A C3 C3 C3 C3 C3 C3		
Liver, Portal hypertension, Portosystemic Anastomosis	• Describe the anatomical structure of liver.	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Describe the lobes, surfaces and segments of liver	C2		
	• Describe peritoneal reflections, ligaments and bare area of liver.	C2		
	• Enumerate visceral relations of liver.	C1		
	• Enlist the structures in porta hepatis.	C1		
	• Discuss Sub hepatic abscess & Live Biopsy	C2		
	• Discuss formation, course and parts of portal vein	C2		
	• Enumerate relations and tributaries of portal vein	C1		
	• Define portal hypertension	C1		
	• Describe sites of the portocaval anastomosis and their clinical significance	C2		
	• Explain role of portocaval shunts • Map outline of liver on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3 C3		
	• Describe location & size of gall bladder	C2		

Gallbladder and Biliary apparatus	• Enumerate relations of gallbladder.	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Describe clinical conditions related to gallbladder	C2		
	• Enlist different components of Extra-hepatic biliary System	C1		
	• Discuss the right & left hepatic ducts, common hepatic duct, cystic ducts, bile duct	C2		
	• Explain differences between Intra & Extra Hepatic Biliary Systems.	C2		
	• Discuss clinicals related with biliary apparatus	C2		
	• Discuss accessory hepatic ducts • Map outline of gallbladder & Bile duct on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3		
Spleen	• Discuss anatomical location and features of spleen with its blood supply, and lymphatic drainage	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Explain Rupture of spleen & its effects • Map outline of spleen on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3		
Pancreas	• Recall location, shape, dimensions and extent of pancreas	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Discuss parts, ducts and relations of pancreas	C2		
	• Describe arterial supply of pancreas	C2		
	• Explain applied aspects of pancreas • Map outline of pancrease on simulated patient/ model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles	C2 P+A C3 C3 C3 C3 C3 C3		

	• Use of HEC digital library			
Vasculature of GIT	• Describe the position and the vertebral levels of aorta in the abdomen.	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enlist the main branches of the aorta and its territories.	C1		
	• Explain the applied anatomy of the aorta	C1		
	• Explain origin, course, branches and distribution of celiac trunk • Map outline of abdominal aorta, coeliac trunk, superior &inferior mesenteric artery on simulated patient/ model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3 C3		
Nerve supply and Lymphatic drainage of GIT	• Discus enteric nervous system with formation of plexuses and its parasympathetic role	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enlist the types of lymph nodes draining the abdomen	C1		
	• Describe lymphatic drainage of GIT with special reference to lymphatic trunks, cisterna chyli & the thoracic duct • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3		
Cross Sectional Anatomy	• Identify different visceras located at different levels of vertebral coloumn; T10,T11,T12,L1,L2 • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C1 C3 C3 C3 C3 C3 C3	Skill lab	SAQ MCQ VIVA OSPE
Rectum	• Discuss the location and extent of rectum	C2	Skill lab	SCQ MCQ
	• Describe the internal and external features of rectum	C2		
	• Discuss peritoneal reflections rectouterine, rectovesical fossae and their clinical significance	C2		

	• Enumerate relations of rectum	C1		VIVA OSPE
	• Discuss blood supply, nerve supply, venous and lymphatic drainage	C1		
	• Describe the basis and features of rectal prolapsed • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 C3 C3 C3 C3 C3 C3		
Anal canal	• Discuss location and extent of anal canal	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Describe external and internal features of Anal Canal	C2		
	• Discuss features of anal sphincters	C2		
	• Tabulate relations of the anal canal with the surrounding structures	C2		
	• Describe the Blood supply, venous and lymphatic drainage & innervations of anal canal	C2		
	• Discuss anal continence	C2		
	• Differentiate between internal and external haemorrhoids • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 C3 C3 C3 C3 C3 C3		
Radiological Anatomy	• Identify structures on a normal X-ray abdomen • Appreciate Air fluid shadows. • Mark anatomical landmarks. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C3 C3 C3 C3 C3 C3	Skill lab	OSPE

Topics of SDL	Learning Objectives Students Should Be Able To	Learning Resources
Antero lateral abdominal wall,	• Explain the layers of abdominal wall. • Explain the fascia and muscles of abdominal wall. • Describe nerve supply of anterior and lateral abdominal wall. • Explain the segmental sympathetic supplies	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 183,184-216). ❖ https://3d4medical.com/
Rectus sheath	• Describe Formation of rectus sheath • Enlist contents of rectus sheath	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 188-201). ❖ https://teachmeanatomy.info/
Inguinal region & Hernias	• Describe Walls & detailed anatomy of Inguinal Canal • Explain Deep & Superficial Inguinal Ring • Associated Clinicals	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 197, 202-203, 212-213). ❖ https://3d4medical.com/
Peritoneum & Peritoneal Cavity.	• Define peritoneum • Explain the different folds of peritoneum. • Describe greater and lesser sacs • Enlist the intra and retroperitoneal viscera • Discuss vertical tracings of peritoneum • Describe arrangement of peritoneum in transverse & Longitudinal section of abdomen • Describe arrangement of peritoneum in transverse section of male pelvis • Explain arrangement of peritoneum in transverse section of female pelvis • Explain the layers, folds, recesses and compartments of peritoneum with their clinical importance • Describe peritonitis • Enumerate the signs and symptoms of peritonitis • Treat peritonitis by antibiotics and peritoneal dialysis	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 219-221,). ❖ https://teachmeanatomy.info/
Small Intestine	• Describe the different parts of duodenum with their anatomical differences • Enumerate the relations of different parts of duodenum • Discuss its clinical importance • Anatomy of Jejunum & Ileum	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 239, 241, 244, 245, 325, 436). ❖ https://www.kenhub.com/en/library/anatomy/the-digestive-system
Large Intestine	• Enlist various parts of large intestine	

	• Demonstrate gross anatomical features of different parts of large intestine • Enlist intra and retroperitoneal parts of large intestine	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 227,246,248, 325). ❖ https://www.kenhub.com/en/library/anatomy/the-digestive-system
Liver and pancreas	• Describe formation of hepatic diverticulum • Describe histogenesis of liver during intrauterine life • Describe formation of various ligaments of liver. • Discuss congenital abnormalities of liver • Differentiate between exocrine and endocrine pancreas. • Discuss the cellular structure and function of exocrine pancreatic acinus and ducts.	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 267-268, 272-278, 282,323, 395). ❖ https://www.kenhub.com/en/library/anatomy/the-digestive-system
Vasculature of GIT (Blood Supply, Venous drainage, Lymphatic drainage)	• Explain the applied anatomy of the aorta • Explain origin, course, branches and distribution of celiac trunk • Discuss formation, course and parts of portal vein • Enumerate relations and tributaries of portal vein • Define portal hypertension • Discuss Major Lymphatic Channels	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 228-233, 249-250, 263-285). ❖ http://www.anatomyzone.com 3D **anatomy**
Rectum & Anal Canal	• Discuss the location and extent of rectum • Describe the internal and external features of rectum • Discuss peritoneal reflections rectouterine, rectovesical fossae and their clinical significance • Enumerate relations of rectum • Discuss blood supply, nerve supply, venous and lymphatic drainage • Describe the basis and features of rectal prolapsed • Discuss location and extent of anal canal • Describe external and internal features of Anal Canal • Discuss features of anal sphincters • Tabulate relations of the anal canal with the surrounding structures • Describe the Blood supply, venous and lymphatic drainage & innervations of anal canal • Discuss anal continence • Differentiate between internal and external hemorrhoids	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 239, 248,253 368-371,436,438). ❖ http://www.anatomyzone.com 3D **anatomy**
Innervation of Abdominal Viscera's	• Discuss cutaneous & Somatic innervation of GIT • Describe Autonomic innervation of GIT	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 301-305). ❖ http://www.anatomyzone.com 3D **anatomy**

Practicals				
Topic	**At the end of practical students should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Tongue & salivary glands	• Identify slidesof tongue & glands under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of tongue & salivary glands	C2		
	• Write two points of identification	C1		
Esophagus	• Identify slide of Esophagus under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of Esophagus	C2		
	• Write two points of identification	C1		
Stomach	• Identify slide of Stomach under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of Stomach	C2		
	• Write two points of identification	C1		
	• Differentiate mucosa of cardiac, fundus, body and pyloric end of stomach	C2		
Liver, Gall bladder & Pancreas	• Identify slides of Liver, Gall bladder &Pancreas under microscope	P	Skill labs	OSPE
	• Illustrate histological structures of Liver, Gallbladder & Pancreas	C2		
	• Write two points of identification	C1		
Small Intestine	• Identify slide of small intestine under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of small intestine	C2		
	• Write two points of identification	C1		
Large Intestine	• Identify slide of Large Intestine under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of large intestine	C2		
	• Write two points of identification	C1		

Physiology				
Theory				
Topic	**Learning Objectives** **At the end of lecture students should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Introduction to GIT, Electrical activity in GIT Movements of GIT	• Explain the physiologic anatomy of GIT	C2	LGIS	SEQ MCQ VIVA
	• Summarize the functions of GIT	C1		
	• Explain the electrical activity of GIT smooth muscle	C2		
	• Describe the concept of slow waves and spike potentials	C1		
	• Explain resting membrane potential and factors affecting RMP	C2		
	• Explain role of calcium ions in muscle contraction	C2		
	• Describe tonic contraction in GIT smooth muscles	C1		
	• Enumerate different types of movements in GIT	C1		
	• Define propulsive movements	C1		
	• Define mixing movements	C1		
	• Describe sites of peristaltic movement in GIT	C1		
	• Describe stimulus, mechanism and direction of peristaltic movement	C1		
	• Discuss role of Myenteric plexus in peristaltic movement	C2		
	• Explain peristaltic reflex and Law of gut	C2		
	• Describe mechanism and function performed by mixing movements	C1		
Enteric nervous system and GIT reflexes	• Describe physiological anatomy of enteric nervous system	C1	LGIS	SEQ MCQ VIVA
	• Enlist functions of enteric nervous system	C1		
	• Compare and contrast Myenteric and Meissner‘s plexus	C2		
	• Enumerate neurotransmitters of enteric nervous system	C1		
	• Describe the autonomic regulation of enteric nervous system	C1		
	• Enumerate afferent sensory connections of enteric nervous system	C1		

	• Discuss the physiology of GIT reflexes	C2		
	• Explain GIT reflexes integrated at the level of gut wall, prevertebral sympathetic ganglia and spinal cord/brain stem	C2		
Control of GIT motility and factors affecting GIT blood flow	• Enumerate hormones of GIT	C2	LGIS	SEQ MCQ VIVA
	• Describe the hormonal control of GIT motility	C1		
	• Explain site of secretion, stimuli for secretion and actions of Gastrin, Cholecystokinin, Secretin, Gastric inhibitory peptide and Motilin	C2		
	• Discuss the factors affecting GIT blood flow	C2		
	• Recall anatomy of GIT blood supply	C1		
	• Explain splanchnic circulation and hepatic portal circulation	C2		
	• Describe the significance of blood flow to liver through portal vein	C1		
	• Describe special organization of blood flow through intestinal villus	C1		
	• Explain factors affecting gastrointestinal blood flow	C2		
	• Describe counter current blood flow in villi.	C1		
	• Explain nervous control of GIT blood supply	C2		
	• Discuss physiological importance of sympathetic vasoconstriction in GIT under special conditions	C2		
Swallowing1 and (Mastication and Saliva)	• Describe the secretion and composition of saliva and its physiologic roles	C1	LGIS	SEQ MCQ VIVA
	• Describe the nervous regulation of saliva	C1		
	• Describe mastication	C1		
	• Enumerate functions of mastication	C1		
	• Explain role of teeth and muscles of mastication	C2		
	• Describe the steps and nervous control center of chewing reflex	C1		
	• Introduce swallowing	C1		
	• Enumerate stages of swallowing (voluntary/involuntary)	C1		

	• Explain in detail each stage of swallowing ○ Voluntary stage Mechanism ○ Pharyngeal stage (reflex act) ▪ Stimulus, receptors, afferents, center, efferent, effectors, response ▪ Relate pharyngeal stage with process of respiration ▪ Esophageal stage	C2		
	• Primary peristalsis Secondary peristalsis (stimulus, afferent, center, efferent, response)	C2		
Swallowing -II	• Describe physiological anatomy and function of Lower esophageal sphincter	C1	LGIS	SEQ MCQ VIVA
	• Explain receptive relaxation of stomach with nervous pathway	C2		
	• Describe physiological anatomy and function of distal end of esophagus	C1		
Clinical disorders of swallowing (Achalasia cardia, vomiting & nausea)	• Define Achalasia cardia	C1	LGIS	SEQ MCQ VIVA
	• Describe causes, effects and treatment of achalasia cardia	C1		
	• Define vomiting	C1		
	• Describe stimuli & nervous pathway of vomiting	C1		
	• Discuss act of vomiting	C2		
	• Describe chemoreceptor trigger zone	C1		
	• Define nausea	C1		
	• Enlist causes of nausea	C2		
Regulation of Stomach emptying	• Discuss in detail gastric factors that promote emptying and duodenal factors that inhibit emptying	C2	LGIS	SEQ MCQ VIVA
	• Explain the role of enterogastric nervous reflexes and hormonal feedback	C2		
Motor functions of	• Recall physiological anatomy of stomach	C1		

stomach	• Describe motor functions of stomach in detail 1. Storage 2. Mixing and propulsion of food chyme and Hunger contractions 3. Stomach emptying 4. Role of pyloric pump	C1	LGIS	SEQ MCQ VIVA
	• Discuss role of pyloric sphincter	C2		
Gastric juice-I and Digestion in stomach Physiological barrier protecting development of peptic ulcer	• Describe the secretion of gastric juice. a. Describe the basic mechanism of HCl secretion. b. Describe the secretion and activation of pepsinogen c. Describe the secretion of intrinsic factor d. Describe the secretion of mucous and gastrin e. Describe the regulation of gastric acid and pepsinogen secretion	C1	LGIS	SEQ MCQ VIVA
	• Summarize the digestive process occurring in stomach	C1		
	• Discuss the role of gastric juice, hormones and enzymes acting in stomach	C2		
	• Discuss sites, causes and physiological factors preventing peptic ulcer	C2		
Liver & gall bladder, liver and biliary secretions	• Recall physiological anatomy of liver & portal circulation	C1	LGIS	SEQ MCQ VIVA
	• Describe in detail metabolic and non metabolic functions of liver	C1		
	• Explain the mechanism of secretion of bile.	C2		
	• Explain the functions of biliary tree.	C2		
	• Describe the composition of bile.	C1		
	• Explain the role of bile in fat digestion.	C2		
	• Explain the formation of gall stones.	C2		
LFTs and jaundice	• Enlist liver functions test	C1	LGIS	SEQ MCQ
	• Describe liver function tests	C1		

	• Discuss in detail pathophysiology of jaundice	C2		VIVA
Cirrhosis & portal hypertension	• Describe causes and effects of cirrhosis	C1	LGIS	SEQ MCQ VIVA
	• Describe causes and effects of portal hypertension	C1		
Physiology of pancreas Pancreatic secretions	• Discuss composition of pancreatic secretions	C2	LGIS	SEQ MCQ VIVA
	• Describe mechanism of secretion of bicarbonate ions	C1		
	• Describe the regulation and phases of pancreatic secretion.	C1		

Digestion and Absorption –I (digestion and absorption of carbohydrates and proteins)	• Enumerate dietary sources of carbohydrates	C1	LGIS	SEQ MCQ VIVA
	• Describe the structure of villi.	C1		
	• Enumerate the features of small intestine which increase its surface area	C1		
	• Explain in detail mechanism of absorption of fluids, ions & carbohydrates	C2		
	• Enumerate dietary sources of proteins.	C1		
	• Describe the role of hydrolysis in digestion of food.	C1		
	• Explain in detail the digestion of proteins with emphasis on enzymes at relevant steps.	C2		
	• Describe the sites of absorption	C1		
Digestion and absorption-II (digestion and absorption of lipids)	• Enumerate dietary sources of fats	C1	LGIS	SEQ MCQ VIVA
	• Explain in detail the digestion of lipids in relation to bile	C2		
Movements & functions of large intestine (motor functions of large gut and defecation) Flatus & constipation	• Recall functions of large intestine	C1	LGIS	SEQ MCQ VIVA
	• Discuss in detail mixing and propulsive movements	C2		
	• Explain the role of Gastrocolic & Duodenocolic reflex in	C2		
	• large intestine motility	C2		
	• Enumerate causes of empty rectum	C1		
	• Explain defecation reflex, its importance and nervous control	C2		
	• Discuss composition of feces	C2		
	• Enlist causes of flatus	C1		
	• Discuss causes and effects of constipation	C2		

Hormones of GIT	• Explain the general principles of alimentary tract secretion	C2	LGIS	SEQ MCQ VIVA
	• Enlist the stimuli for alimentary tract secretion	C1		
	• Describe the basic mechanism of secretion by glandular cells	C1		
	• Elaborate the role of autonomic stimulation on glandular secretion	C2		
Small intestine motility, Diarrhea, malabsorption & sprue, ulcerative colitis and paralytic ilius	• Enlist types of movements of small intestine	C1	LGIS	SEQ MCQ VIVA
	• Discuss in detail mixing contractions and propulsive movements	C2		
	• Describe peristaltic rush	C1		
	• Explain functions of ileocecal valve and feedback control of ileocecal sphincter	C2		
	• Discuss causes, types and effects of diarrhea, malabsorption and sprue	C2		
	• Discuss causes and effects of Ulcerative colitis & paralytic ilius	C2		

Topics Of SDL	**Learning Objectives Students Should Be Able To**	**Learning Resources**
Introduction to GIT, electrical activity in GIT, Enteric Nervous System and GIT reflexes	• Introduction • Role of GIT in control system • Concept of Enteric nervous system • GIT reflexes and its clinical correlation	❖ Ganong's Review of Medical Physiology.25TH Edition. Overview of gastrointestinal function andregulation (Chapter 25, Page 453,467,472). ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21Page 691,700) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page 339) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 43, Page 681) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology. Section 12. (Chapter 63, Page 787)
Gastric secretion, digestion in stomach, peptic ulcer and gastritis	• Gastric secretion and role in digestion • Peptic ulcer disease • Type of gastritis and clinical importanceof gastritis • Investigations to diagnose gastritis	❖ Ganong's Review of Medical Physiology. Overview of gastrointestinal function and regulation(Chapter 25, Page 455). ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page356,360) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 44, Page 706) (Chapter 45, Page 720,726) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition.

		Gastrointestinal Physiology. Section 12. (Chapter 65, Page 809,811)
Small intestine motility and malabsorption (sprue, paralytic ileusand Crohn's disease)	❖ Factors affecting motility of smallintestine ❖ Concept of absorption of nutrients ❖ Importance of history in diagnosis ofvarious malabsorption diseases ❖ Inflammatory bowel disease	❖ Ganong's Review of Medical Physiology.25TH Edition, Gastrointestinal motility. (Chapter 27,Page 495) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21,Page 697) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page 348) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 44,Page 690,710) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 64, Page 797,802)
Intestinal secretion and its functions, pancreatic juice, its composition and functions	• Intestinal secretions and action • Anatomy of pancreas and its blood supply • Composition of pancreatic juice and itsrole in absorption • Function of pancreas	❖ Ganong's Review of Medical Physiology.25TH Edition.Overview of gastrointestinal function andregulation (Chapter 25,Page 460). ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21,Page 709) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page366,371) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 45,Page 738,739) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 65,Page 814,820)
Pancreatitis, overall mechanism of digestion and absorption of intestine (amino acids, fatty acids and glucose)	• Pancreatitis • Conclusion of digestion and absorption ofnutrients. • Clinical correlation with pancreaticenzymes. • Hormones secreted by pancreas	❖ Ganong's Review of Medical Physiology.25TH Edition. Digestion, Absorption and NutritionalPrinciples. (Chapter 2, Page 475) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21,Page 703-710,715) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page 374) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 47,Page 770)(Chapter 48,Page 785) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 66, Page 823)

Motor function of large gut,defecation reflex	• Motor function of large gut • Inflammatory bowel disease • Defecation reflex • Concept of Hemorrhoids	❖ Ganong's Review of Medical Physiology.25TH Edition, Gastrointestinal motility. (Chapter 27,Page 495) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21,Page 720) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 44,Page 713) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 64,Page 804)
Pathophysiology (vomiting, diarrhea, constipation, ulcerative colitis, megacolon and carcinoma of colon)	• Symptomsrelated to GIT • Clinical role of various symptoms • Overview of Carcinoma of stomach, smalland large intestine	❖ Ganong's Review of Medical Physiology.25TH Edition, Gastrointestinal motility. (Chapter 27,Page495) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page 385) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 67, Page 833)

Topic	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tools
Introduction to GIT	• Enlist general four functions performed by GIT	C1	SGD	SEQ MCQ VIVA
	• Recall physiological anatomy and blood flow through GIT	C1		
	• Briefly discuss electrical activity of GIT smooth muscle	C1		
Swallowing	• Discuss in detail the three stages of swallowing	C2	SGD	SEQ MCQ VIVA
	• Briefly discuss physiological anatomy of lower esophageal sphincter and distal end of esophagus and state their functional importance	C2		
Functions of stomach	• Recall physiological anatomy of stomach	C1	SGD	SEQ MCQ VIVA
	• Describe motor functions of stomach including storage, mixing, propulsion and stomach emptying.	C1		
	• Discuss in detail gastric factors that promote emptying	C2		
	• Explain the role of enterogastric nervous reflexes and hormonal feedback.	C2		
Liver functions	• Recall physiological anatomy of liver	C1	SGD	SEQ MCQ VIVA
	• Discuss formation and storage of bile	C2		
	• Enlist and describe all functions performed by liver	C1		
Digestion and	• Describe in detail the process of digestion of carbohydrates, proteins and fats with special emphasis on enzymes involved at each step	C1		SEQ

absorption	• Discuss special features of small and large intestine to promote absorptive process and mechanism of absorption in detail	C2	SGD	MCQ VIVA
Large intestine	• Recall movements and functions of large intestine	C1	SGD	SEQ MCQ VIVA
	• Enumerate causes of empty rectum	C1		
	• Explain defecation reflex, its importance and nervous control	C2		
	• Explain GIT reflexes integrated at the level of gut wall, prevertebral sympathetic ganglia and spinal cord/brain stem.	C2		

Topic	At the end of this skill lab, student should be able to illustrate:	Learning Domain	Teaching Strategy	Assessment Tool
Sense of taste	• Apparatus identification	P	Skill lab	OSPE
	• Principle	C1		
	• Procedure	P		
	• Precautions	C1		
	• Recall taste modalities, taste pathway & abnormalities of taste	C1		
Examination of sense of smell	• Apparatus identification	P	Skill lab	OSPE
	• Principle	C1		
	• Procedure	P		
	• Precautions	C1		
	• Recall Olfactory pathways and abnormalities of olfaction	C1		
Examination of superficial reflexes	• Apparatus identification	C1	Skill lab	OSPE
	• Principle	C1		
	• Procedure	A,P		
	• Precautions	P		
	• Recall reflex arc	C1		
	• Recall effects of UMNL & LMNL on reflexes	C1		
Examination of deep reflexes	• Apparatus identification	C1	Skill lab	OSPE
	• Principle	C1		
	• Procedure	A,P		
	• Precautions	P		
	• Recall reflex arc	C1		
	• Recall effects of UMNL & LMNL on reflexes	C1		

Biochemistry				
Theory				
Topic	**Learning Objectives** **At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Introduction to Carbohydrate metabolism	• Understand metabolic pathways • Discuss glucose entry into the cells	C2 C2	LGIS	MCQs, SAQs Viva
Glycolysis and Fates of Pyruvate	• Explain types, reactions and regulation of Glycolysis • Describe fates of Pyruvate • Explain related clinical disorders	C2 C2 C3	LGIS	MCQs, SAQs Viva
Gluconeogenesis	• Discuss substrates, reactions and regulation of Gluconeogenesis	C2	LGIS	MCQs, SAQs Viva
Glycogen metabolism	• Explain the steps and regulation of glycogenesis and glycogenolysis	C2	LGIS	MCQs, SAQs Viva
Metabolism of Individual Sugars	Describe the metabolism of individual sugars Explain related clinical disorders	C2 C3	LGIS	MCQs, SAQs Viva
HMP Shunt and G6PD deficiency	Explain the pathway of HMP shunt Discuss uses of NADPH Describe G6PD deficiency	C2 C2 C3	LGIS	MCQs, SAQs Viva
GIT Digestive juices and Hormones	Describe the composition and role of digestive juices Explain role of gastrointestinal hormones Understand related clinical disorders	C2 C2 C3	LGIS	MCQs, SAQs Viva
	Understand BMI and BMR	C2		MCQs, SAQs

Nutrition	Explain the role of different dietary constituents Understand related clinical disorders	C2 C3	LGIS	Viva
LFTs and Jaundice	Discuss Liver function tests and Jaundice	C3	LGIS	MCQs, SAQs Viva
Digestion and Absorption	Explain the digestion and absorption of carbohydrates, lipids and proteins Discuss the role of different digestive enzymes Describe related clinical disorders	C2 C2 C3	LGIS	MCQs, SAQs Viva

Topic	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Saliva	• Explain formation, composition & biochemical functions	C2	SGD	MCQs SAQs Viva
Gluconeogenesis & its regulation	• Discuss substrates, reactions and regulation of Gluconeogenesis	C2	SGD	MCQs SAQs Viva
LFT's Jaundice	• Discuss Liver function tests and Jaundice	C3	SGD	MCQs SAQs Viva

Topics of SDL	Learning Objectives Students Should Be Able To	References
Carbohydrate Metabolism & Glycolysis	• Understand stages of metabolism • Explain transport of glucose across cell memebrane • Describe steps of glycolysis • Discuss regulation of committed steps • Explain energy calculation in anaerobic and aerobic conditions • Understand pyruvate kinase deficiency	❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#8, Page 100.

TCA Cycle & Gluconeogenesis	• Describe steps of TCA cycle • Discuss substrates, steps and regulation of gluconeogenesis	❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#9, Page 120. ❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#10, Page 128.
Glycogen metabolism	• Explain synthesis and breakdown of glycogen • Discuss glycogen storage diseases	❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#11, Page 137.
Individual Sugars	• Descibe the metabolism of individual sugar • Explain related clinal disorder •	❖ Essentials of Medical Biochemistry Book by Mushtaq Ahmed Edition 9th Volume#1, Chapter#7, Page 186 ❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#19, Page 276, 77.
Digestion of Lipids by Pancreatic Enzymes	• Explain the digestion and absorption of lipids • Discuss the role of pancreatic enzymes in lipid digestion	❖

Practicals				
Topic	**At the End of Practical Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Saliva-I	• Understand Normal constituents of saliva Discuss effects of saliva on digestion of starch	P	Skill Lab	OSPE
Silva-II	• Discus the role of silva in digestion of carbohydrates	P	Skill Lab	OSPE
Bile	• Descirbe the composition and role of bile in disgestion • Understand related disorder	P	Skill Lab	OSPE
Estimation of ALT & ALP	• Perform estimation of ALT • Perform estimation of ALP	P	Skill Lab	OSPE
Analysis of Food Component (Wheat)	• Perform to analyse the different constituents of wheat •	P	Skill Lab	OSPE

Orientation Sessions of Medical Education

Content

- Orientation Session on Curricular Reform RMU & Feedback of Year 2023
- Student Session on Standardization of Teaching Strategies

Department of Medical Education			
Theory			
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Teaching Strategy**	**Assessment Tool**
Orientation of Integrated Modular system, Intoduction to study guides and RMU Policies	• Understand the concept of integration • Understand the orientation of integrated modular curriculum of RMU • How to use Study Guides • Introduction to different policies of RMU	LGIS	MCQs
Standardization of Teaching Strategies	• Discuss Standardization of Different Teaching Strategies used in Integrated Model of RMU.	LGIS	MCQs

Basic and Clinical Sciences (Vertical Integration)

Anatomy, Physiology & Biochemistry

Theory

Subject	Topic	At the End Of Lecture Students Should Be Able To	Learning Domain
Anatomy	• Acute Appendicitis	Apply basic knowledge of subject to study clinical case.	C3
	• Liver Cirrhosis	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Peptic Ulcer	Apply basic knowledge of subject to study clinical case.	C3
	• Food Poisoning	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Glucose 6 Phosphate Dehydrogenase Deficiency	Apply basic knowledge of subject to study clinical case.	C3
	• Lactose Intolerance	Apply basic knowledge of subject to study clinical case.	C3

Community Medicine

Theory

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Concept of Health and Disease	By the end of the session students will be able to; • Define Health	C1	LGIS	MCQs
	• Identify different phases of Health	C1		
	• Elaborate concepts of Health	C2		
	• Acknowledge Dimensions of Health	C2		
	• Elucidate Dimensions of health	C2		
	• Appreciate Determinants of Health	C2		
	• Describe the types of determinants	C2		
Infectious Disease Epidemiology				
	• Define important terms related to infectious disease epidemiology.	C1		

Definitions			LGIS	MCQs
Epidemic, endemic and pandemic	• Differentiate between epidemic, endemic and pandemic	C2		
Dynamics of disease transmission	• Describe the dynamics of transmission of disease	C2		
Incubation period	• Explain the concept of incubation period and its importance.	C2		

Medicine				
Theory				
Topic	**At the end of the lecture, students should be able to**	**Learning Domain**	**Learning Strategy**	**Assessment Tools**
Dysphagia	• Define and discuss pathophysiology	C1	LGIS	MCQs
	• Discuss the causes	C2		
	• Describe clinical features	C2		
	• Describe the management	C2		
Peptic ulcer	• Describe Mechanism of digestion in stomach	C1	LGIS	MCQs
	• Describe Mechanism of APD and GERD	C2		
	• Discuss Peptic ulcer formation	C2		
	• Enlist Clinical features	C2		
	• Enlist Investigations	C1		
	• Describe management	C2		
Jaundice	• Enlist types of Jaundice	C1	LGIS	MCQs
	• Discuss changes in Liver	C2		
	• Describe clinical features	C2		
	• Enlist investigations	C1		

	• Discuss management	C2		
Inflammatory bowel disease	• Describe features of IBD	C2	LGIS	MCQs
	• Classify IBD	C2		
	• Describe pathogenesis of IBD	C2		
	• Describe histological diagnosis of IBD	C1		
	• Enlist complication of IBD	C1		

List of GIT Module Basic and Clinical Sciences Vertical Integration Lectures

Sr. #	Date/Day	Week	Time	Department	Topic of Lectures	Teacher's Name & Contact #
1.	29-02-2024 Thursday	1st Week	09:20am-10:10am	Community Medicine	Concept of health & disease (Even)	Dr. Rizwana Shahid 0320-5511684
					Epidemiology of infectious diseases & Basic Concepts (Odd)	Dr. Afifa kalsoom 0333-5506597
2.	01-03-2024 Friday	1st Week	10:00am-11:00am	Quran Translation	Imaniat I (Even)	Mufti Naeem Sherazi 03005580299
					Ibadat I (Odd)	Dr Fahd 03005156800
3.	01-03-2024 Friday	1st Week	11:00am-12:00pm	Community Medicine	Epidemiology of infectious diseases & Basic Concepts (Odd)	Dr. Afifa kalsoom 0333-5506597
					Concept of health & disease (Even)	Dr. Rizwana Shahid 0320-5511684
4.	02-03-2024 Saturday	1st Week	9:20am – 10:10am	Behavioral Sciences	Eating Disorders	Dr. Sadia Yasir (Even)
						Dr. Zona Tahir (Odd)
5.	04-03-2024 Monday	2nd Week	11:20am-12:10pm	Bioethics & Research	Pakistan Medical & dental council Code of Ethics (even)	Dr. Sidra Hamid 0331-5025147
					Introduction to Descriptive Statistics (Odd)	Dr. Rizwana Shahid 0320-5511684
6.	08-03-2024 Friday	2nd Week	08:00am-09:00am	Medicine	Peptic ulcer (Even)	Dr Javeria Khan 03345444083
					Peptic ulcer (Odd)	Dr Anum Abbas 03455057646

7.	08-03-2024 Friday	2nd Week	10:00am-11:00am	Quran Translation-II	Ibadat-II (Even)	Dr Fahd 03005156800
					Imaniyat -II (Odd)	Mufti Naeem Sherazi 03005580299
8.	08-03-2024 Friday	2nd Week	11:00am 12:00pm	Quran Translation-II	Ibadat-II (Even)	Mufti Naeem Sherazi 03005580299
					Imaniyat -II (Odd)	Dr Fahd 03005156800
9.	09-03-2024 Saturday	2nd Week	9:20am – 10:10am	Radiology & Artificial Intelligence	Medical Imaging of abdomen-I	Dr. Quratul Ain (Even) Dr. Aneeqa Saleem (Odd)
10.	12-03-2024 Tuesday	3rd Week	11:10am-11:50am	Research -I & Bioethics	Introduction to descriptive statistics (Even)	Dr. Rizwana Shahid 0320-5511684
					Pakistan Medical & dental council Code of Ethics (Odd)	Dr. Sidra Hamid
11.	13-03-2024 Wednesday	3rd Week	09:20am-10:10am	Research-II LGIS	Classification of different types of data	Dr. Rizwana Shahid 0320-5511684 Dr.
12.	14-03-2024 Thursday	3rd Week	09:20am-10:10am	Medicine	State of the Art Lecture Jaundice	Worthy Vice Chancellor Prof. Dr. Muhammad Umar
13.	14-03-2024 Thursday	3rd Week	11:10am-11:50am	Family Medicine	Common Abdominal diseases	Dr. Sadia
						Dr. Ishtiaq
14.	15-03-2024 Friday	3rd Week	10:00am 11:00am	Quran Translation-III	Ibadaat-3	Dr Fahd 03005156800 (Even)
					Imaniat-3	Mufti Naeem Sherazi 03005580299 (Odd)
15.	15-03-2024 Friday	3rd Week	11:00am 12:00pm	Quran Translation-III	Imaniat-3	Mufti Naeem Sherazi 03005580299 (Even)
					Ibadaat-3	Dr Fahd 03005156800 (Odd)
16.	16-03-2024 Saturday	3rd Week	11:10am-11:50am	Pak Studies/Islamiyat	Tehreek-E-Pakistan Islaahi Tehreekain	Qari Aman Ullah 03467598528
					Akhirat-I	Mufti Naeem Sherazi 03005580299
17.	19-03-2024 Tuesday	4th Week	10:30am-11:10am	Research-III	Scales of Data Measurement	Dr. Rizwana Shahid 0320-5511684
						Dr. Afifa kalsoom 0333-5506597
						Dr. Ishtiaq
18.	21-03-2024	4th Week	11:10am-	Research-IV	Research IV: Measures of central	Dr. Rizwana Shahid 0320-5511684

	Thursday		12:00pm		Tendency	Dr. Afifa kalsoom 0333-5506597
19.	22-03-2024 Friday	4th Week	08:00am-09:00am	Pak Studies/Islamiyat-I	Toheed	Mufti Naeem Sherazi 03005580299
					Qayam e Pakistan, Aghraaz o Maqasid	Qari Aman Ullah 03467598528
20.	22-03-2024 Friday	4th Week	09:00am-10:00am	Pak Studies/Islamiyat-I	Qayam e Pakistan, Aghraaz o Maqasid	Qari Aman Ullah 03467598528
					Toheed	Mufti Naeem Sherazi 03005580299
21.	22-03-2024 Friday	4th Week	10:00am-11:00am	Entrepreneurship	Ideate Initial Idea	Dr. Asif Maqsood & Dr. Sidra Hamid
22.	23-03-2024 Saturday	4th Week	11:50am – 01:00pm	Pak Studies/Islamiyat	Tehreek-e-Aligarh, Sir Syed Ahmad Khan	Qari Aman Ullah (Even)
					Akhirat -II	Mufti Naeem Sherazi (Odd)
23.	27-03-2024 Wednesday	5th Week	10:30am-11:10am	Research-V	Compute and Interpret measures of central tendency	Dr. Rizwana Shahid 0320-5511684 Dr. Afifa kalsoom 0333-5506597
24.	28-03-2024 Thursday	5th Week	10:30am-11:10am	Research-VI	Measures of dispersion/Secondary Data Analysis	Dr. Rizwana Shahid 0320-5511684 Dr. Afifa kalsoom 0333-5506597
25.	29-03-2024 Friday	5th Week	11:10am-11:50am	Radiology & Artificial Intelligence	Medical Imaging of abdomen-II	Dr. Sana Yaqoob (Even) \ 0342-2064666 Dr. Saba Bint e Kashmir (Odd)

Spirally Integrated Courses / General Education Cluster (GEC) Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Biomedical Ethics & Professionlism**
    - **Behavioural Sciences**
    - **Family Medicine**
    - **Artificial Intelligence (Innovation)**
    - **Integrated Undergraduate Research Curriculum (IUGRC)**
    - **Enterpeneurship**
    - **Digital Literacy Module**
    - **Early Clinical Exposure (ECE)**

The Holy Quran Translation Lecture				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Imaniyat (Faith)	• Introduction of concept of Imaniyat • Corelate the concept of faith in different situation of life	C2	LGIS	SAQ
Tauheed (Oneness of God)	• Introduction of Quranic Concept of Tauheed • Corelate the concept of tauheed in different situation of life	C2	LGIS	SAQ
Ibadaat (Worship)	• Introduction of concept of Ibadaat • Study of Verses Related to Hajj • Impact of Hajj on a Muslim's Life	C2	LGIS	SAQ
Amr bil Ma'ruf and Nahi anil Munkar (Enjoining Good and Forbidding Evil)	• Introduction of concept of Amr bil Ma'ruf and Nahi anil Munkar • Study of Verses Related to Amr bil Ma'ruf and Nahi anil Munkar • Importance of Amr bil Ma'ruf and Nahi anil Munkar in the life of medical doctors	C2	LGIS	SAQ

Pak Studies/Islamiyat				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Tehreek-E-Pakistan Islaahi Tehreekain	• Understand the history of Tehreek-E-Pakistan Islaahi Tehreekain.	C2	LGIS	SAQ
Akhirat-I	• Introduction of Quranic Concept of Akhriat • Corelate the concept of Akhriat in different situation of life	C2	LGIS	SAQ
Qayam e Pakistan, Aghraaz o Maqasid	• Understand the history of Qayam e Pakistan, Aghraaz o Maqasid Tehreek-E-Pakistan Islaahi Tehreekain.	C2	LGIS	SAQ

Toheed	• Introduction of Quranic Concept of Tauheed • Corelate the concept of tauheed in different situation of life	C2	LGIS	SAQ

Biomedical Ethics & Professionalism				
Theory				
Topic	**At the End of The Session, Student Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Pakistan Medical & Dental Council Code of Ethics	At the end of the session students should be able to;	C2	LGIS	SAQ MCQ VIVA
	• Appreciate the value of oath and pledge taken by medical student at the time of graduation from medical school			
	• Appraise the importance of principles to be followed by the medical and dental practitioners to fulfil the social contract with the society in order to win the trust of the public in the profession	C2		
	• Cognizant with disciplinary proceedings in case of violation of rules laid down by regulatory body	C1		

Behavioral Sciences				
Theory				
Topic	**At The End of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Eating Disorders	• To be able to define eating disorders	C1	LGIS	MCQs
	• To be able to describe the types of eating disorders	C2		
	• To make differential diagnosis	C2		
	• To be able to manage such conditions	C2		

Family Medicine				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Approach to a Patient with abdominal pain	• Discuss what is abdominal pain	C2	LGIS-1	MCQs
	• Discuss its causes			
	• Disscus diagnosis & principle of management			

Radiology & Artificial Intelligence				
Theory				
Topic	**At the end of lecture student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
X-ray abdomen	• Identify normal and abnormal radiographs of abdomen (AP view)	C1	LGIS	MCQs
	• Identify filling defects (Barium meal and Barium enema)	C1		
	• Recognize the correct and incorrect positioning of feeding tubes	C1		
CT Scan MRI abdomen	• Identify normal and abnormal CT Scan MRI abdomen	C1	LGIS	MCQs
	• Discuss co-relation with Artificial Intelligence	C2		

Integrated Undergraduate Research Curriculum (IUGRC)			
Theory			
Topic	**At the End of The Session, Student Should Be Able To**	**Teaching Strategy**	**Assessment Tool**
Lecture 1: Introduction to Descriptive Statistics	At the end of the session students should be able to; • Define & enlist uses of statistical knowledge in research & healthcare profession. • Differentiate descriptive statistics form inferential statistics • Appreciate value of information & precision in scientific decision making	LGIS	SAQ MCQ VIVA
Lecture 2: Classification of different types of Data	• Describe the concept of data, variable & sources of data with respect to descriptive statistics • Enlist data types with examples from medical background • Classify types of data with examples (qualitative & quantitative) • Exercise on the identification of different types of data	LGIS	SAQ MCQ VIVA
Lecture 3: Scales of Data Measurement	• Enlist types of data measurement scales • Elaboration of different types of data measurement scales with example • Enlist different method of data presentation (tables, graphs, diagrams, pie chart, Bar graph, histogram. line diagram scatter diagram, statistical maps, pictogram and ogive curve) according to type of data.	LGIS	SAQ MCQ VIVA
Lecture 4: Measure of central tendency	• Explain concept of Measures of central tendency with illustrations form medical background • Calculate and interpret the different measures of central tendency	LGIS	SAQ MCQ VIVA
Lecture 5: Measures of	• Explain concept of Measures of dispersion with illustrations form medical background • Calculate and interpret the different measures of dispersion		SAQ

Dispersion		LGIS	MCQ VIVA
Lecture 6: Practice Session	• Compute and Interpret results of different measures of dispersion form a given data file	LGIS	SAQ MCQ VIVA

Enterpreneurship		
Theory		
Topics	**Brief Note**	**Learning Outcomes**
Ideate Initial Idea	• How it would create value	Understand the concept of ideation in the entrepreneurial context. Learn techniques for generating creative and innovative business ideas. Develop skills to evaluate and refine initial ideas for feasibility and viability.

Digital Literacy Module			
Theory			
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Teaching Strategy**	**Assessment Tool**
RMU Goes digital	• Introduction to LMS, CMS and MS Teams. • Inrtorduction to RMU website • How to use HEC digital library • How to use up to date website	LGIS	MCQs

List of Foundation Module Spiral Courses Lectures						
Sr. #	**Date/Day**	**Week**	**Time**	**Department**	**Topic of Lectures**	**Teacher's Name & Contact #**
1.	01-03-2024 Friday	1st Week	10:00am-11:00am	Quran Translation	Imaniat I (Even)	Mufti Naeem Sherazi 03005580299
					Ibadat I (Odd)	Dr Fahd 03005156800
2.	02-03-2024 Saturday	1st Week	9:20am – 10:10am	Behavioral Sciences	Eating Disorders	Dr. Sadia Yasir (Even)
						Dr. Zona Tahir (Odd)
3.	04-03-2024 Monday	2nd Week	11:20am-12:10pm	Bioethics & Research	Pakistan Medical & dental council Code of Ethics (even)	Dr. Sidra Hamid 0331-5025147
					Introduction to Descriptive Statistics (Odd)	Dr. Rizwana Shahid 0320-5511684
4.	08-03-2024 Friday	2nd Week	10:00am-11:00am	Quran Translation-II	Ibadat-II (Even)	Dr Fahd 03005156800
					Imaniyat -II (Odd)	Mufti Naeem Sherazi 03005580299
5.	08-03-2024 Friday	2nd Week	11:00am 12:00pm	Quran Translation-II	Ibadat-II (Even)	Mufti Naeem Sherazi 03005580299
					Imaniyat -II (Odd)	Dr Fahd 03005156800
6.	09-03-2024 Saturday	2nd Week	9:20am – 10:10am	Radiology & Artificial Intelligence	Medical Imaging of abdomen-I	Dr. Quratul Ain (Even) Dr. Aneeqa Saleem (Odd)
7.	12-03-2024 Tuesday	3rd Week	11:10am-11:50am	Research -I & Bioethics	Introduction to descriptive statistics (Even)	Dr. Rizwana Shahid 0320-5511684
					Pakistan Medical & dental council Code of Ethics (Odd)	Dr. Sidra Hamid
8.	13-03-2024 Wednesday	3rd Week	09:20am-10:10am	Research-II LGIS	Classification of different types of data	Dr. Rizwana Shahid 0320-5511684 Dr.
9.	14-03-2024 Thursday	3rd Week	11:10am-11:50am	Family Medicine	Common Abdominal diseases	Dr. Sadia
						Dr. Ishtiaq
10.	15-03-2024 Friday	3rd Week	10:00am 11:00am	Quran Translation-III	Ibadaat-3	Dr Fahd 03005156800 (Even)
					Imaniat-3	Mufti Naeem Sherazi 03005580299 (Odd)
11.	15-03-2024	3rd Week	11:00am	Quran Translation-III	Imaniat-3	Mufti Naeem Sherazi 03005580299 (Even)

	Friday		12:00pm		Ibadaat-3	Dr Fahd 03005156800 (Odd)
12.	16-03-2024 Saturday	3rd Week	11:10am-11:50am	Pak Studies/Islamiyat	Tehreek-E-Pakistan Islaahi Tehreekain	Qari Aman Ullah 03467598528
					Akhirat-I	Mufti Naeem Sherazi 03005580299
13.	19-03-2024 Tuesday	4th Week	10:30am-11:10am	Research-III	Scales of Data Measurement	Dr. Rizwana Shahid 0320-5511684
						Dr. Afifa kalsoom 0333-5506597
						Dr. Ishtiaq
14.	21-03-2024 Thursday	4th Week	11:10am-12:00pm	Research-IV	Research IV: Measures of central Tendency	Dr. Rizwana Shahid 0320-5511684
						Dr. Afifa kalsoom 0333-5506597
15.	22-03-2024 Friday	4th Week	08:00am-09:00am	Pak Studies/Islamiyat-I	Toheed	Mufti Naeem Sherazi 03005580299
					Qayam e Pakistan, Aghraaz o Maqasid	Qari Aman Ullah 03467598528
16.	22-03-2024 Friday	4th Week	09:00am-10:00am	Pak Studies/Islamiyat-I	Qayam e Pakistan, Aghraaz o Maqasid	Qari Aman Ullah 03467598528
					Toheed	Mufti Naeem Sherazi 03005580299
17.	22-03-2024 Friday	4th Week	10:00am-11:00am	Entrepreneurship	Ideate Initial Idea	Dr. Asif Maqsood & Dr. Sidra Hamid
18.	23-03-2024 Saturday	4th Week	11:50am – 01:00pm	Pak Studies/Islamiyat	Tehreek-e-Aligarh, Sir Syed Ahmad Khan	Qari Aman Ullah (Even)
					Akhirat -II	Mufti Naeem Sherazi (Odd)
19.	27-03-2024 Wednesday	5th Week	10:30am-11:10am	Research-V	Compute and Interpret measures of central tendency	Dr. Rizwana Shahid 0320-5511684 Dr. Afifa kalsoom 0333-5506597
20.	28-03-2024 Thursday	5th Week	10:30am-11:10am	Research-VI	Measures of dispersion/Secondary Data Analysis	Dr. Rizwana Shahid 0320-5511684 Dr. Afifa kalsoom 0333-5506597
21.	29-03-2024 Friday	5th Week	11:10am-11:50am	Radiology & Artificial Intelligence	Medical Imaging of abdomen-II	Dr. Sana Yaqoob (Even) \ 0342-2064666 Dr. Saba Bint e Kashmir (Odd)

Block-I

Module No. 2 - Renal

Duration 5 Weeks

Renal Module Team

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

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Sheena Tariq (Senior Demonstrator of Physiology)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Ali Raza (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Rahat Afzal (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Uzma Kiyani (Senior Demonstrator of Physiology)

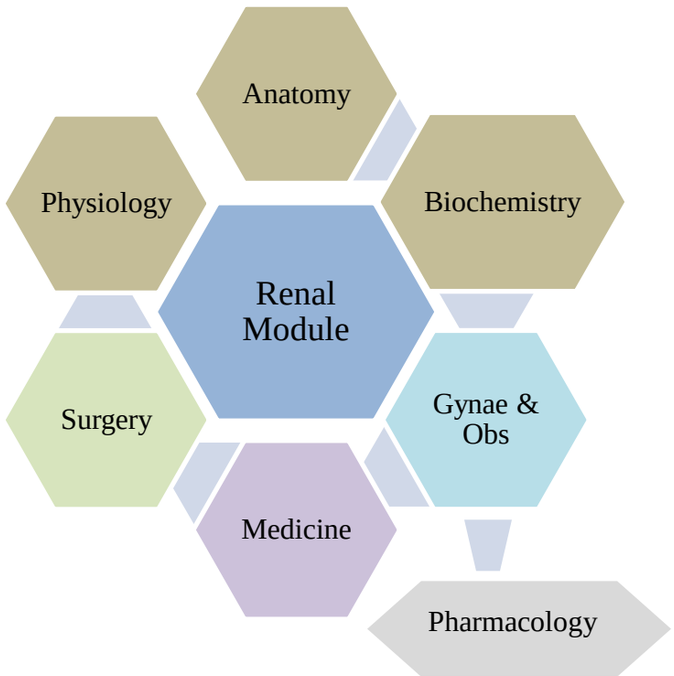
DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	Implementation Incharge 1st & 2nd Year MBBS & Director DME	Prof. Dr. Ifra Saeed Dr. Farzana Fatima
4.	Editor	Muhammad Arslan Aslam

Themes				
Block	**Module**	**Embryology**	**Histology**	**Gross Anatomy**
I	• Anatomy	Embryology • Kidney • Ureter • Urinary Bladder • Urethra	Histology • Kidney • Ureter • Urinary Bladder	• Posterior Abdominal Wall & Organs of Urinary System
	• Biochemistry	• Amino Acid Pool Protein Turn Over Nitrogen Balance & transport of Amino Acid, • Urea Cycle & Disorder • Amino Acid Metabolism • Ammonia Toxicity • Acid Base in Balance • Serum Electrolyte		
	• Physiology	• Body Fluid Compartments, Volume & osmolarity of ECF NICF • Physiology of Renal System, GFR • Regulation of GFR & RBF • Tubular Reabsorbtion & Scretion • Micturition Reflex & Abnomalities • Acid base balance		
	Spiral Courses			
	• The Holy Quran Translation	• Imaniat 3 • Ibadat 3 • Imaniat 4 • Ibadat 4		
	• Bioethics & Professionalism	• Ethical principles		
	• Radiology & Artificial Intelligence	• Prenatal ultrasonography • Contrast Nephropathy		
	• Research Club Activity	• Questionnaire Development (Practical Session-II) • Session on data analysis (Practical Session-III) • Manuscript writing (Practical Session-IV)		
	• Family Medicine	• Renal Failure		
	Vertical Integration			

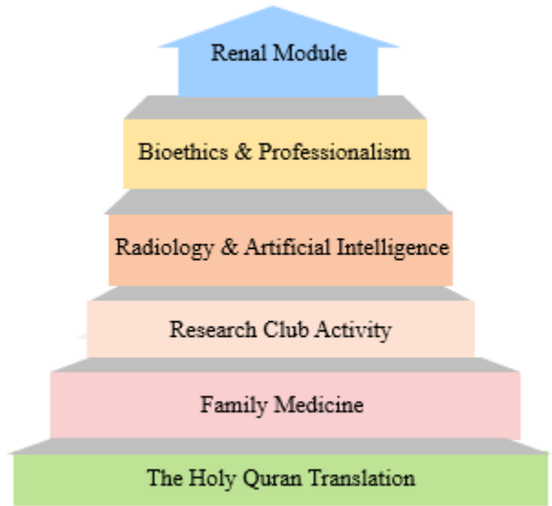
	Clinically content relevant to Renal module • Acute renal failure (Medicine) • Potassium imbalance and its management (Medicine) • CRF & Rehabilitation of patient with CRF(Medicine) • Hydronephrosis / Pyonephrosis (Surgery) • Investigations of urinary tract (Surgery) • Renal calculi (Surgery) • Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis, stress incontinence) (Obstetrics & Gynecology) • Introduction to diuretics (Pharmacology)	
	Entrepreneurship	
	• Ideate Initial Idea	
	Early Clinical Exposure (ECE)	
	• Clinical Rotations	• Cases of Renal failure • Dialysis • Renal Transplant • Ultrasound of Kidney • Plain X-Ray • KUB Nephrotic Syndrome
Clinical Themes		
	• Pathophysiology and Management of Acute Kidney Injury (AKI) • Chronic Kidney Disease (CKD): Stages and Clinical Features • Role of the Kidney in Hypertension (e.g., renovascular hypertension) • Mechanisms and Management of Nephrotic Syndrome • Diagnosis and Treatment of Urinary Tract Infections (UTIs) • Polycystic Kidney Disease: Genetic and Clinical Aspects • Mechanisms of Renal Stones and Treatment Options • Dialysis: Indications and Principles • Pathophysiology of Glomerulonephritis • Fluid and Electrolyte Imbalances in Clinical Practice	

Implementation of Terms of Reference (TORS)
• Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are predefined as per the guidelines of PMDC and to be strictly followed. • The hours mentioned within each module are the mandatory minimum required. • The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these. However, the level of cognition can be kept at a higher level. • The Table of Specifications provided will be used for the three papers of the first professional examination. • The same table of specifications should be used for the respective block exams for internal assessment. • The criteria defined for continuous internal assessment is to be followed for each module and block respectively

Integration of Disciplines in Renal Module



Spiral / General Education Cluster Courses



Module No. 2 – Renal Module

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

Module Outcomes

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

Knowledge

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

Skills

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

Attitude

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

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

Syllabus of Renal Module (Module No. 2)

Anatomy				
Theory				
Topic	**Learning Objectives** **At The End of The Lecture the Student Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Embryology				
Development of Kidney & ureter	• Enumerate the derivatives of intermediate mesoderm, urogenital and gonadal ridges.	C1	LGIS	SAQ MCQ VIVA
	• Describe the stages of development of human kidneys	C2		
	• Describe the molecular regulation of kidney development.	C2		
	• Correlate positional changes of the kidney with its blood supply	C1		
	• Describe different stages of development of ureter from ureteric bud and metanephrogenicblastema.	C1		
	• Understand the bio-physiological aspects of kidney & ureter development	C2		
	• Enumerate Congenital anomalies of kidney and ureter.	C3		
	• Correlate the clinical conditions (polycystic kidney, horseshoe shaped kidney)	C3		
	• Understand the preventive and curative health care measures	C3		
	• Practice the principles of Bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Development of urinary bladder & urethra	• Describe the development of urinary bladder	C2	LGIS	SAQ MCQ
	• Understand the bio-physiological aspects of bladder development	C2		
	• Discuss the parts of urethra in males and females	C2		
	• Describe development of male urethra	C2		
	• Describe development of female urethra	C2		
	• Discuss the anomalies related to urethra & bladder development	C3		

	• Correlate the clinical conditions	C3		VIVA
	• Understand the preventive and curative health care measures	C3		
	• Practice the principles of Bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Histology				
Histology of kidney I (Cortex & Medulla)	• Discuss the structural components of the nephron.	C2	LGIS	SAQ MCQ VIVA
	• Discuss the histology of filtration barrier.	C2		
	• Understand the bio-physiological aspects of filtration	C2		
	• Distinguish the key microscopic components of the renal cortex and medulla.	C2		
	• Differentiate the histological appearance of proximal tubule, loop of Henley, distal convulated tubule and collecting duct.	C2		
	• Correlate the clinical conditions	C3		
	• Understand the preventive and curative health care measures			
	• Practice the principles of Bioethics			
	• Apply strategic use of AI in health care			
	• Read relevant research article			
Histology of kidney II (Collecting System)	• Enumerate the component cells of the juxta glomerular apparatus.	C1	LGIS	SAQ MCQ
	• Discuss the component cells of the juxtaglomerular apparatus	C2		
	• Discuss the effect of diabetes & hypertension on glomerular filtration rate	C2		
	• Understand the effect of hypertension on renin angiotensin release	C3		
	• Correlate the clinical conditions			
	• Understand the preventive and curative health care measures			

	• Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	C3		VIVA
Histology of Urinary bladder	• Describe histological characteristics of urinary bladder.	C2	LGIS	SAQ MCQ VIVA
	• Explain the concept of umbrella cells and Uroplakins.	C2		
	• Explain the concept of internalization	C2		
	• Understand the bio-physiological effects of urinary epithelium	C2		
	• Compare the histological changes of empty and full bladder.	C2		
	• Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	C3		
Histology of ureter & urethra	• Describe the microscopic structure of ureter	C2	LGIS	SAQ MCQ VIVA
	• Discuss the histological features of urethra	C2		
	• Distinguish the transition in epithelium in different types of urethra	C2		

	• Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	C3		

Topics	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Posterior abdominal wall I (Fascia & Muscles)	• Describe thethe fascia of posterior abdominal wall • Tabulate the muscles of posterior abdominal wall with reference to, origen, insertion, nerve supply and action, • Describe the relations of Psoas major muscle. • Correlate the clinical conditions (Psoas Abscess) • Understand the preventive and curative health care measures • Map Root of mesentery on SP/Model • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C3 C3 C3 C3 C3 C3 C3	Skill labs	OSPE MCQ SAQ VIVA
Posterior abdominal wall II (Nerves)	• Trace the nerves present on posterior abdominal wall • Discuss the formation of nerves • Discuss the formation of lumbosacral plexus • Correlate the clinical conditions (Lumbar symphathectomy) • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C2 C3 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Posterior abdominal wall III (vessels)	• Enlist branches of Abdominal Aorta. • Describe the tributaries of inferior vena cava. • Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk.	C1 C2 C2 C2	Skill lab	OSPE MCQ SAQ

& Lumbar Vertebrae	• Differentiate between typical and atypical lumbar vertebrae. • Identify different parts of lumbar vertebrae. • Discuss the attachments of lumbar vertebrae. • Correlate the clinical conditions (abdominal aortic aneurysm) • Understand the preventive and curative health care measures • Map Abdominal aorta, Inferior Vena cava & Portal vein on simulated patient (SP)/Model • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C3 C3 C3 P C3 C3 C3 C3		VIVA
Kidney	• Discuss the site and extent of kidneys • Differentiate right from left kidney • Understand the bio-physiological aspects of kidney • Discuss the renal capsule and its role in support of kidney. • Describe the structure of cortex and medulla • Describe peritoneal relationship of both kidneys. • Describe visceral relationship of both kidneys • Explain blood supply of both kidneys with emphasis on renal artery. • Discuss the venous drainage of both kidneys. • Correlate the clinical conditions (perinephric abscess, nephroptosis, renal cysts and renal colic) • Understand the preventive and curative health care measures • Map the kidney on the back (Morrison's Parrallelogram) on SP/Model • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C2 C2 C2 C2 C2 C2 C3 C3 C3 P C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
	• Discuss extent and course of ureter in abdomen and pelvis in males and females • Explain peritoneal reflections of ureter in both sexes. • Describe relations of ureter.	C2 C2		

Ureter	• Describe the arterial, venous and lymphatic drainage of ureter. • Correlate the clinical conditions (ureteric colic) • Understand the preventive and curative health care measures • Map Ureter from the back on SP/Model • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C3 C3 C3 P C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Supra renal gland	• Describe the location & visceral relations of right and left supra renal glands • Understand the bio-physiological aspects of kidney • Discuss supra renal cortex and medulla • Discuss vessels and nerves of supra renal gland • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C2 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Urinary bladder	• Interpret size and extent of urinary bladder in different ages and states. • Discuss the peritoneal and visceral relationships of urinary bladder(bladder bed) • Understand the bio-physiological aspects of kidney • Discuss the trigone of urinary bladder • Elaborate nerve supply of urinary bladder • Correlate the clinical conditions (urinary incontinence, suprapubiccystotomy and atonic bladder) • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research article	C2 C2 C2 C2 C2 C2 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA

Urethra	• Describe different parts of male and female urethra. • Explain blood supply, innervation and lymphatics of urethra in both sexes • Discuss the clinically significant differences between male and female urethra • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Cross Sectional Anatomy	• Identify different structures at different levels of vertebral coloumn;L2,L3,L4,L5 • Correlate the clinical conditions at the given level • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C3 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Radiology	• Identify structures on a normal X-ray abdomen • Identify kidney and its associated structures on contrast studies. • Appreciate filling defects. • Mark anatomical landmarks. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 P P C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA

Topics	Learning Objectives Students Should Be Able To	Learning Resources
Posterior abdominal wall I (Fascia & Muscles)	• Describe the the fascia of posterior abdominal wall • Tabulate the muscles of posterior abdominal wall with reference to, origen, insertion, nerve supply and action, • Describe the relations of Psoas major muscle. • Discuss Psoas abscess • Read a relevant research article • Use digital Library	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 537- 541). ❖ **https://www.youtube.com/watch?v=5ZnlcZrC-XY**
Posterior abdominal wall II (Nerves)	• Trace the nerves present on posterior abdominal wall • Discuss the formation of nerves • Discuss the formation of lumbosacral plexus • Discuss clinical significance of Lumbar symphathectomy • Read a relevant research article	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 527-532). ❖ **https://www.youtube.com/watch?v=5ZnlcZrC-XY**
Posterior abdominal wall III (vessels) & Lumbar Vertebrae	• Enlist branches of Abdominal Aorta. • Describe the tributaries of inferior vena cava. • Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk. • Differentiate between typical and atypical lumbar vertebrae. • Identify different parts of lumbar vertebrae. • Discuss the attachments of lumbar vertebrae. • Discuss abdominal aortic aneurysm	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 541-544, 544-547). ❖ **https://www.youtube.com/watch?v=pSDYlPzNg4s**
Kidney	• Discuss the site and extent of kidneys • Differentiate right from left kidney • Understand the bio-physiological aspects of kidney • Discuss the renal capsule and its role in support of kidney. • Describe the structure of cortex and medulla • Describe peritoneal relationship of both kidneys. • Describe visceral relationship of both kidneys • Explain blood supply of both kidneys with emphasis on renal artery. • Discuss the venous drainage of both kidneys. • Discuss related clinicals; perinephric abscess, nephroptosis, renal	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 515-517,523-524). ❖ **https://www.youtube.com/watch?v=ZVlVquVYGDo**

	cysts and renal colic	
Ureter	• Discuss extent and course of ureter in abdomen and pelvis in males and females • Explain peritoneal reflections of ureter in both sexes. • Describe relations of ureter. • Describe the arterial, venous and lymphatic drainage of ureter. • Discuss the related clinicals; ureteric colic • Read a relevant research article	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 517-518,525). ❖ **https://www.youtube.com/watch?v=1P0utMb5nkg**
Supra renal gland	• Describe the location & visceral relations of right and left supra renal glands • Understand the bio-physiological aspects of kidney • Discuss supra renal cortex and medulla • Discuss vessels and nerves of supra renal gland • Discuss the related clinicals • Read a relevant research article	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 519-523). ❖ **https://www.youtube.com/watch?v=iE8nCvLaGM4**
Urinary bladder	• Interpret size and extent of urinary bladder in different ages and states. • Discuss the peritoneal and visceral relationships of urinary bladder(bladder bed) • Understand the bio-physiological aspects of kidney • Discuss the trigone of urinary bladder • Elaborate nerve supply of urinary bladder • Discuss the related clinicals; urinary incontinence, suprapubiccystotomy and atonic bladder	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 591-595). ❖ **https://www.youtube.com/watch?v=tGouMldaQgU**
Urethra	• Describe different parts of male and female urethra. • Explain blood supply, innervation and lymphatics of urethra in both sexes • Discuss the clinically significant differences between male and female urethra • Read a relevant research article	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 595). ❖ **https://www.youtube.com/watch?v=EQUdo392wg0**

Practicals				
Topic	**At the End Of Practical Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
kidney	• Identify the histological slide of kidney. • Illustrate the histological structure of Kidney. • Enlist two points of identification. • Focus the slide	P C2 C1 P	Skill Lab	OSPE
Ureter	• Identify the histological slide of ureter • Illustrate the histological structure of ureter. • Enlist two points of identification. • Focus the slide	P C2 C1 P	Skill Lab	OSPE
Urinary bladder	• Identify the histological slide of urinary bladder. • Illustrate the histological structure of urinary bladder • Enlist two points of identification. • Focus the slide	P C2 C1 P	Skill Lab	OSPE

Physiology				
Theory				
Topic	**Learning Objectives** **At The End Of Lecture Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Body fluid compartments, Volume & osmolarity of ECF & ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality,Osmosis and Osmotic pressure	C1 C2 C2 C1	LGIS	SAQ MCQ VIVA
Physiology of Renal system,Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	C2 C2 C2 C1 C1	LGIS SGD	SAQ MCQ VIVA
Abnormalities of fluid volume &regulation, Edema	• Volume and osmolarity in abnormalstates • Abnormalities of fluid volume &Regulation • Hyponatremia and Hypernatremia • Edema and its Mechanism. • Fluid in potential spaces of the body	C1 C1 C2 C1 C2	LGIS SGD	SAQ MCQ VIVA
A. Regulation of GFR & RBF-I (Determinants of GFR & RBF) Regulation of GFR & RBF-II,Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	C1 C1 C2	LGIS SGD	SAQ MCQ VIVA

RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback Mechanism • Macula-densa Feedback Mechanism	C1 C1 C2 C1 C2 C3	LGIS SGD	SAQ MCQ VIVA
Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in ○ Proximal tubule ○ Loop of Henle ○ Distal tubule & collecting tubule. Active and passive transport mechanisms	C1 C2 C1 C1 C2	LGIS Group presentations	SAQ MCQ VIVA
Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	C1 C2	LGIS SGD Group presentations	SAQ MCQ VIVA
A. Clearance methods to quantify kidney function Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	C1 C1 C1 C1 C1 C2	LGIS SGD	SAQ MCQ VIVA

Topic	Learning Objectives Students Should Be Able To	LearningDomain	Teaching Strategy	Assessment Tools
GFR & RBF	• Explain factors effecting GFR	C2	SGD	MCQ SEQ VIVA OSPE
	• Discuss determinants of RBF	C2		
	• Explain autoregulatory mechanism of GFR & RBF	C2		
Micturition	• Describe the physiological anatomy & nervous connections of urinarybladder	C1	SGD	MCQ SEQ VIVA OSPE
	• Explain Micturition reflex	C2		
	• Discuss abnormalities of Micturition	C2		
Clearancemethods	• Define Renal clearance	C1	SGD	MCQ SEQ VIVA OSPE
	• Enumerate & Explain clearance methods to quantify renal functions	C1		
	• Explain filtration fraction	C2		
Acid basebalance	• Describe mechanism of action of buffer systems of body fluid	C1	SGD	MCQ SEQ VIVA OSPE
	• Discuss buffering power of respiratory & renal system	C2		
	• Explain the acid base disorders	C2		

Topics Of SDL	Learning Objective	References
Body fluid compartments, Volume & osmolarity of ECF &ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality,Osmosis and Osmotic pressure	❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition andvolume Section 07 (Chapter 38, Page 695) ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 245) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiologyof Body Fluids. (Chapter 26,Page 449-459) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys.Section 05. (Chapter 25, Page 305-313)
Physiology of Renal system, Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	• Ganong's Review of Medical Physiology.25TH Edition. Renal Physiology (Chapter 37, Page 671) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 624-636) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiologyof Body Fluids. (Chapter 27, Page 460-469) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 26, Page 321-324) (Chapter 27, Page 331-332)

Abnormalities of fluid volume & regulation, Edema	• Volume and osmolarity in abnormal states • Abnormalities of fluid volume & Regulation • Hyponatremia and Hypernatremia • Edema and its Mechanism. • Fluid in potential spaces of the body	• Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 251) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 20 Page 672-677) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Regulation ofVolume and Osmolality of the Body Fluids. (Chapter 32, Page 530) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys.Section 05. (Chapter 25, Page 314-320)
B. Regulation of GFR & RBF-I (Determinants of GFR & RBF) **C.** Regulation of GFR & RBF-II, Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	❖ A. ❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition andvolume, Section 07 (Chapter 37, Page 674) ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 257,261)
RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback Mechanism • Macula-densa Feedback Mechanism	❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 28,Page 473) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 331,333,337) ❖ B. ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 337,342) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Filtration and Blood Flow. (Chapter 28,Page 476,483)
Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in • Proximal tubule • Loop of Henle • Distal tubule & collecting tubule. • Active and passive transport mechanisms	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 679) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 267) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 636,643) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 29,Page 487-497) . (Chapter 30,Page 498) . (Chapter 31,Page 508) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 343,355)

Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 39, Page 709) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 276,298) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 355-360)
B. Clearance methods to quantify kidney function **C.** Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, • Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	❖ A. ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 255) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19,Page 643- 647) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. (Chapter 27, Page 469,483) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 360-364) ❖ B. ❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 691) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19,Page 648) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 26, Page 324-328)

Practicals

Practical	At the End of This Skill Lab, Student Should Be Able to Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools
Specific gravity of Urine	• Apparatus identification	C1	Skill lab	OSPE
	• Principle	C1		
	• Procedure	P, A		
	• Precautions	C1		
	• Use of urinometer	C1		
	• Recall normal values of specific gravity	C1		

Biochemistry				
Theory				
Topic	**Learning Objectives** **At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Introduction to protein metabolism	Understand protein turn-over, amino acid pool and entry of amino acid into cell	C2	LGIS	MCQs, SAQs & Viva
Nitrogen balance	Describe positive and negative nitrogen balance	C2	LGIS	MCQs, SAQs & Viva
General reactions of amino acids	Discuss reactions of amino acids Interpret the clinical importance of transaminases	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of ammonia	Explain sources of NH_3 formation and its transport Discuss causes and effects of Hyperammonemia Explain mechanism of ammonia toxicity	C2 C3 C2	LGIS	MCQs, SAQs & Viva
Urea cycle	Describe the location, steps and regulation of Urea cycle	C2	LGIS	MCQs, SAQs & Viva
Disorders of urea cycle	Describe Disorders of the urea cycle	C2	LGIS	MCQs, SAQs & Viva
Metabolism of glycine	Explain Glycine metabolism and related disease	C2	LGIS	MCQs, SAQs & Viva
Metabolism of phenyl alanine and tyrosine	Explain Phenyl alanine & tyrosine metabolism Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva

Metabolism of Tryptophan	Explain Tryptophan metabolism Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of methionine	Describe metabolism of sulpher containing amino acids Discuss related disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of branched chain amino acids	Explain Metabolism of branched chain amino acids Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of polyamines	Discuss Synthesis of polyamines and their clinical significance	C2	LGIS	MCQs, SAQs & Viva
Acid base imbalance	Explain causes and compensation of metabolic and respiratory acid base disorders Describe anion gap and its significance Interpret different acid base disorders	C2 C2 C3	LGIS	MCQs, SAQs & Viva
Water	Explain Distribution of water in different compartments of body Interpret Dehydration & over hydration	C2 C3	LGIS	MCQs, SAQs & Viva
Electrolytes Sodium (Na)	Describe Daily requirements, sources and functions of sodium Explain causes and effects of hyponatremia & hypernatremia	C2 C3	LGIS	MCQs, SAQs & Viva
Potassium	Describe Daily requirements, sources and functions of potassium Explain causes and effects of hypokalemia & hyperkalemia	C2 C3	LGIS	MCQs, SAQs & Viva
Chloride (Cl) & Bicarbonate ($HCO_{3)}$	Describe Daily requirements, sources, functions & their deficiency and toxic effects on body	C2	LGIS	MCQs, SAQs & Viva

Topic	Learning Objectives At The End Of Tutorial Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Phenylalanine Metabolism	Explain Metabolim of phenylalanine Metabolism	C2	SGD	MCQs, SAQs & Viva
Metabolism of tryptophan, tyrosine and branched chain amino acids	Explain metabolism and related disorders of amino acids	C2	SGD	MCQs, SAQs & Viva
Hyper Amonia	Explain formation, transport and toxicity of ammonia in the body	C2	SGD	MCQs, SAQs & Viva
Acid base imbalance	Explain causes and compensation of acid base disorders	C2	SGD	MCQs, SAQs & Viva
Sodium & Chloride Metabolism	Describe causes and effects of hypo and hyper natremia, hypo and hyper kalemia	C2	SGD	MCQs, SAQs & Viva

Topics Of SDL	Learning Objectives	Learning resources
Amino Acids Pool, Protein Turnover, Nitrogen balance & Transport of Amino Acids	• Understand protein turn-over, amino acid pool and entry of amino acid into cell • Describe positive and negative nitrogen balance	• Lippin cott Biochemistry 8th edition (chapter 19 page - 271) • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854183/
Urea cycle & its Disorders	• Describe the location, steps and regulation of Urea cycle • Describe Disorders of the urea cycle	• Lippin cott Biochemistry 8th edition (chapter 19 page - 279) • https://my.clevelandclinic.org/health/diseases/23470-urea-cycle-disorder
Arginine & Branched Chain Amino Acid Metabolism, Ammonia Toxicity	• Explain Metabolism of branched chain amino acids • Discuss related inherited disorders	• Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477) • https://link.springer.com/article/10.1007/BF00998474
Sodium & Chloride Metabolism	• Describe Daily requirements, sources and functions of sodium • Explain causes and effects of hyponatremia & hypernatremia • Describe Daily requirements, sources, functions & their deficiency and toxic effects on body	• Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9th edition (Chapter 02 page 46) • https://www.sciencedirect.com/topics/medicine-and-dentistry/sodium-metabolism

Practicals				
Topic	**Learning Objectives** **At The End Of Practical Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Urine analysis I	Examine urine for its color, odor, pH and specific gravity Perform tests on urine to detect its normal constituents	P	Skill Lab	OSPE
Urine analysis II	Perform tests to detect abnormal constituents of urine (proteins, ketone bodies, bile salts)	P	Skill Lab	OSPE
Estimation of urea	Perform estimation of urea	P	Skill Lab	OSPE
Estimation of creatinine	Perform estimation of creatinine	P	Skill Lab	OSPE

Basic and Clinical Sciences (Vertical Integration)

Anatomy, Physiology Biochemistry			
Theory			
Subject	**Topic**	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**
Anatomy	• Renal Failure	Apply basic knowledge of subject to study clinical case.	C3
	• Ureteric Colic	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Acute Glomerulo Nephritis	Apply basic knowledge of subject to study clinical case.	C3
	• Anuria	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Metabolic Acidosis	Apply basic knowledge of subject to study clinical case.	C3
	• Ammonia Toxicity	Apply basic knowledge of subject to study clinical case.	C3
Subject	**Topic**	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**
PBL	• Renal Failure	Apply basic knowledge of subject to study clinical case.	C3

Surgery				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Investigations of urinary tract	• Understand the diagnostic approach and interpretation of urinary tract investigations including urinalysis, urine culture, ultrasonography, and intravenous urography.	C2	LGIS	MCQs
	• Demonstrate proficiency in recognizing common urinary tract disorders through investigative findings, facilitating accurate diagnosis and management decisions.	C2		

Hydronephrosis / Pyonephrosis	• Define hydronephrosis and pyonephrosis, including their etiology and pathophysiology.	C2	LGIS	MCQs
	• Identify clinical presentations, diagnostic modalities, and management strategies for both conditions, emphasizing the importance of early recognition and intervention to prevent renal damage.	C2		

Medicine				
Theory				
Topic	**At The End of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Acute renal failure	• Understand the etiology, pathophysiology, and clinical manifestations of ARF	C2	LGIS	MCQs
	• Recognizing the diagnostic criteria and appropriate investigations for ARF	C2	LGIS	MCQs
CRF & Rehabilitation of patient with CRF	• Understand the etiology, pathophysiology, clinical manifestations, and management options of CRF.	C2	LGIS	MCQs
	• Recognize the importance of rehabilitation strategies such as dietary modifications, medication management, dialysis, and transplantation in improving patient outcomes and quality of life.	C2	LGIS	MCQs
Potassium imbalance and its management	• Understand the physiological role of potassium in the body and recognize the clinical manifestations of hypo- and hyperkalemia.	C2	LGIS	MCQs
	• Develop competence in diagnosing and managing potassium imbalances, including appropriate treatment modalities and monitoring strategies.	C2	LGIS	MCQs

Community Medicine				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Biostatistics-1 Basic concepts and uses (Descriptive). Data and its types.	• Define biostatistics and correlate its importance in medical research.	C1	LGIS	MCQs
	• Understand data and its types	C2		
Biostatistics-2 Basic concepts and uses (Descriptive). Data and its types.	• Define biostatistics and correlate its importance in medical research.	C1	LGIS	MCQs
	• Understand data and its types	C2		

Obstetrics & Gynaecology				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Physiological changes in the renal system in pregnancy	• The anatomic and functional changes in the renal system in pregnancy	C2	LGIS	MCQs
	• The changes in indices of renal function during pregnancy	C2		

Pharmacology				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Introduction to diuretics	• Understanding the mechanism of action of diuretics in altering renal function to promote urine production.	C2	LGIS	MCQs
	• Identifying the major classes of diuretics, their pharmacokinetics, clinical indications, and potential side effects.	C2		

	• Exploring the role of diuretics in managing conditions such as hypertension, edema, and congestive heart failure	C2		

List of Renal Module Vertical Courses Lectures						
Sr. #	**Date/Day**	**Week**	**Department**	**Time**	**Topic Of Lectures**	**Teachers Name & Contact #**
1.	06-05-2024 MONDAY	3rd	Surgery	10:30 am – 11:20 am	Investigations of urinary tract	Dr. Faraz Basharat Dr. Muhammad Amin
2.	06-05-2024 MONDAY	3rd	Medicine	11:20 am – 12:10 Pm	Acute renal failure	Dr. Saima Meer 0343-5761430 Dr. Mudassir
3.	07-05-2024 TUESDAY	3rd	Medicine	11:20- 12:10pm	CRF & Rehabilitation of patient with CRF	Dr. Mudassar 0321-6813249 Dr. Saima Meer 0343-5761430
4.	08-05-2024 WEDNESDAY	3rd	Surgery	10:30 am – 11:20 am	Hydronephrosis / Pyonephrosis	Dr. Muhammad Ali Dr. Ahmed Shahzad
5.	08-05-2024 WEDNESDAY	3rd	Obstetrics & Gynecology	11:20 am – 12:10 pm	Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis, stress incontinence)	Dr. Humaira Noreen Dr. Talat Farkhanda
6.	13-05-2024 MONDAY	4th	Medicine	11:20 am - 12:10 pm	Potassium imbalance and its management	Dr. Mudassar 0321-6813249 Dr. Saima Meer 0343-5761430
7.	15-05-2024 WEDNESDAY	4th	Pharmacology	11:20 am – 10:10 Am	Introduction to diuretics	Dr. Uzma 0336-5178766 (Even) Dr. Haseeba 0331-4453835 (Odd)

Spirally Integrated Courses / General Education Cluster (GEC) Courses

Content

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

The Holy Quran Translation Lecture				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Imaniat	• Describe the answers to questions of the Pagans of Arab • Describe the purpose of sending the Prophets.	C2	LGIS	SAQ
Ibadat	• Understand the concept of Hijrah in Holy Quran • Disscus the significance of consistency in religion	C2	LGIS	SAQ

Radiology & Artificial Intelligence				
Theory				
Topic	**At The End of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Prenatal Ultrasonography	• Interpret normal ultrasonography of renal system	C2	LGIS	MCQs
	• Discuss features of different congenital abnormalities of renal system	C2		
Contrast Nephropathy	• Understand the diverse manifestations of nephropathy, including diabetic nephropathy and IgA nephropathy	C2	LGIS	MCQs

Biomedical Ethics and Professionalism				
Theory				
Topic	**At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Islam & Teachings of Bioethics	• Conceptualize the Islamic teachings of medical ethics. • Outline the main points in oath of Muslim doctor. • Correlate the 4 principles of medical ethics with principles of Islamic medical ethics	C2	LGIS	MCQs

Ethics of social media & advertising	• Delineate the principles of ethics involved in social media & advertising including. • Publishing or broadcasting information • Certificates, Reports and other documents • Teaching Photography and Consent			
Ethical principles	• Elaborate General ethical 06 basic ethical principles: autonomy, beneficence, non-maleficence & justice. • Explain the process of ensuring patient autonomy, beneficence, non-maleficence, respect & justice while informing/ deciding on a treatment modality			

Integrated Undergraduate Research Curriculum (IUGRC)				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
How to Generate a Research Question	• How to generate a research question according to FINER Criteria	C3	Hands on Session	MCQs
	• Formulate the research question according to PICOT format – problem/population, intervention, comparison, outcome and time frame			
	• To understand how a properly formulated research question is related to an efficient literature review			
	• Development of research protocol including research objectives			
Session on Data Analysis	• Understand statistical methods applicable to medical data. • Mastertools for data visualization and interpretation. • Develop skills to critically evaluate research findings for their clinical significance and validity.	C3	Hands on Session	MCQs
Manuscript Writing	• Structure their manuscripts coherently. • Employ appropriate scientific language, and adhere to journal guidelines, thereby enhancing their ability to communicate research findings effectively in scholarly publications.	C3	Hands on Session	MCQs

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

Entrepreneurship				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Ideate Initial Idea	• Identify healthcare challenges and develop innovative solutions.	C2	LGIS	MCQs
	• Understand the healthcare market landscape to identify opportunities and assess demand.	C2		
	• Describe the ethical implications of healthcare entrepreneurship, including patient privacy and safety.	C2		

List of Renal Module Spiral Courses Lectures						
Sr. #	**Date/Day**	**Week**	**Department**	**Time**	**Topic Of Lectures**	**Teachers Name & Contact #**
1.	29-04-2024 MONDAY	2nd	Bioethics	10:30 am – 11:20 am	Ethical principles	Dr. Arsalan (0334-3911629)
2.	30-04-2024 TUESDAY	2nd	Research Practical Session II	10:30 am – 11:20 am	Questionnaire Development	Dr. Khuala Noreen Dr. Afifa Kalsoom
3.	03-05-2024 FRIDAY	2nd	Quran Translation – I	09:20 am – 10:10 am	Imaniat-3 Ibadaat-3	Mufti Naeem Sherazi 0300-5580299 (Even) Dr. Fahd Anwar 0300-5156800 (Odd)
4.	07-05-2024 TUESDAY	3rd	Research Practical Session III	10:30am-11:20 am	Session on data analysis	Dr. Khuala Noreen Dr. Afifa Kalsoom
5.	10-05-2024 FRIDAY	3rd	Quran Translation – II	08:00 am – 09:00 am	Ibadaat-4 Imaniat-4	Mufti Naeem Sherazi 03005580299 (Even) Dr. Fahd Anwar 03005156800 (Odd)
6.	13-05-2024 MONDAY	4th	Research Practical Session IV	10:30 am – 11:20 am	Manuscript writing	Dr. Khuala Noreen Dr. Afifa Kalsoom
7.	14-05-2024 TUESDAY	4th	Family Medicine	11:20 am – 12:10 am	Renal Failure	Dr. Sidra Hamid (03315025147) Dr. Sadia Mufti Naem Sherazi 03005580299 (Even)

Block-II

Module No. 3 - Reproduction

Duration 4 Weeks

Reproduction Module Team

Module Name	:	Reproduction Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Uzma Zafar
Co-coordinator	:	Dr. Romessa Naeem
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Uzma Zafar (APWMO Demonstrator of Biochemistry)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Tariq Furqan (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Romessa Naeem (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Nazia (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

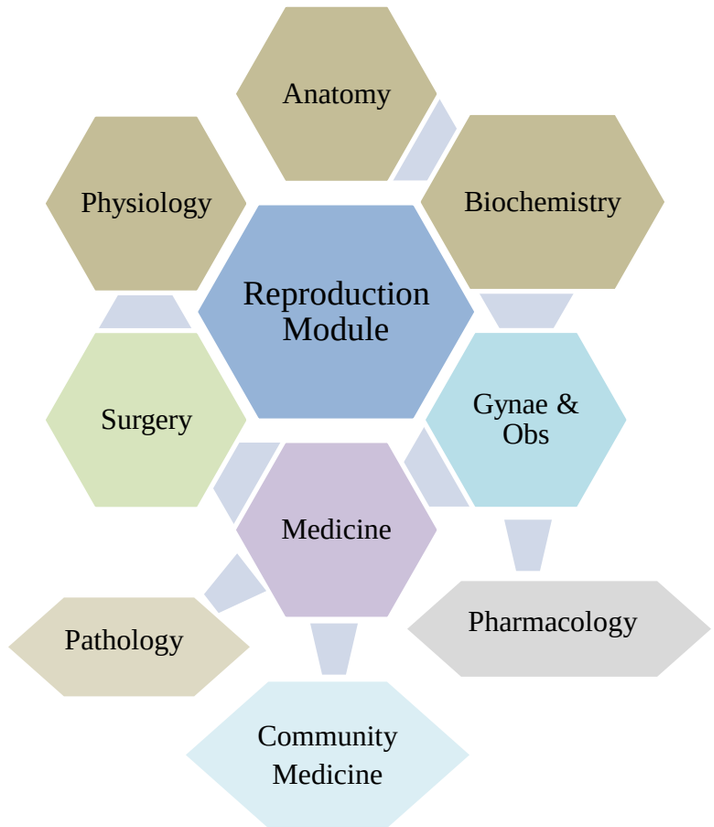
Themes				
Block	**Subjects**	**Embryology**	**Histology**	**Gross Anatomy**
II	• Anatomy	Embryology/Development • Testis • Genital Ducts • Prostate & Accessory Glands • Uterus & Uterine tubes • Ovary & Vagina	Histology • Testis • Genital Ducts • Prostate & Accessory Glands • Uterus & Uterine Tubes • Ovary & Vagina	• Sacrum • Bony Pelvis & Joints of Pelvis • Pelvic Fascia, Pelvic Diaphragm, & Pelvic Peritoneum • Male External Genitalia, Scrotum, & Testis • Prostate Vas Deferens, Seminal Vesicles & Ejaculatory Ducts • Female External Genitalia, Ovaries, Fallopian Tubes • Uterus, Cervix & Vagina • Ischioanal Fossa • Urogenital Diaphragm • Perineum, Superficial Perineal Pouch and its contents • Deep Perineal Pouch and its contents • Blood Supply & Lymphatic Drainage of Pelvis & Perineum • Sacral and Coccygeal Plexus • Radiology, Surface Marking
	• Biochemistry	• Digestion of nucleic acid & biosynthesis of purines • Purine catabolism and related disorders • Pyrimidine metabolism • Regulation of gene expression • Male Gonadal Hormones • Female Gonadal Hormones		
	• Physiology	• Physiological anatomy of male reproductive • system & spermatogenesis • Physiological anatomy female reproductive system • Semen, capacitation & acrosome reaction • Monthly Ovarian Cycle, ovulation • Male sex hormones, Abnormalities of male sexual • function and spermatogenesis • Monthly Endometrial Cycle and Menstruation • Response of mother’s body to pregnancy and parturition • Female sex hormones (oestrogen and progesterone) • Lactation, Milk composition, breast feeding • Puberty, menarche, menopause, postmenopausal symptoms & anovulatory cycles, Abnormalities of		

		• secretion by ovaries • Growth &functional development of fetus, Adjustments of infant to extrauterine life, Growth • & development in child • Fertilization of ovum, transport, implantation, Functions of placenta • Hormonal factors in pregnancy, Special functional • problems in neonate. Prematurity and its problems
	Spiral Courses	
	• Biomedical (Club Activity)	• Ethical dilemmas Involving breech in Autonomy. • Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence. • Ethical dilemmas practice involving breach in principle of justice
	• Behavioural Sciences	• Emotion
	• Family Medicine	• AIDS
	• The Holy Quran Translation	• Imaniat-5 • Akhlaqiat-1
	• Pak Studies/Islamiyat	• Kaamyab logu ki sifaat • Nehru report, Quaid e Azam k 14 nukaat
	Vertical Integration	
	• Gynae & Obs	• Early Pregnancy Complications • Menstrual irregularities • Subfertily
	• Pharmacology	• Hormonal Contraceptives
	• Surgery	• Male hypogonadism, Acute Scrotum
	• Pathology	• BPH/Prostatitis / Sexually Transmitted Diseases • Polycystic Ovaries
	• Community Medicine	• Sexually Transmitted Diseases (STDs) • Acquired Immunodeficiency Syndromes/ Sexually Transmitted Diseases
	Early Clinical Exposure	
	• Clinical Rotations	• Ovarian Tumors • Uterine Tumors • Polycystic Ovaries • Menstrual Irregularities **(Gynecology)**
		• Important points in History of pregnant lady

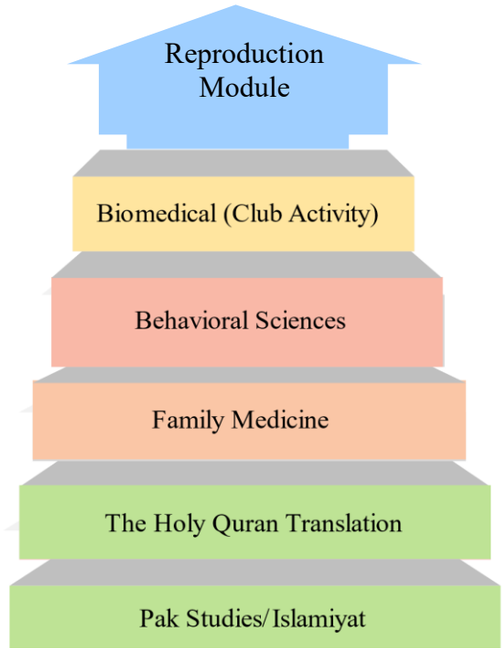
		• Obstetrics Trimesters **(Obstetrics)** • Fetal heart sounds
		• Testicular Tumors • Hydrocele **(Surgery)** • Undescended Testis • Hypospadias/ Epispadias
Clinical Themes		
	• Polycystic Ovary Syndrome (PCOS): Diagnosis and Management • Male and Female Infertility: Causes and Treatment Options • Pathophysiology of Menstrual Disorders (e.g., dysmenorrhea, amenorrhea) • Pregnancy-Induced Hypertension (PIH) and Pre-Eclampsia • Ectopic Pregnancy: Diagnosis and Surgical Management • Hormonal Contraception: Mechanisms and Side Effects • Diagnosis and Management of Pelvic Inflammatory Disease (PID) • Benign and Malignant Tumors of the Reproductive System (e.g., ovarian and testicular cancers) • Common Sexually Transmitted Infections (e.g., syphilis, gonorrhea) • Understanding and Counseling in Assisted Reproductive Techniques	

Implementation of Terms of Reference (TORS)
• Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are predefined as per the guidelines of PMDC and to be strictly followed. • The hours mentioned within each module are the mandatory minimum required. • The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these. However, the level of cognition can be kept at a higher level. • The Table of Specifications provided will be used for the three papers of the first professional examination. • The same table of specifications should be used for the respective block exams for internal assessment. • The criteria defined for continuous internal assessment is to be followed for each module and block respectively

Integration of Disciplines in Reproduction Module



Spiral / General Education Cluster Courses



Module No. 3 – Reproduction

Rationale: Reproductive system plays an important role in person life although it does not contribute to homeostasis and is not essential for the survival of individual e.g. the manner in which people relate as sexual beings contributes in significant ways to psycosocial behavior and has an important influence on how people view themselves and how they interact with others. Reproductive function also has profound effect on society. The universal organization of societies into family units provide a stable environment that is condusive for perpetuating our species.

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 reproductive system.
- Used technology based Medical Education including
  Artificial Intelligence
- Appreciate concept and importance of
  - **Family Medicine**
  - **Biomedical Ethics**
  - **Research**

Skills

- Demonstrate effective skill for performing and interpreting various laboratory tests like pregnancy test.
- Demostrate awareness of ethical, legal and social implecation 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 4 weeks duration. Instructional strategies are given in the time table and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

s

Syllabus of Reproduction (Module No. 3)

Anatomy				
Theory				
Topics	**At The End Of Lecture Students Should Be Able To:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Development of testis	• Recall the time of early sex differentiation and genes involved in it. • Explain the development of male gonads and formation of testis. • Describe the descent of testis. • Describe the concepts of chromosomal determination of sex, primordial germ cells and indifferent gonads. • Describe histogenesis of interstitial cells of leydig and seminiferous tubules. • Correlate with the clinical conditions. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C1 C2 C2 C2 C2 C3 C3 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Histology of Testis	• Discuss germ cells at different steps of spermatogenesis in the seminiferous tubule. • Describe histology of Sertoli cells and Leydig cells. • Explain their roles in the production of sperm and regulation of the male reproductive system. • Understand the bio-physiological aspects of spermatogenesis. • Discuss the related clinicals like orchitis, male infertility, testicular cancers, cryptorchidism. • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article	C2 C2 C2 C2 C3 C3 C3 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA

		C3 C3		
Histology of male genital ducts	• Describe the histological organization of epididymis, ductus deferens and ejaculatory ducts. • Describe the epithelium and microscopic features of epididymis, ductus deferens and ejaculatory ducts. • Understand the bio-physiological aspects of epithelium of ducts. • Discuss the related clinicals like vasectomy, epididymitis. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article	C2 C2 C3 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Development of male genital ducts, Seminal vesicles and prostate	• Describe the development of male genital ducts during indifferent stage. • Discuss development of male genital ducts at advanced stage • Describe the molecular regulation of male genital ducts. • Describe the development of seminal vehicles. • Discuss the development of prostate. • Discuss the remnants of mesonephric and paramesonephric ducts in males and their clinical significance. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C2 C2 C2 C2 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA

Histology of accessory male reproductive glands	• Describe the histological organization of prostate gland, seminal vesicles and bulbourethral glands. • Describe microscopic features of these glands. • Discuss the related clinicals like prostatitis. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C2 C2 C2 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Development of male external genitalia	• Explain the different stages and further development of external genitalia. • Discuss the related clinical like ambiguous genitalia, Androgen insensitivity syndrome, hypospadias, epispadias, bifid penis, micropenis • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C2 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Histology of uterus and uterine tubes	• Recollect knowledge of histological features of endometrium in various phases • Discuss microanatomy of layers of uterus • Describe parts of uterine tubes • Explain microscopic features of all parts of uterine tubes. • Dicuss the related clinicals like endometriosis, tubal ligation, salpingitis, and cervical cancers • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C1 C2 C2 C2 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA

Development of uterus and uterine tubes	• Describe role of paramesonephric ducts, uterovaginal primordium in development of uterine tubes • Discuss the role of paramesonephric ducts and uterovaginal primordium in the development of uterus. • Discuss the related clinicals like bicornuate uterus, unicornuate uterus, double uterus. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article	C2 C2 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Histology of Ovary and Vagina	• Discuss the stages of follicular growth (primordial, primary, secondary, tertiary), as well as the changes that occur in the follicular wall. • Discuss ovarian cycle and menstrual cycle. • Describe the histological features of corpus luteum of mensuration and pregnancy. • Discuss the related clinicals like PCOS, Follicular cyst, hemorrhagic cyst. • Discuss histological structure of vagina. • Understand the bio-physiological aspects of vaginal epithelial cells. • Discuss the related clinical like vaginitis, squamous cell carcinoma of vagina. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article	C2 C2 C2 C2 C2 C2 C3 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA

Development of Ovary	• Recall the process of oogenesis in female. • Explain the different steps involved in early oogenesis. • Explain the ovarian and menstrual cycle and phases. • Explain the hormonal changes occurring during reproductive cycle. • Describe role of paramesonephric ducts, uterovaginal primordium in development of ovary • Describe the descent of ovaries. • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 C2 C2 C2 C2 C2 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Development of Vagina	• Discuss the developmental stages of vagina and female external genitalia • Enlist different congenital anomalies of female reproductive system. • Describe different syndromes and gene defects associated with congenital anomalies • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C1 C2 C3 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA

Topics	At The End Of Demonstration Student Should Be Able To	Learning Domains	Teaching Strategy	Assessment Tools
Sacrum	• Identify the bone • Place the bone in anatomical position • Demonstrate anatomical features on bone • Discuss attachments and relations on bone • Discuss important clinical anatomy of bone • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care	C2 P P C2 C3 C3 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA

	• Read a relevant research article			
Bony pelvis	• Identify type of pelvis • Place pelvis in anatomical position • Demonstrate different diameters of each type • Differentiate bony features of each type • Clinical importance of each type • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2P PC1 C3 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA
Pelvic Peritoneum and its contents	• Identify visceras present in pelvis • Demonstrate peritoneal reflections on pelvic visceras • Discuss pouches formed by peritoneum • Discuss clinical anatomy of pelvic peritoneum and pelvic visceras • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C2 C3 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA
Pelvic diaphragm	• Identify the muscles forming pelvic diaphragm • Demonstrate the attachments and nerve supply of muscles of pelvic diaphragm • Locate the structures piercing the pelvic diaphragm • Discuss clinical anatomy of pelvic diaphragm • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C2 C2 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA
Male external genitalia	• Identify the anatomical structures of external genitalia • Demonstrate anatomical position of testis • Enlist layers of scrotum with its neurovasculature • Discuss clinical anatomy of scrotum • Understand curative and preventive heath care measures	C2 P C1 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE

	• Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C3		• VIVA
Testis	• Identify the structure • Demonstrate anatomical position of testis • Discuss layers and structure of testis • Discuss important clinical anatomy related to testis • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Male genital ducts	• Describe the anatomical position of vas deferens, seminal vesicles, ejaculatory ducts on model • Discuss the anatomical relations of vas deferens, seminal vesicles, ejaculatory ducts • Discuss clinical anatomy • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Prostate	• Identify the position of prostate • Demonstrate the anatomical features and relations of prostate • Discuss clinical anatomy • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Ovaries	• Identify the site of ovarian fossa • Discuss anatomical relations of ovary • Discuss neurovasculature and hormonal effects of ovaries • Discuss important clinical anatomy of ovary • Understand curative and preventive heath care measures • Practice the principles of bioethics.	C1 C2 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA

	• Apply strategic use of A.I in health care • Read a relevant research article	C3		
Fallopian tubes, Uterus	• Identify the location of structures in pelvis • Demonstrate anatomical relations of these structures • Discuss normal positions of uterus with its ligaments • Discuss its neurovasculature • Discuss important clinical anatomy of fallopian tubes, uterus and uterine tube • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 P C2 C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Cervix	• Discuss anatomy of cervix • Describe anatomical relations of cervix • Describe its neurovasculature • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C2 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Ischio-anal fossa	• Discuss the dimensions, boundaries and recesses • Describe the contents of Ischio anal fossa • Describe pudendal canal and its contents • Discuss important clinical anatomy of structures • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C2 C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Urogenital diaphragm	• Discuss the formation of diaphragm • Identify the relations and contents of diaphragm • Discuss organs piercing urogenital diaphragm • Discuss important clinical anatomy related to diaphragm • Understand curative and preventive heath care measures • Practice the principles of bioethics.	C2 C1 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA

	• Apply strategic use of A.I in health care • Read a relevant research article	C3		
Perineum & Superficial perineal pouches	• Identify boundaries and divisions of perineum • Discuss formation of perineal pouches • Discuss in detail the contents of superficial perineal pouches in male and female • Discuss important clinical anatomy related to superficial perineal pouches • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 C2 C2 C3 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Deep perineal pouches	• Discuss in detail the contents of deep perineal pouches in male and female • Discuss important clinical anatomy related to deep perineal pouches. • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C3 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Blood supply of pelvis and perineum	• Identify major blood vessels & nerves of pelvis and perineum • Demonstrate anatomical relationships • Describe important clinical anatomy related to blood vessels of pelvis and perineum • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 P C3 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Lymphatic drainage of pelvis and perineum	• Identify major lymphatic vessels of pelvis and perineum • Discuss lymphatic drainage of pelvis and perineum • Discuss important clinical anatomy • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care	C1 C2 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA

	• Read a relevant research article			
Sacral and Coccygeal plexus	• Identify various branches of sacral and coccygeal plexus • Discuss anatomical relations • Describe root values of each branch of plexus and its related applied • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 C2 C2 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Radiology	➢ Describe the radiological appearance of pelvis and perineum on ➢ Interpret normal radiographs ➢ Read ultrasound uterus for gestation/feotus ➢ Describe Hysterosalpangigraphy ➢ Understand curative and preventive heath care measures ➢ Practice the principles of bioethics. ➢ Apply strategic use of A.I in health care ➢ Read a relevant research article	C2 C3 C3 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Cross Sectional Anatomy	• Identify different structures of male pelvis at different levels; S5, coccyx, Symphysis pubis, ischial tuberosity, anal verge • Identify different structures of female pelvis at different levels; S5, coccyx, Symphysis pubis, ischial tuberosity, anal verge • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA

Topics	Learning objectives	Learning Resources
Sacrum	• Identify the bone • Place the bone in anatomical position • Demonstrate anatomical features on bone • Discuss attachments and relations on bone • Discuss important clinical anatomy of bone • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 4, Page 451). • https://www.youtube.com/watch?v=93c9nlxbMUw • https://www.youtube.com/watch?v=PuOE-PI1eps

Bony pelvis	• Identify type of pelvis • Place pelvis in anatomical position • Demonstrate different diameters of each type • Differentiate bony features of each type • Clinical importance of each type • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 327-337). • https://www.youtube.com/watch?v=yK-8ZwLFarc • https://www.youtube.com/watch?v=3v5AsAESg1Q • https://www.youtube.com/watch?v=3Z0XBCyXb3Y
Pelvic Peritoneum and its contents	• Identify visceras present in pelvis • Demonstrate peritoneal reflections on pelvic visceras • Discuss pouches formed by peritoneum • Discuss clinical anatomy of pelvic peritoneum and pelvic visceras • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 338-349). • https://www.youtube.com/watch?v=F2-5tX_CMlQ • https://www.youtube.com/watch?v=3Z0XBCyXb3Y
Pelvic diaphragm	• Identify the muscles forming pelvic diaphragm • Demonstrate the attachments and nerve supply of muscles of pelvic diaphragm • Locate the structures piercing the pelvic diaphragm • Discuss clinical anatomy of pelvic diaphragm • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 338-349). • https://www.youtube.com/watch?v=P3BBAMWm2Eo • https://www.youtube.com/watch?v=3Z0XBCyXb3Y
Male external genitalia	• Identify the anatomical structures of external genitalia • Demonstrate anatomical position of testis • Enlist layers of scrotum with its neurovasculature • Discuss clinical anatomy of scrotum • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 418-419). • https://www.youtube.com/watch?v=ai7MjQvenKs • https://www.youtube.com/watch?v=5eHvZ2gyR1Y • https://www.youtube.com/watch?v=N66sAZH1VA8
Testis	• Identify the structure • Demonstrate anatomical position of testis • Discuss layers and structure of testis • Discuss important clinical anatomy related to testis • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 2, Page 208-215). • https://www.youtube.com/watch?v=ai7MjQvenKs • https://www.youtube.com/watch?v=5eHvZ2gyR1Y • https://www.youtube.com/watch?v=N66sAZH1VA8
Male genital ducts	• Describe the anatomical position of vas deferens, seminal vesicles, ejaculatory ducts on model • Discuss the anatomical relations of vas deferens, seminal vesicles, ejaculatory ducts • Discuss clinical anatomy • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 376 -381). • https://www.youtube.com/watch?v=N66sAZH1VA8 • https://www.youtube.com/watch?v=ai7MjQvenKs

Prostate	• Identify the position of prostate • Demonstrate the anatomical features and relations of prostate • Discuss clinical anatomy • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 376 -381). • https://www.youtube.com/watch?v=93Ayq248u_8 • https://www.youtube.com/watch?v=ai7MjQvenKs
Ovaries	• Identify the site of ovarian fossa • Discuss anatomical relations of ovary • Discuss neurovasculature and hormonal effects on ovaries • Discuss important clinical anatomy of ovary • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 391-392). • https://www.youtube.com/watch?v=AREHaMls9Y4 • https://www.youtube.com/watch?v=2tOtIqSNqbc
Fallopian tubes, Uterus	• Identify the location of structures in pelvis • Demonstrate anatomical relations of these structures • Discuss normal positions of uterus with its ligaments • Discuss its neurovasculature • Discuss important clinical anatomy of fallopian tubes, uterus and uterine tube • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 385-390, 392-399). • https://www.youtube.com/watch?v=AREHaMls9Y4 • https://www.youtube.com/watch?v=PMI-iJwNt3Y • https://www.youtube.com/watch?v=2tOtIqSNqbc
Cervix	• Discuss anatomy of cervix • Describe anatomical relations of cervix • Describe its neurovasculature blood • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 385-390, 392-399). • https://www.youtube.com/watch?v=AREHaMls9Y4 • https://www.youtube.com/watch?v=PMI-iJwNt3Y
Ischio-anal fossa	• Discuss the dimensions, boundaries and recesses • Describe the contents of Ischio anal fossa • Describe pudendal canal and its contents • Discuss important clinical anatomy of structures • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 409-411, 416). • https://www.youtube.com/watch?v=SFq0hA3PwK4 • https://www.youtube.com/watch?v=K4K3a8UnS5M
Urogenital diaphragm	• Discuss the formation of diaphragm • Identify the relations and contents of diaphragm • Discuss organs piercing urogenital diaphragm • Discuss important clinical anatomy related to diaphragm • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 406-408). • https://www.youtube.com/watch?v=edI7knFSu_k • https://www.youtube.com/watch?v=ZaIRPhXavVg

Perineum & Superficial perineal pouches	• Identify boundaries and divisions of perineum • Discuss formation of perineal pouches • Discuss in detail the contents of superficial perineal pouches in male and female • Discuss important clinical anatomy related to superficial perineal pouches • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 402-405). • https://www.youtube.com/watch?v=GegidLpxW9A • https://www.youtube.com/watch?v=OwWk6tqsW8o
Deep perineal pouches	• Discuss in detail the contents of deep perineal pouches in male and female • Discuss important clinical anatomy related to deep perineal pouches. • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 406-409, 414). • https://www.youtube.com/watch?v=q0Ax3rLFc6M • https://www.youtube.com/watch?v=OwWk6tqsW8o
Blood supply of pelvis and perineum	• Identify major blood vessels & nerves of pelvis and perineum • Demonstrate anatomical relationships • Describe important clinical anatomy related to blood vessels of pelvis and perineum • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 350-357, 361). • https://www.youtube.com/watch?v=xYu56Luwdls • https://www.youtube.com/watch?v=o4TplbDDcj8
Lymphatic drainage of pelvis and perineum	• Identify major lymphatic vessels of pelvis and perineum • Discuss lymphatic drainage of pelvis and perineum • Discuss important clinical anatomy • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 400-402). • https://www.youtube.com/watch?v=F-Ba96V0R-c • https://www.youtube.com/watch?v=o4TplbDDcj8
Sacral and Coccygeal plexus	• Identify various branches of sacral and coccygeal plexus • Discuss anatomical relations • Describe root values of each branch of plexus and its related applied • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 357-361). • https://www.youtube.com/watch?v=DZ0IL1tHNxo • https://www.youtube.com/watch?v=f7Zig8eBCqY • https://www.youtube.com/watch?v=JqUleDnXuEI

Practicals				
Topics	**At The End of Demonstration Student Should Be Able To**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Testis, epididymis, ductus deferens	• Identify the histological slide of testis, ductus deferens and epididymis • Illustrate the microscopic picture of testis, ductus deferens and epididymis • Enlist two points of identification of each • Read relevant research article • Use digital library	P C2 C1 C3 C3	Skill Lab	OSPE
Seminal vesicles, prostate	• Identify the histological slide of seminal vesicles and prostate • Illustrate the microscopic picture of seminal vesicles and prostate • Enlist two points of identification of each • Read relevant research article • Use digital library	P C2 C1 C3 C3	Skill Lab	OSPE
Ovary	• Identify the histological slide of ovary • Illustrate the microscopic picture of ovary • Enlist two points of identification • Read relevant research article • Use digital library	P C2 C1 C3 C3	Skill Lab	OSPE
Uterus, uterine tubes	• Identify the histological slide of Uterus and uterine tubes • Illustrate the microscopic picture of Uterus and uterine tubes • Enlist two points of identification of each • Read relevant research article • Use digital library	P C2 C1 C3 C3	Skill Lab	OSPE

Physiology						
Theory						
Topics	**At the end of lecture students should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**		
Physiological anatomy of male reproductivesystem & spermatogenesis	• DescribePhysiological anatomy of male reproductive system • Explainthestepsof spermatogenesis • Identifytheprocessof meiosis • Describethehormonal factors that stimulate spermatogenesis • Describefunctionsof seminal vesicles	C2 C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Function of Male reproductive system (Chapter 23, Page 417) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 466) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Reproduction and Development (Chapter 26 Page 843,847) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Reproductive and hormonal Functions of the Male..Section 14. (Chapter 81, Page 1011)	1. https://teachmephysiology.com/reproductive-system/embryology/ 2. https://www.annualreviews.org/doi/abs/10.1146/annurev.ph.36.030174.001515?journalCode=physiol

Physiological anatomy female reproductive system	• Describe oogenesis & follicular development in ovaries • Discuss female hormonal system	C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 389) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 470) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Reproduction and Development (Chapter 26 Page 852) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Female Physiology before pregnancy and female hormones. Section 14. (Chapter 82, Page 1027)	**1.**https://teachmephysiology.com/reproductive-system/ **2.** https://youtu.be/2_owp8kNMus **3.** https://youtu.be/rYVGjbzmAtg
Semen,capacitation& acrosome reaction	• Explain capacitation • Describe acrosomal reaction • Summarize the abnormalities related to spermatogenesis: ➢ Bilateral orchitis ➢ Effects of temperature ➢ Cryptorchidism	C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Function of Male reproductive system (Chapter 23, Page 420) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 466) • Physiological Basis of Medical Practice by Best & Taylor's.13th	1. https://www.sciencedirect.com/science/article/abs/pii/S0093691X02009536 2. https://www.ibbiotech.com/en/info/sperm-capacitation/

					Edition. Fertilization, Pregnancy and Lactation. (Chapter 59, Page 977) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Reproductive and hormonal Functions of the Male..Section 14. (Chapter 81, Page 1014)	
MonthlyOvarian Cycle,ovulation	• Describe gonadotropic hormones & their effects on ovaries • Explain follicular phase of ovarian cycle • Explain ovulation hormones • Explain LH surge • Describe luteinizing function of Luteinizing	C2 C2 C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ OSPE VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 399) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.The Female Reproductive System (Chapter 58, Page 959) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female hormones.Section 14.(Chapter 82, Page 1028)	1. https://courses.lumenlearning.com/wm-biology2/chapter/the-ovarian-cycle-the-menstrual-cycle-and-menopause/ 2. https://youtu.be/V9a2AQSJIMc **(Dr Najeeb Lectures)**
Male sex hormones, Abnormalitiesofmale sexual function and spermatogenesis system	• Describe male sex hormone's (secretion, metabolism, chemistry, degradation and	C2 C2 C2	LGIS	MCQ SEQ SAQ	• Ganong's Review of Medical Physiology.25TH Edition. Function of Male reproductive	1. https://youtu.be/VS72mR5aMyo**(Male reproductive system)** 2. https://www.annualreviews.org/doi/abs/10.1146/annur

	excretion) • Explain functions of testosterone in detail • Describe: ➢ Hypogonadism in males ➢ Interstitial Leydig cell tumors ➢ Erectiledysfunctionin males			EMQ VIVA	system (Chapter 23, Page 421-426) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 467) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Reproductive and hormonal Functions of the Male..Section 14. (Chapter 81, Page 101)	ev.ph.36.030174.001515?journalCode=physiol
MonthlyEndometrial Cycle and Menstruation	• Explain monthly endometrial cycle • Explain menstruation & physiological changes in endometrium	C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 399) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 475) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Reproduction and Development (Chapter 26 Page 853) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female	1. https://courses.lumenlearning.com/wm-biology2/chapter/the-ovarian-cycle-the-menstrual-cycle-and-menopause/

					hormones.Section 14.(Chapter 82, Page 1036)	
Responseofmother's body to pregnancy, Parturition	• Explain: ➢ Anterior pituitarygland secretion ➢ Increased corticosteroid secretion ➢ Increased thyroidgland secretion ➢ Increasedparathyroid gland secretion • Explainincreased uterine excitability near term • Explainhormonalfactors increasing uterine contractility • Discuss mechanical factorsincreasinguterine contractility • Explainthephysiological mechanism of labour	C2 C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 410,413) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 478,479) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Reproduction and Development (Chapter 26 Page 863) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Fertilization, Pregnancy and Lactation. (Chapter 59, Page 994) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Pregnancy and Lactation.Section 14.(Chapter 82, Page 1045,1052)	1. https://teachmephysiology.com/reproductive-system/ 2. https://zerotofinals.com/obgyn/reproductivesystem/physiologyinpregnancy/ 3. https://www.sciencedirect.com/science/article/abs/pii/S001502822200485X

Female sex hormones (estrogen and progesterone)	• Explain: ➢ Functions of estradiol & progesterone ➢ Chemistry of sex hormones ➢ Synthesis of estrogen & progesterone	C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 404) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 472) • Textbook of Medical Physiology	1. https://youtu.be/hW4XpW7LfIM 2. https://teachmephysiology.com/endocrine-system/hypothalamus-pituitary/anterior-pituitary/hypothalamic-pituitary-gonadal-axis/
Lactation, Milk composition,breast feeding	• Explaindevelopmento f breasts • Explainhormonalcont rol of breast development • Describe the role of prolactininlactation • Explain: ➢ Milkletdown reflex ➢ Milk composition ➢ Metabolicdrainin mother caused by lactation	C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.26TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 414) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female hormones.Section 14.(Chapter 82, Page 1056-1059)	1. https://rupress.org/jgp/article/5/4/441/30794/THE-RATE-OF-DECLINE-OF-MILK-SECRETION-WITH-THE 2. https://www.annualreviews.org/doi/abs/10.1146/annurev.nutr.20.1.249
Puberty, menarche, menopause, postmenopausal symptoms & anovulatory cycles, Abnormalities of secretion by ovaries	• Discussthephysiology of: ➢Puberty ➢Menarche ➢ Menopause Explainhypogona	C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ OSPE VIVA	• Ganong's Review of Medical Physiology.26TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 396,398,408)	1. https://journals.lww.com/clinicalobgyn/Citation/1977/09000/PUBERTY_AND_MENARCHE.11.aspx 2. https://www.glowm.com/section-view/heading/Physiology%

	dism • Describeamenorrhea • Describehypersecretion by ovaries				• Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female hormones.Section 14.(Chapter 82, Page 1040) •	20of%20Puberty/item/285#.ZCKTtXZBzIU
Fertilization of ovum, transport, implantation Functions of placenta	• Describe: ➢ Entry of ovum into fallopian tube ➢ Transport of fertilized ovum ➢ Implantation of blastocyst ➢ Early nutrition of embryo • Describe physiological anatomy of placenta • Explain placental permeability • Explain diffusion of gases & excretion of waste products	C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	❖ Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 410) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Fertilization, Pregnancy and Lactation. (Chapter 59, Page 975) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Pregnancy and Lactation .Section 14. (Chapter 83, Page 1045)	1. https://teachmephysiology.com/reproductive-system/ 2. https://my.clevelandclinic.org/health/articles/11585-conception

Growth &functional developmentoffetus, Adjustmentsofinfant to extrauterine life, Growth & development in child	• Describedevelopmentof organ system in fetus • Explainfetalmetabolism	C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Physiology of Pregnancy (Chapter 60, Page 998) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Fetal and Neonatal Physiology. Section 14. (Chapter 84 , Page 1061-1065)	**1.** https://youtu.be/rYVGjbzmAtg **2.** https://www.msdmanuals.com/home/women-s-health-issues/normal-pregnancy/stages-of-development-of-the-fetus
Hormonal factors in pregnancy, Special functionalproblemsin neonate. Prematurity and its problems	• ExplainfunctinsofB - HCG • Describesecretion of estrogens by the placenta • Summarizefunction of estrogen in pregnancy • Summarizefunction of progesterone in pregnancy • Explainonset of breathing • Describethecauseof breathing at birth • Explain delayed / abnormalbreathing at birth • Describechangesto hypoxia	C2 C2 C2 C2 C2 C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ OSPE VIVA	Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Physiology of Pregnancy (Chapter 60, Page 998) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Fetal and Neonatal Physiology. Section 14. (Chapter 84 , Page 1066-1070)	**1.** https://teachmephysiology.com/reproductive-system/ **2.** https://patient.info/pregnancy/premature-babies

Topics	At the end of discussion students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Infertility	• Correlate basic knowledge with clinical application	C3	CBL	MCQ SEQ VIVA
Menorrhagia	• Correlate basic knowledge with clinical application	C3	CBL	MCQ SEQ VIVA
Neonatal problems of Prematurity	• Correlate basic knowledge with clinical application	C3	SGD	MCQ SEQ VIVA

Topics Of SDL	Learning Objectives	Learning resources
Fertilization of ovum, transport, implantation, Functions of placenta	• Maturation and fertilization of ovum • Transport and Implantation • Early nutrition of the Embryo • Functions of Placenta	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 410) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Fertilization, Pregnancy and Lactation. (Chapter 59, Page 975) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. ▪ Pregnancy and Lactation. Section 14. (Chapter 83, Page 1045) ○ https://teachmephysiology.com/reproductive- system/ ○ https://my.clevelandclinic.org/health/articles/11585- conception
Growth &functional development of fetus, Adjustments of infant to extrauterine life, Growth & development in child	• Growth & functional development of fetus • Fetal Metabolism • Changes in Fetal circulation at Birth Adjustment of the Infant to the Extrauterine life	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Physiology of Pregnancy (Chapter 60, Page 998) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Fetal and Neonatal Physiology. Section 14. (Chapter 84, Page 1061-1065) ○ https://youtu.be/rYVGjbzmAtg ○ https://www.msdmanuals.com/home/women-s- health-issues/normal-pregnancy/stages-of-development- of-the-fetus

Hormonal factors in pregnancy, Special functional problems in neonate. Prematurity and its problems.	• Special functional problems in neonate • Prematurity • Immature development of the premature Infant • Instability of Homeostasis in Premature Infant Instability of body temperature in Infants	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Physiology of Pregnancy (Chapter 60, Page 998) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Fetal and Neonatal Physiology. Section 14. (Chapter 84, Page 1066-1070) ○ https://teachmephysiology.com/reproductive- system/ ○ https://patient.info/pregnancy/premature-babies

Practicals				
Practicals	**At The End Of This Skill Lab, Student Should Be Able To Illustrate:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Examination of 7th Cranial nerve	• Principle • Procedure • Clinical correlation • Overview of Cranial nerves • Performance of student	C1 P3 C3 C1 P3	Skill lab	OSPE
Pregnancy Test	• Apparatus identification • Principle • Procedure • Precautions • Recall types of pregnancy test • Performance of student	P3/A3 C1 P3 C1 C1 P3	Skill lab	OSPE
Examination of 3rd,4th,6th cranial nerves	• Principle • Procedure • Clinical correlation of reflexes • Overview of cranial nerves	C1 P3 C3 C1	Skill lab	OSPE

Biochemistry				
Theory				
Topics	**At the end of lecture students should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Male gonadal hormones	• Synthesis mechanism of action and functions of male gonadal hormones	C2	LGIS	MCQ SEQ VIVA
Female gonadal hormones	• Synthesis mechanism of action and functions of female gonadal hormones	C2	LGIS	MCQ SEQ VIVA
Digestion of nucleic acid and purine synthesis	• Explain digestion of nucleoprotein • Describe purine biosynthesis (Denovosynthesis and salvage pathway)	C2 C2	LGIS	MCQ SEQ VIVA
Purine catabolism and related disorders	• Explain purine catabolism • Discuss related disorders	C2 C3	LGIS	MCQ SEQ VIVA
Pyrimidine metabolism	• Explain Pyrimidine catabolism • Related disorders	C2 C3	LGIS	MCQ SEQ VIVA
Regulation of gene expression	• Explain the regulation of gene expression	C2	LGIS	MCQ SEQ VIVA

Topics	At the end of tutorial students should be able to	Learning Domains	Teaching Strategy	Assessment Tools
Purine metabolism	• Purine denovo synthesis and describe salvage pathway • Read a relevant research article • Use digital library	C2 C3 C3	SGD	MCQ SEQ VIVA
Male female sex hormones	• Synthesis, mechanism of action and functions of male female gonadal hormones • Read a relevant research article • Use digital library	C2 C3 C3	SGD	MCQ SEQ VIVA

Topics Of SDL	Learning Objectives	Learning resources
Male gonadal hormones	• Synthesis mechanism of action and functions of male gonadal hormones	• Text Book of Harper,32 edition (chapter 41 page – 487-488) • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-function • https://www.youtube.com/watch?v=A5u_TY1A0t8 • Use digital library • https://www.ncbi.nlm.nih.gov/books/NBK29/
Female gonadal hormones	• Synthesis mechanism of action and functions of female gonadal hormones	• Text Book of Harper,32 edition (chapter 41 page – 487-488) • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-functionn • https://www.youtube.com/watch?v=A5u_TY1A0t8 • Use digital library • https://www.ncbi.nlm.nih.gov/books/NBK29/
Introduction to nucleic acid and purine synthesis	• Digestion of nucleoprotein • Understand whole purine synthesis (Denovo and salvage pathway)	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 22, page 292-295) • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/purine-synthesis • https://www.youtube.com/watch?v=VXWyWzbigrg • Use digital library • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3243375/

Purine catabolism	• Explain purine catabolism • Discuss related disorder	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 22, page 298-301) • https://www.sciencedirect.com/topics/medicine-and-dentistry/purine-metabolism-disorder • https://www.youtube.com/watch?v=e2KFVvI8Akk • Use digital library • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4215161/
Pyrimidine metabolism	• Explain Pyrimidine catabolism and related disorders	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 22, page 302-304) • https://www.cliffsnotes.com/study-guides/biology/biochemistry-ii/purines-and-pyrimidines/pyrimidine-metabolism • https://www.youtube.com/watch?v=n7Uec8Jtr4E • Use digital library • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC378357/
Regulation of gene expression	• Explain the regulation of gene expression	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 22, page 465-477) • https://www.healio.com/hematology-oncology/learn-genomics/genomics-primer/regulation-of-gene-expression-in-eukaryotes • https://www.youtube.com/watch?v=J9jhg90A7Lw • Use digital library • https://www.nature.com/scitable/topicpage/regulation-of-transcription-and-gene-expression-in-1086/

Practicals				
Topics	**At the End Of Practical Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Estimation of uric acid	Perform estimation of uric acid by spectrophometer	P	Skill Lab	OSPE
Estimation of Cholestrol	Estimation of cholesterol by spectrophometer	P	Skill Lab	OSPE
Milk analysis	Protein, carbohydrates, lipid detection	P	Skill Lab	OSPE

Basic and Clinical Sciences (Vertical Integration)

Anatomy, Physiology & Biochemistry			
Theory			
Subjects	**Topics**	**At the end of the session the student should be able to**	**Learning Domains**
Anatomy	• Prostatic Hyperplasia	Apply basic knowledge of subject to study clinical case.	C3
	• Ovarian Cyst	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Infertility	Apply basic knowledge of subject to study clinical case.	C3
	• Menorrhagia	Apply basic knowledge of subject to study clinical case.	C3
	• Neonatal problems of Prematurity	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Gout	Apply basic knowledge of subject to study clinical case.	C3
Subject	**Topic**	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**
PBL	• Pregnancy	Apply basic knowledge of subject to study clinical case.	C3
	• PCOS	Apply basic knowledge of subject to study clinical case.	C3

Pathology				
Theory				
Topics	**At the end of lecture students of should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Sexually transmitted diseases	• Enumerate the STDs • Describe the pathogenesis of syphilis and gonorrhea	C1 C2	LGIS	MCQ's

BPH/Prostatitis	• Define benign prostatic hyperplasia • Briefly discuss the morphological features of BPH & prostatitis	C1 C2	LGIS	MCQ's
Polycystic ovaries	• Define the polycystic ovaries Describe the pathophysiology of polycystic ovaries	C1 C2	LGIS	MCQ's

Community Medicine				
Theory				
Topics	**At the end of lecture students of should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Sexually Transmitted Diseases				
Definition	• Define STD and its various factors	C1	LGIS	MCQ,
Problem statement	• Discuss the problem statement of STD worldwide.	C2		
Types of STDs	• Enumerate different types of STDs	C1		
Host factors related to STDs	• Discuss all host factors responsible for STDs	C2		
Demographic factors	• Discuss in detail role of demographic factors in STD spread.	C2		
Social factors role	• Role of social factors in STDs	C2		
Intervention strategies.	• Role of intervene on strategies and planning in control of STDs	C2		
AIDS	• Discuss In detail the definition of AIDS	C2	LGIS	MCQ
Problem statement of AIDS and HIV	• Discuss in detail the problem statement of HIV n AIDs. • Its impact on underdeveloped eloped world. • understanding the gravity of the situation.	C2		
Risk factors	• Discuss the key risk factors in HIV responsible.	C2		
	• Explain agent details	C2		

Agent and other biological determinants	• Describe the effect of agent stability and its biological determinants			
Host, reservoir of infection and transmission details	• Detailed discussion on the host factors, reservoir of infection and transmission factors responsible.	C2		
Symtomology, treatment and prevention of AIDs and HIV	• Discuss in detail the symptomology, treatment and prevention of AIDS and HIV .	C2		

Surgery				
Theory				
Topics	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Male hypogonadism	• Discuss pathophysiology, signs and symptoms of male hypogonadism • Describe altered hormonal levels in male hypogonadism • Outline treatment plan for breast tumors	C2 C2 C1	LGIS	MCQ
Undescended Testes	• Define UDT • Define Retractile Testes • Define Ectopic Testes • Causes of UDT/Ectopic Testes • Differentiate between UDT and Retractile Testes • Management plan	C1 C1 C1 C2 C2 C2	LGIS	MCQ
Acute Scrotum	• Enumerate the causes of acute scrotum • Describe Torsion, orchitis, epididymorchitisetc • Differentiate between Torsion and Epididymorchitis • Describe the approach towards diagnosis of acute scrotum	C1 C2 C2 C2	LGIS	MCQ

Obstetrics & Gynaecology				
Theory				
Topics	**At the end of lecture students should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tool**
Menstrual irregularity due to anovulation	• Understand ovarian and endometrial changes during normal menstrual cycle • Describe the process of ovulation under the effect of LH • Describe causes of anovulation • Describe effects of anovulation • Enumerate the tests for confirmation of ovulation	C2 C2 C2 C2 C1	LGIS	MCQs

List of Reproduction Module Vertical Courses Lectures						
Sr. #	**Date/Day**	**Week**	**Department**	**Time**	**Topic Of Lectures**	**Facilitators Names And Contact Numbers**
1.	30-05-2024 Thursday	1st	Gynae And Obs	11:20am – 12:10 Pm	Early Pregnancy Complications	
2.	31-05-2024 Friday	1st	Pharmacology	11:00am – 12:00pm	Hormonal Contraceptives	
3.	03-06-2024 Monday	2nd	Surgery	11:20am – 12:10pm	Male hypogonadism Acute Scrotum	Dr. Mariyam (Even) Dr. Faraz (Odd
4.	04-06-2024 Tuesday	2nd	Pathology	11:20am – 12:10pm	Sexually transmitted diseases BPH/Prostatitis	Dr Abid Hassan (Even) Dr Rabbiya Khalid (Odd)
5.	05-06-2024 Wednesday	2nd	Pathology	11:20am – 12:10pm	BPH/ Prostatitis Sexually transmitted diseases	Dr Abid Hassan (Odd) Dr Rabbiya Khalid (Even)
6.	06-06-2024 Thursday	2nd	Surgery	11:20am – 12:10pm	Undescended Testes	Dr. Rameez (Even) Dr. Ameen (Odd)
7.	10-06-2024 Monday	3rd	Pathology	10:30am – 11:20am	Polycystic ovaries	Dr Tayaba Ali (Even) Dr. Aasiya Niazi (Odd)

8.	11-06-2024 Tuesday	3rd	Community Medicine	10:30am – 11:20am	Sexually Transmitted Diseases (STDs) Acquired immunodeficiency syndromes (AIDs)	Dr. Rizwan (Even) Dr. Asif (Odd)
9.	11-06-2024 Tuesday	3rd	Gynae And Obs	11:20am – 12:10pm	Menstrual irregularities	Dr Shama Bashir (Even) Dr. Saira Ahmed (Odd)
10.	12-06-2024 Wednesday	3rd	Community Medicine	11:20am – 12:10pm	Acquired immunodeficiency syndromes (AIDs) Sexually Transmitted Diseases (STDs)	Dr. Asif (Even) Dr. Rizwan (Odd)
11.	15-06-2024 Saturday	3rd	Gynae And Obs	10:30am – 11:20am	Subfertility	

Spirally Integrated Courses / General Education Cluster (GEC) Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Pak Studies/Islamiyat Biomedical (Club Activity)**
    - **Family Medicine**
    - **Behavioral Sciences**
    - **Early Clinical Exposure (ECE)**

The Holy Quran Translation Lecture				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Imaniat-5	• Quate Example of Shrik from Surrah Ul Hajj	C1	LGIS	MCQs
Akhlaqiat-1	• Define Truth and Righteousness	C1	LGIS	MCQs
	• Describe Truth and Righteousness with help of Quranic Verses	C2	LGIS	MCQs

Pak Studies/Islamiyat				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Kaamyab Logu Ki Sifaat	• Describe Qualities of Successful People with the help of Quranic Verses and Sunnah	C2	LGIS	MCQs
Nehru report, Quaid e Azam k 14 nukaat	• Descirbe Nehru Report and fourteen points of Quaid e Azam	C2	LGIS	MCQs

Family Medicine				
Theory				
Topic	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
AIDS	• Discuss pathophysiology, signs and symptoms of patients with HIV • Discuss the diagnostic criteria • Discuss the complications • Discuss the management of disease and its complications.	C1 C2 C2 C2	LGIS	MCQs

Behavioural Sciences				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Emotion	• To define emotions. • To explain the neuroanatomy and neurochemistry of emotion • To handle situations with heightened emotions encountered in • daily life and clinical practice	C3	LGIS	MCQs

Biomedical (Club Activity)				
Theory				
Topics	**At the end of session students should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Ethical dilemmas in healthcare practice involving breach in principle of autonomy	• Analyze ethical dilemmas in healthcare practice involving breach in principle of autonomy. • Explain what procedures adopted to maintain patient autonomy. • Identify situations in which doctor may have to take decisions in the best interest of the patients	C3 C2 C1	Short video demonstration on violation of Ethical principle of autonomy from suit CBEC Video resources	• Assignment based assessment involving real life case scenarios under aggregate Marks. (Internal Assessment) • Assignment to be uploaded on LMS
Ethical dilemmas in healthcare practice involving breach in principle of	• Analyze ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence. • Explain what procedures adopted to maintain the principle of beneficence and non-maleficence in challenging situations. • Identify situations in which a doctor may	C3 C2 C1	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources Students deliberations and reflections	• Assignment based assessment involving real life case scenarios under aggregate Marks (Internal Assessment) • Assignment to be uploaded on LMS

beneficence and non-maleficence	have to take decisions in the best interests of the patient considering the principle of beneficence and non-maleficence		Reflective writing	
Ethical dilemmas practice involving breach in principle of justice	• Analyze ethical dilemmas in healthcare practice involving breach in principle of justice. • Explain what procedures adopted to maintain the principle of justice in challenging situations. • Identify situations in which a doctor may have to take decisions in the best interests of the patient considering the principle of justice	C3 C2 C1	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources Students deliberations and reflections Reflective writing	• Assignment based assessment involving real life case scenarios under aggregate Marks (Internal Assessment) • Assignment to be uploaded on LMS

List of Reproduction Module Spiral Courses Lectures						
Sr. #	**Date/Day**	**Week**	**Department**	**Time**	**Topic Of Lectures**	**Facilitators Names And Contact Numbers**
1.	31-05-2024 Friday	1st	Quran Translation - I	08:00am – 09:00 Am	Imaniat-5/ Akhlaqiat-1	Mufti Naeem (0300-5580299) Dr. Fahd (0300-5156800)
2.	31-05-2024 Friday	1st	Pak Studies/Islamiyat	09:00am – 10:00am	Kaamyab Logu Ki Sifaat / Nehru Report, Quaid E Azam K 14 Nukaat	Mufti Naeem (0300-5580299) Qari Aman (0346-7598528)
3.	07-06-2024 Friday	2nd	Biomedical (Club Activity)	10:00am – 12:00pm	Ethical Dilemmas Involving Breech In Autonomy	
4.	10-06-2024 Monday	3rd	Behavioural Sciences	11:20am – 12:10pm	Emotion	
5.	12-06-2024 Wednesday	3rd	Biomedical Ethics	10:30am – 11:20am	Ethical Dilemmas In Healthcare Practice Involving Breach In Principle Of Beneficence And Non-Maleficence	

6.	13-06-2024 Thursday	3rd	Biomedical Ethics	10:30am – 11:20am	Ethical dilemmas practice involving breach in principle of justice	
7.	14-06-2024 Friday	3rd	Quran Translation – II	08:00am – 09:00am	Imaniat-6 Akhlaqiat-2	Dr. Fahd Anwar (Odd) Mufti Naeem Sherazi (Even
8.	14-06-2024 Friday	3rd	Pak Studies/Islamiyat	09:00am – 10:00am	Nehru Report, Quaid E Azam K 14 Nukaat/ Kaamyab Logu Ki Sifaat	Qari Aman (0346-7598528) Mufti Naeem (0300-5580299)
9.	15-06-2024 Saturday	3rd	Family Medicine	11:20am – 12:10pm	AIDS	Dr Shaheer(Even) Dr Shabaz Ashraf (Odd)

=

Block-II
Module No. 4 - Central Nervous System

Duration 6 Weeks

CNS Module Team

Module Name	:	CNS Module
Duration of module	:	06 Weeks
Coordinator	:	Dr. Arsalan Manzoor Mughal
Co-coordinator	:	Dr. Gaiti Ara
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Arsalan Manzoor Mughal (Associate Professor of Anatomy)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Gaiti Aara ((APWMO of Anatomy)
4.	Co-Coordinator	Dr. Rahat (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Shazia (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

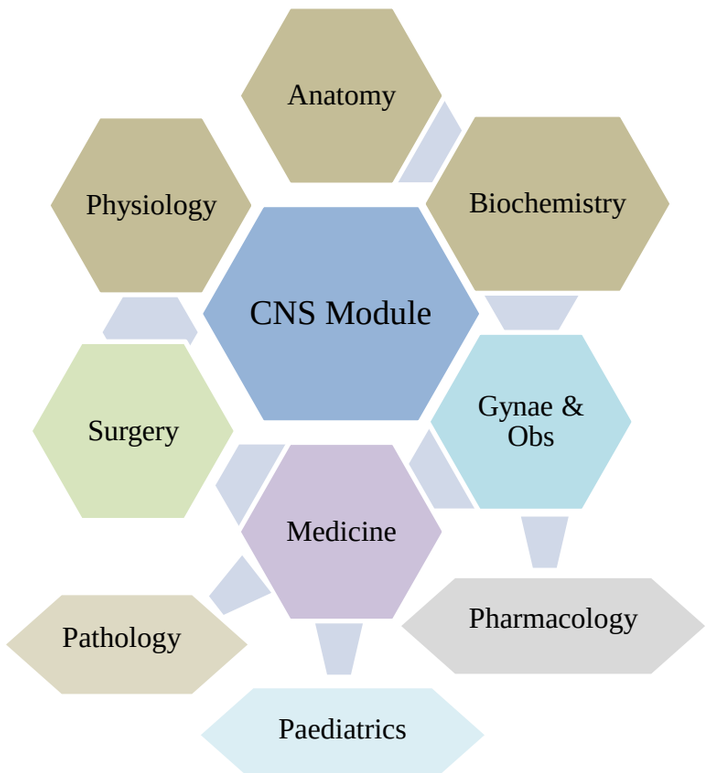
Themes				
Subjects	**Embryology**	**Histology**	**General Anatomy**	**Gross Anatomy**
• Anatomy	• Early CNS Development • Spinal Cord • Hindbrain & Cerebellum • Midbrain • Forebrain • Peripheral Nervous System	• Ganglia • Peripheral Nerves • Spinal Cord • Cerebellum • Cerebrum	• General Anatomy of Nervous System • General Anatomy of Autonomic Nervous System.	• Anterior, Middle & Posterior cranial fossae • Meninges, Dural venous sinuses, and intracranial hemorrhages • Spinal cord & Tracts • Brain stem (Medulla oblongata, Pons, cerebellum & Midbrain) • Diencephalon • Cerebrum • CSF and Ventricular System • Cranial nerves • Basal ganglia • Limbic system & Reticular formation • Blood Supply of Brain • Radiological Imaging of CNS • Cross Sectional Anatomy of CNS
• Biochemistry	• Fatty acid metabolism • Cholesterol Metabolism • Ketone bodies metabolism • Lipoproteins and Phospholipids • Fatty Liver and hyper Lipidemias. • Glycerophospholipid & Sphimgo phospholipid			
• Physiology	• Organization of nervous system, Mechanism of synaptic transmission • Classification of sensory receptors, Properties of sensory receptors • Properties of synaptic transmission • Physiology of pain, Dual pathway for transmission of pain, Analgesia System and Thermal sensations • Sensory pathways for transmitting somatic signals • Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function • Somatosensory cortex & lesions of Somatosensory cortex • Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation • CSF, Blood brain barrier, Blood CSF Barrier, Lumber puncture • Concept of Association areas, • Concept of Dominant and non-dominant cerebral hemispheres			

	• Limbic system, • Functions of hypothalamus • Speech and aphasia • Learning and memory • Reticular activating system and sleep • EEG and epilepsy • Introduction to motor nervous system & Reflex action, Conditioned reflexes & Properties of reflex action, Control of spinal cord reflexes by higher centers • Introduction to cerebellum, Neuronal circuits of cerebellum, and its motor functions • Muscle spindle & Golgi tendon organ, Role of muscle spindle and Golgi tendon organ in voluntary motor activity
Spiral Courses	
• The Holy Quran Translation	• Imaniyaat-5 • Imaniyaat-6 • Momalat-I • Momalat-II
• Pak Studies / Islammiyat	• Musawat • Tehreek-e-Pakistan (1940-1947) • Khwateen k hakook • Qayam e Pakistan, Ibtidai Mushkilaat
• Bioethics & Professionalism	• Ethical dilemmas in healthcare practice involving breach in principle of autonomy • Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence • Ethical dilemmas practice involving breach in principle of justice
• Radiology & Artificial Intelligence	• Skull radiograph • CT Scan & MRI
• Family Medicine	• Approach to a patient with headache
• Behavioral Sciences	• Emotions • Memory
Vertical Integration	
• Pharmacology	• Introduction to CNS
• Pathology	• Patterns of injury in nervous system • Meningitis
• Pediatrics	• Meningitis • Cerebral palsy, Polio
• Surgery	• Spinal injury and head injury • Management of hydrocephalus

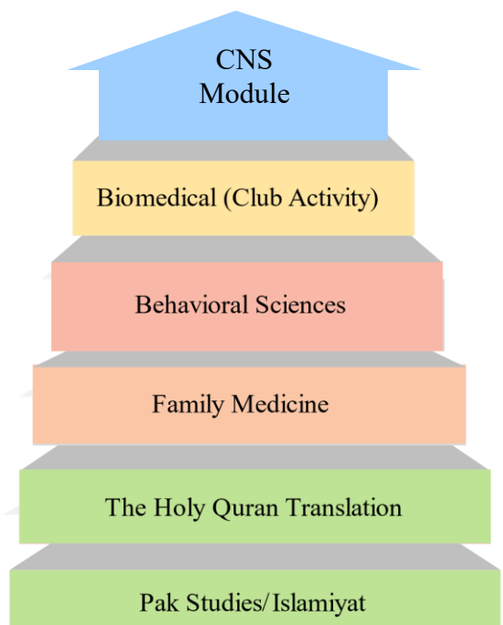
	• Brain abscess • Polytrauma patient
• Medicine	• Spinal cord and peripheral nervous system • Encephalitis • Cerebellar disorders • Epilepsy and other convulsive disorders • Stroke
• Gynecology & Obs	• Seizures during pregnancy (eclampsia/ epilepsy)
Early Clinical Exposure (ECE)	
• Medicine	• Cases of stroke • Paraplegia • Vegetative state
• Surgery/ Neurosurgery	• Head injury. • Nerve injuries
• Radiology	• CT scan • Brain • Normal • Stroke • Hemorrhage • Infarction Hydrocephalus • Brain atrophy • Brain Edema • Skull/ spine Fractures • MRI Brain/ Spine
Clinical Themes	
• Stroke: Types, Pathophysiology, and Acute Management • Epilepsy: Mechanisms, Classification, and Treatment • Pathophysiology of Parkinson's Disease and its Clinical Features • Dementia: Causes (e.g., Alzheimer's) and Diagnosis • Spinal Cord Injuries: Levels and Clinical Outcomes • Headaches: Differentiating Migraine, Cluster, and Tension Headaches • Meningitis: Diagnosis and Management • Peripheral Neuropathy: Causes and Clinical Features • Multiple Sclerosis: Pathogenesis and Symptoms • Raised Intracranial Pressure: Causes and Management	

Implementation of Terms of Reference (TORS)
• Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are predefined as per the guidelines of PMDC and to be strictly followed. • The hours mentioned within each module are the mandatory minimum required. • The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these. However, the level of cognition can be kept at a higher level. • The Table of Specifications provided will be used for the three papers of the first professional examination. • The same table of specifications should be used for the respective block exams for internal assessment. • The criteria defined for continuous internal assessment is to be followed for each module and block respectively

Integration of Disciplines in CNS Module



Spiral / General Education Cluster Courses



Module No. 4 – CNS

Rationale: The human nervous system is the most complex and versatile achievement of the process of evolution. The nervous system of all animals functions to detect changes in the external and internal environment and to bring about appropriate responses in the muscles, organs and glands.

The anatomical, physiological, biochemical and molecular foundation of some of these aspects of neural function are well understood, while others continue to occupy the professional lives of many thousands of researchers in both the basic and clinical sciences.

The nervous system is often damaged by inherited or developmental abnormalities by disease processes and by traumatic injury. The prevention, diagnosis and management of neurological disorders are therefore of immense socioeconomic importance.

This module is expected to build the student's basic knowledge about the normal structure, organization, functions and development of nervous system. This knowledge, skills and attitudes acquired will serve as a fabric on which the student will weave further knowledge about the etiology, pathology and pathogenesis of diseases of nervous system and the principles of their management.

Module Outcomes

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

Knowledge

- Describe the development, structure, functions and biochemical processes of the nervous system.
- Briefly describe the injuries and diseases of the nervous system such as Alzheimer's disease, Parkinson's Disease, etc.
- Classify the main drug groups actin on the nervous system.
- Identify the medical conditions related to nervous system such as stroke, cerebellar disorders, meningitis etc.
- Identify the surgical conditions related to the nervous system such as head injury brain tumors and abscesses.
- Identify obstetrical conditions related to nervous system such as preeclampsia.
- Identify pediatric conditions related to nervous system such as meningitis, cerebral palsy and polio.
- Identify parts of the CNS on radiographs CT scans and MRIs.
- Identify ENT and ophthalmological conditions such as acoustic neuroma and strabismus.
- Describe aspects of behavioral sciences such as Emotions and Memory.
- Used technology based Medical Education including Artificial Intelligence.

- Appreciate concept and importance of Biomedical Ethics, & Research.

Skills

- Demonstrate dissection and identification of various parts of the nervous system.
- Identify, draw and label histological slides of the nervous system.
- Perform examination of sensory system, motor system, special senses and cranial nerves.
- Demonstrate effective skill for performing estimation of cholesterol, triglycerides and HDL.
- 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 6 weeks duration. Instructional strategies are given in the time table and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

s

Syllabus of Central Nervous System (Module No. 4)

Anatomy				
Theory				
Topic	**At The End Of The Session Student Should Be Able To**	**C/P/A**	**Teaching Strategy**	**Assessment Tool**
General Anatomy Nervous System	• Discuss the major divisions of nervous system	C2	LGIS	MCQs SAQs SEQs VIVA
	• Differentiate between neurons and neuroglia	C2		
	• List the neuroglia and their functions	C1		
	• Describe myelination of nerve fibers	C2		
	• Describe the structure of a peripheral nerve and reflex action	C2		
	• Describe degeneration and regeneration of nerves	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology Early development of Skull & Central Nervous System	• Describe the process of development of neurocranium and viscerocranium	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe formation of neural tube, neuropores and their closure	C2		
	• Describe histogenesis and Cytodifferentiation within the neural tube.	C2		
	• Describe the brain flexures and their derivatives	C2		
	• Describe role of neuroblasts forming efferent and afferent rows.	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology Development of spinal cord	• Describe the significance of ventricular, mantle and marginal layers of developing spinal cord.	C2	LGIS	MCQs SAQs SEQs VIVA
	• Enumerate derivatives of alar and basal plates in developing spinal cord.	C1		
	• Describe the process of myelination of nerve fibers.	C2		
	• Describe role of neural crest cells in development of spinal ganglia.	C2		
	• Explain positional changes of spinal cord.	C2		
	• Discuss congenital anomalies due to neural tube defects and abnormal histogenesis.	C3		

	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
General Anatomy Autonomic Nervous System	• Enlist the components of peripheral and autonomic system.	C1	LGIS	MCQs SAQs SEQs VIVA
	• Tabulate differences between sympathetic and parasympathetic nervous systems	C2		
	• Describe effects of sympathetic and parasympathetic nervous systems on various parts of the body	C2		
	• Discuss the anatomical basis of autonomic injuries such as Horner's syndrome, Urinary bladder dysfunction, rectal distention, Erectile dysfunction are argyll Robertson pupil.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Histology Meninges, Choroid Plexus, Peripheral Nervous system and ganglia	• Describe the histological structure of meninges and choroid plexus	C2	LGIS	MCQs SAQs SEQs VIVA
	• Discuss the histological structure of Myelinated and unmyelinated nerve fibers	C2		
	• Discuss the histological structure of sensory and autonomic ganglia	C2		
	• Discuss the principles of neuroplasticity and regeneration	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology Development of Rhombencephalon	• Describe the development of Myelencephalon.	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe the arrangement of neuroblasts in metencephalon	C2		
	• Describe the development of metencephalon.	C2		
	• Describe the arrangement of neuroblasts in metencephalon	C2		
	• Describe the development of cerebellum	C2		
	• Correlate with the clinical conditions & cross sections.	C3		

	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Histology Spinal Cord and Cerebellum	• Describe the histological structure of spinal cord	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe the histological structure of cerebellum	C2		
	• Discuss cells in each layer along with its histological morphology	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology Development Mesencephalon and Prosencephalon	• Describe the development of mesencephalon	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe the arrangement of neuroblasts in mesencephalon	C2		
	• Describe the development of mesencephalon	C2		
	• Describe the arrangement of neuroblasts in mesencephalon	C2		
	• Describe the development of pituitary gland	C2		
	• Discuss the anatomical basis of pharyngeal hypophysis and craniopharyngiomas	C3		
	• Discuss the anatomical basis of birth defects such as encephalocele, microencephaly, microcephaly, Chiari malformation.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Histology Cerebrum	• Describe the histological structure of cerebrum	C2	LGIS	MCQs SAQs SEQs VIVA
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
	• Describe the development cranial nerves	C2		
	• Describe the development of spinal nerves	C2		

Embryology Development of peripheral and autonomic nervous system	• Describe the development of sympathetic nervous system	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe the development of parasympathetic nervous system	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology Development of Cranium	• Describe the development of different steps of cartilaginous and membranous viscero cranium and neuro-cranium.	C2	LGIS	MCQs SAQs SEQs VIVA
	• Discuss the postnatal growth of the cranium	C2		
	• Correlate with the clinical conditions.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		

Topic	At The End Of Lecture Students Should Be Able To	C/P/A	Teaching Strategy	Assessment Tool
Anterior & Middle cranial fossae	• Identify and describe the boundaries of anterior and middle cranial fossae	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Discuss anatomical features present in anterior and middle cranial fossa	C2		
	• Locate foramina and describe the structures passing through them	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Posterior cranial fossa	• Identify and describe the boundaries of posterior cranial fossa	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Discuss anatomical features present in posterior cranial fossa	C2		
	• Locate foramina and describe the structures passing through them	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		

Meninges, Dural venous sinuses, and intracranial hemorrhages	• Identify and describe meninges and their reflections on specimens and models	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Describe the attachments and relations of dural venous sinuses of brain with the help of models and specimens	C2		
	• Discuss the clinical importance of facial vein connection with dural venous sinuses.	C3		
	• Differentiate between various types of intracranial hemorrhages	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
	• Differentiate between different types of headaches	C3		
Spinal cord	• Describe the internal and external structure of spinal cord	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Compare the arrangement of white and gray matter in different regions of the spinal cord	C2		
	• Enumerate the major ascending and descending tracts of spinal cords	C1		
	• Illustrate the arrangements of ascending and descending tracts in the spinal cors	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Ascending tracts and their clinicals	• List the ascending tracts of the spinal cord	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Tabulate the sensation, receptor, first to third order neurons, pathways and destinations	C2		
	• Describe and illustrate the pathways of lateral spinothalamic tract, anterior spinothalamic tract, anterior spinocelebellar tract and posterior spinocerebellar tracts	C2		
	• Describe and illustrate the pathways of spinotectal tract, spinoreticular tract and spino-olivary tracts	C2		
	• Describe the anatomical basis of the signs and symptoms in lesions of the ascending tracts	C3		

	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Descending tracts and their clinicals	• List the descending tracts of the spinal cord	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Tabulate the sensation, receptor, first to third order neurons, pathways and destinations of pyramidal and extrapyramidal tracts	C2		
	• Describe and illustrate the pathways of corticospinal tracts	C2		
	• Describe and illustrate the pathways of extrapyramidal tracts	C2		
	• Describe the anatomical basis of the signs and symptoms in lesions of upper and lower motor neuron lesions	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Lesions of Spinal Cord	• Explain anatomical basis of signs and symptoms of anterior and posterior nerve root lesions	C3	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Explain anatomical basis of signs and symptoms of complete cord transection syndrome, central cord syndrome, syringomyelia, anterior cord syndrome, Brown-Sequard Syndrome, Poliomyelitis and amyotrophic lateral sclerosis	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Medulla oblongata	• Identify and describe gross features of medulla and identify them on gross specimen/model.	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE
	• Identify and describe internal structure of medulla on cross sectional diagrams.	C2		
	• Describe the anatomical basis and clinical features of raised pressure in posterior cranial fossa, Arnold Chiari malformation, lateral and medial medullary syndrome.	C2		

	• Correlate with the clinical conditions & cross sections.	C3		VIVA
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Pons & the Fourth ventricle	• Identify and describe the gross features of Pons on a given specimen/model	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Identify and describe internal structure of pons on cross sectional diagrams.	C2		
	• Describe the boundaries and relations of 4th ventricle	C2		
	• Describe the anatomical basis of clinical features of tumors, hemorrhage and infarctions of pons	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Midbrain & Cerebral aqueduct	• Identify and describe the gross features of Pons on a given specimen/model	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Identify and describe internal structure of pons on cross sectional diagrams.	C2		
	• Describe the boundaries and relations of 4th ventricle	C2		
	• Describe the anatomical basis of trauma, cerebral aqueduct stenosis and vascular lesions of midbrain.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cerebellum	• Identify and describe the gross features of cerebellum	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE
	• Describe internal structure of gray and white matter of cerebellar cortex	C2		
	• Describe the cerebellar cortical mechanisms	C1		
	• Describe afferent and efferent fibers of cerebellum	C2		
	• Discuss the functions of cerebellum	C2		
	• Describe the anatomical basis of signs and symptoms of cerebellar diseases such as hypotonia, gait alteration, ataxia, dysdiadochokinesia, disturbances in reflexes, disturbances in ocular movement, disorders of speech	C3		
	• Describe the anatomical basis of signs and symptoms of cerebellar syndromes such as vermis syndrome and cerebellar hemisphere syndrome	C3		

	• Correlate with the clinical conditions & cross sections.	C3		VIVA
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Thalamus, Epithalamus & Subthalamus	• Identify and describe the gross structure of thalamus, epithalamus and subthalamus	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Enlist nuclei of thalamus, epithalamus & subthalamus and describe their functions	C1		
	• Describe the anatomical basis for the lesions of thalamus, epithalamus and subthalamus such as thalamic pain and thalamic hand	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Hypothalamus and 3rd Ventricle	• Enlist nuclei of thalamus, epithalamus & subthalamus and describe their functions	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Identify and describe the functions of tuber cinereum and mamillary bodies	C2		
	• Describe the various afferent and efferent connections of hypothalamic nuclei	C2		
	• Describe the anatomical basis for the lesions of hypothalamus and hypothalamic syndromes	C3		
	• Describe the boundaries and relations of the 3rd ventricle	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cortical areas, Layers and Lesions of Cerebrum	• Identify and describe the gross features of cerebrum	C2	Skills lab	• MCQs • SAQs • SEQ
	• Identify the describe the lobes and subdivisions of cerebrum	C2		
	• Identify the sulci and gyri of cerebral cortex and describe their functions	C2		
	• Identify and describe the commissural, association and projection fibers present in the white matter of the brain.	C2		

	• Discuss the anatomical basis of lesions of internal capsule and alzheimer's disease	C3		• OSPE • VIVA
	• Discuss the anatomical basis of cerebral cortical lesions of the motor cortex, frontal eye field, motor & sensory speech areas, prefrontal cortex, sensory cortex and visual areas	C3		
	• Discuss the anatomical basis of schizophrenia and frontal lobectomy	C3		
	• Discuss the basis cerebral dominance, consciousness, persistent vegetative state, sleep and epilepsy.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Lateral Ventricle &CSF	• Describe the relations and boundaries of lateral ventricle	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Describe the formation of choroid plexus in ventricles	C2		
	• Explain the function, production, circulation, and absorption of cerebrospinal fluid	C2		
	• Explain the causes of overproduction and blockage of CSF	C2		
	• Discuss the anatomical basis of various types of hydrocephalus and papilledema.	C3		
	• Discuss the formation and clinical significance of blood brain barrier, blood CSF barrier and CSF Brain interface.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cranial nerves I,II,II,IV,VI	• Identify the nuclei and connections of CN I,II,II,IV,VI	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE
	• Trace the pathway and perform reflexes associated with of CN I,II,II,IV,VI	C2		
	• Describe the anatomical basis of lesions of visual pathway and ophthalmoplegias	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		

	• Apply strategic use of A.I in health care.	C3		• VIVA
	• Read relevant research article.	C3		
Cranial nerves V,VII	• Identify the nuclei and connections of CN V,VII	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Trace the pathway and perform reflexes associated with of CN V,VII	C2		
	• Describe the anatomical basis of upper and lower motor neuron lesion of CN V and trigeminal neuralgia	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cranial nerves VIII-XII	• Identify the nuclei and connections of CN VIII-XII	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Trace the pathway and perform reflexes associated with of CN VIII-XII	C2		
	• Discuss the anatomical basis of vertigo, nystagmus, deafness, tinnitus, taste and gag reflex	C3		
	• Discuss the anatomical basis of paralysis of muscles supplied by accessory and hypoglossal nerves	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Basal ganglia	• Enlist components of basal ganglia	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Discuss functions of basal ganglia	C2		
	• Describe the connections of basal ganglia	C2		
	• Discuss the anatomical basis of hypo and hyperkinetic disorders such as chorea, hemiballismus, Parkinson’s disease and athetosis.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
	• Enlist components and connections of limbic system	C1		
	• Discuss functions of limbic system	C2		

Limbic system & Reticular formation	• Describe the connections of limbic system	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Enlist components of reticular system	C1		
	• Discuss functions of reticular system	C2		
	• Describe the connections of reticular system	C1		
	• Discuss the anatomical basis of loss of consciousness, schizophrenia, Kluver-Bucy syndrome and temporal lobe dysfunction	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Blood Supply of Brain and clinicals	• Describe the arterial supply of brain and spinal cord from internal carotid artery and vertebrobasilar systems	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Describe the circle of Willis along with its clinical significance	C2		
	• Describe the venous drainage of brain and spinal cord	C2		
	• Discuss the anatomical basis of signs and symptoms of cerebral vessel occlusions and spinal cord ischemias.	C3		
	• Correlate with the clinical conditions & cross sections & cross sections	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Radiological Imaging of CNS	• Identify and describe the appearance of different parts of brain in o Normal radiographs o MRI o CT scan	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cross Sectional Anatomy	• Identify different structures of male pelvis at different levels; S5, coccyx, Symphysis pubis, ischial tuberosity, anal verge	C2	Skill Lab	• MCQs • SAQs
	• Identify different structures of female pelvis at different levels; S5, coccyx, Symphysis pubis, ischial tuberosity, anal verge	C2 C3		

	• Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article •	C3 C3 C3		• SEQ • OSPE • VIVA

Topics	Learning objectives	Learning Resources
Anterior And middle Cranial Fossa	• Identify and describe the boundaries of anterior and middle cranial fossae • Discuss anatomical features present in anterior and middle cranial fossa • Locate foramina and describe the structures passing through them	• Clinically Oriented Anatomy, 9th Edition, pg no. 840-861 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/article/10.1007/s00701-013-1937-0
Posterior cranial fossa Dural venous sinuses and intracranial hemorrhages	• Identify and describe meninges and their reflections on specimens and models • Describe the attachments and relations of dural venous sinuses of brain with the help of models and specimens • Discuss the clinical importance of facial vein connection with dural venous sinuses. • Differentiate between various types of intracranial hemorrhages • Differentiate between different types of headaches	• Clinically Oriented Anatomy, 9th Edition, pg no. 840-861, 884-885, 895 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://www.tandfonline.com/doi/abs/10.3109/02688699308995089
Meninges & Spinal cord	• Describe the internal and external structure of spinal cord • Compare the arrangement of white and gray matter in different regions of the spinal cord • Enumerate the major ascending and descending tracts of spinal cords • Illustrate the arrangements of ascending and descending tracts in the spinal cord	• Clinically Oriented Anatomy, 9th Edition, pg no. 132-139, 883, 890-891 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/chapter/10.1007/978-981-15-7771-0_3
Ascending tracts & Descending tracts	• List the ascending tracts of the spinal cord • Tabulate the sensation, receptor, first to third order neurons, pathways and destinations • Describe and illustrate the pathways of lateral spinothalamic tract, anterior spinothalamic tract, anterior spinocelebellar tract and posterior spinocerebellar tracts • Describe and illustrate the pathways of spinotectal tract, spinoreticular tract and spino-olivary tracts	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 131-182 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z https://link.springer.com/chapter/10.1007/978-1-4684-7688-0_7

	• Describe the anatomical basis of the signs and symptoms in lesions of the ascending tracts	
Medulla Oblongata, Pons& Cerebellum	• Identify and describe gross features of medulla and identify them on gross specimen/model. • Identify and describe internal structure of medulla on cross sectional diagrams. • Identify and describe the gross features of Pons on a given specimen/model • Identify and describe internal structure of pons on cross sectional diagrams. • Identify and describe the gross features of cerebellum • Describe internal structure of gray and white matter of cerebellar cortex • Describe the cerebellar cortical mechanisms	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 185-247 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z https://link.springer.com/chapter/10.1007/978-1-61779-779-8_13
Midbrain and Diencephalon	• Identify and describe the gross features of Pons on a given specimen/model • Identify and describe internal structure of pons on cross sectional diagrams. • Describe the boundaries and relations of 4th ventricle • Describe the anatomical basis of trauma, cerebral aqueduct stenosis and vascular lesions of midbrain.	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 209, 363-372 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z https://link.springer.com/chapter/10.1007/978-3-319-60187-8_8
Cerebrum & Ventricular system	• Identify and describe the gross structure of thalamus, epithalamus and subthalamus • Enlist nuclei of thalamus, epithalamus & subthalamus and describe their functions • Identify and describe the functions of tuber cinereum and mamillary bodies • Describe the relations and boundaries of ventricles • Describe the formation of choroid plexus in ventricles • Explain the function, production, circulation, and absorption of cerebrospinal fluid • Explain the causes of overproduction and blockage of CSF	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 249-277, 436-462 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/article/10.1007/BF00344224 • https://www.tandfonline.com/doi/full/10.1080/10255840701492118
Canial Nerves 1-7	• Identify the nuclei and connections of CN 1,2,3,4,& 6 • Trace the pathway and perform reflexes associated with of CN 1,2,3,4,& 6 • Describe the anatomical basis of lesions of visual pathway and ophthalmoplegias • Identify the nuclei and connections of CN 5 & 7 • Trace the pathway and perform reflexes associated with of CN 5 & 7 • Describe the anatomical basis of upper and lower motor neuron lesion of CN 5 and trigeminal neuralgia	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 323-361 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/referenceworkentry/10.1007/978-3-540-29678-2_1315

Cranial Nerves 8-12, Basal Ganglia, Limbic system and Reticular Formation	• Identify the nuclei and connections of CN 8-12 • Trace the pathway and perform reflexes associated with of CN 8-12 • Discuss the anatomical basis of vertigo, nystagmus, deafness, tinnitus, taste and gag reflex • Discuss the anatomical basis of paralysis of muscles supplied by accessory and hypoglossal nerves • Enlist components and connections of limbic system • Discuss functions of limbic system • Describe the connections of limbic system • Enlist components of reticular system • Discuss functions of reticular system • Describe the connections of reticular system • Discuss the anatomical basis of loss of consciousness, schizophrenia, Kluver-Bucy syndrome and temporal lobe dysfunction	• Clinically Oriented Anatomy 9th Edition, pg no. 299-308, 310- 321, 323-361. • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/referenceworkentry/10.1007/978-3-540-29678-2_1315 • https://link.springer.com/book/10.1007/978-1-4615-1235-6

Practicals				
Practical	**At The End Of This Skill Lab, Should Be Able To Illustrate:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Ganglia	• Identify the microscopic features of ganglia	P	Skills lab	OSPE VIVA
	• Illustrate histological picture of ganglia	C2		
	• List two points of identification	C1		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Peripheral nerve	• Identify the microscopic features of peripheral nerve on given histological slide	P	Skills lab	OSPE
	• Illustrate histological picture of peripheral nerve	C2		
	• List two points of identification	C1		

	• Correlate with the clinical conditions & cross sections.	C3		VIVA
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Spinal cord	• Identify histological slide of spinal cord	P	Skills lab	OSPE VIVA
	• Illustrate histological picture of spinal cord	C2		
	• List two points of identification	C1		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cerebellum	• Identify the microscopic features of cerebellum	P	Skills lab	OSPE VIVA
	• Illustrate histological picture of cerebellum	C2		
	• List two points of identification	C1		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		

Physiology						
Theory						
Topic	**At The End Of This LGIS, Second Year MBBS Students Should Be Able To:**	**Learning Objectives**	**Teaching Strategy**	**Assessment Tools**	**References**	**Learning Resources**
Organization of Nervous System Mechanism of synaptic transmission	• Describe the general organization of nervous system	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609)	• https://youtu.be/432AD7JZnKE https://www.osmosis.org/learn/Somatosensory_pathways
	• Describe major levels of CNS functions	C1				
	• Briefly explain nerve fiber structure, classification & properties	C2				
	• Describe labeled line principle	C1				
	• Define synapse	C1				
	• Enumerate & compare types of synapses	C2				
	• Describe process of synaptic transmission	C1				
	• Enumerate the important neurotransmitters of nervous system	C1				
Classification of sensory receptors Properties of sensory receptors	• Enumerate & explain different types of sensory receptors according to function	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609)	• https://youtu.be/432AD7JZnKE https://www.osmosis.org/learn/Somatosensory_pathways
	• Enumerate & explain different types of sensory receptors according to location	C2				
	• Enlist various properties of sensory receptors	C1				
	• Describe mechanism of signal transduction & generation of receptor potential	C1				
	• Describe mechanism of adaptation of different types of receptors	C1				
	• Describe the properties of sensory receptors	C1				
	• Describe the types and characteristics of tactile receptors	C1				
	• Briefly explain the electrical events during neuronal excitation and inhibition	C2			• Ganong's Review of Medical Physiology.25TH Edition.	• https://youtu.be/432AD7JZnKE

Properties of synaptic transmission	• Explain temporal and spatial summation	C1	LGIS	MCQ SEQ VIVA	Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609)	https://www.osmosis.org/learn/Somatosensory_pathways
	• Enlist & explain various characteristics of synaptic transmission	C1				
Physiology of pain Dual pathway for transmission of pain Analgeia System Thermal Sensations	• Define pain	C1	LGIS	MCQ SEQ VIVA		
	• Enumerate different types of pain	C2				
	• Tabulate the differences between two types of pain	C1				
	• Describe characteristics of pain receptors	C1				
	• Discuss the mechanism of stimulation of pain receptors	C2				
	• Compare and contrast neospinothalamic & paleo spinothalamic tract	C2				
	• Define referred pain	C1				
	• Explain the mechanism of referred pain	C2				
	• Give examples of referred pain	C1				
	• Describe visceral pain and its causes	C1				
	• Define headache	C1				
	• Enlist the types of headache & their causes	C1				
	• Explain the analgesia system	C2				
	• Describe thermal receptors	C1				
	• Explain mechanism of excitation of thermal receptors	C2				

	• Describe transmission of thermal signals in nervous system	C1				
Sensory pathways for transmitting somatic signals	• Classify somatic senses	C2	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609)	• https://youtu.be/432AD7JZnKE https://www.osmosis.org/learn/Somatosensory_pathways
	• Describe the sensory pathways for transmission of somatic sensations to central nervous system	C1				
	• Enumerate sensations carried by dorsal column system and anterolateral system	C1				
	• Describe the characteristics of transmission in the dorsal column medial lemniscal system and anterolateral system	C1				
	• Compare and contrast dorsal column medial lemniscal system and anterolateral system	C2				
Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function	• Describe general organization of autonomic nervous system	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 13, Page 255,259) • Physiology by Linda S. Costanzo 6th Edition. Autonomic Nervous System(Chapter 02. Page 47,59) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 11 Page 392) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 61, Page 763,765)	• https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system https://youtu.be/j9pUItHAAhs https://youtu.be/7pGKa-1tSJw https://youtu.be/gBOAYgMxq-Q
	• Enumerate the functions of autonomic nervous system	C1				
	• Describe sympathetic and parasympathetic nervous system	C1				
	• Enumerate & explain their receptors, neurotransmitters & physiological effects	C1				
	• Describe physiological anatomy & effects of adrenal medulla	C1				
	• Explain cortical mapping & association cortex	C2			• Textbook of Medical	

Somatosensory cortex & lesions of somatosensory cortex	• Describe lesions of somatosensory areas	C1	LGIS	MCQ SEQ VIVA	Physiology by Guyton & Hall.14th Edition.(Chapter 48,Page 603) https://nba.uth.tmc.edu/neuroscience/m/s2/chapter04.html	https://teachmeanatomy.info/neuroanatomy/pathways/ascending-tracts-sensory/
	• Summarize role of thalamus in somatic sensations	C1				
	• Interpret the importance of dermatomes	C3				
Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation	• Briefly explain physiological actions of ANS, vasomotor tone, vagal tone & sympathetic stress response	C2	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 13, Page 264) • Physiology by Linda S. Costanzo 6th Edition. Autonomic Nervous • System(Chapter 02. Page 55) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 11 Page 397) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 61, Page 768)	• https://youtu.be/7pGKa-1tSJw • https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system https://www.diffen.com/difference/Parasympathetic_nervous_system_vs_Sympathetic_nervous_system
	• Draw a table showing autonomic effects on various body organs	C1				
	• Briefly describe the pharmacology of autonomic nervous system	C1				
CSF, Blood Brain Barrier, Blood CSF Barrier, Lumber Puncture	• Describe briefly the physiological anatomy of cerebral blood flow	C1	LGIS	MCQ SEQ VIVA	• Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 113) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 62, Page 777-784)	• https://youtu.be/f9xi1Rf5m9w https://www.sciencedirect.com/topics/neuroscience/blood-cerebrospinal-fluid-barrier
	• Explain cerebrospinal fluid system	C2				
	• Describe the CSF pressure, its measurement by lumbar puncture, & hydrocephalus	C1				
	• Explain blood CSF barrier & BBB	C2				
	• Describe brain edema	C1				
	• Draw association areas of brain	C1			• Textbook of Medical	https://my.clevelandclinic.org/health/a
	• Describe association areas of brain regarding their	C1				

Concept of Association areas, dominant and non-dominant cerebral hemispheres	physiological role		LGIS	MCQ SEQ VIVA	Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 58, Page 727)	rticles/23073-cerebral-cortex https://youtu.be/2Z425-CHY1c
	• Explain briefly the clinical features, if the association areas become damaged	C2				
	• Describe concept of dominant hemisphere	C1				
	• Enlist role of parieto-occipito temporal cortex in non-dominant hemisphere	C1				
Limbic system Functions of hypothalamus	• Describe the concept of limbic system	C1	LGIS	MCQ SEQ VIVA	Textbook of Medical Physiology by Guyton & Hall.14th Edition	• https://youtu.be/h3K9RfGw8sI https://www.endocrineweb.com/endocrinology/overview-hypothalamus
	• Describe physiological anatomy of limbic system	C1				
	• Enumerate and explain the roles of hippocampus, amygdala and limbic cortex	C1				
	• Describe physiological anatomy of hypothalamus	C1				
	• Enlist functions of hypothalamus	C1				
	• Explain role of hypothalamus in: o Vegetative function o Endocrine function Behavioral function o Reward and punishment function	C2				
Speech and aphasia	• Describe sensory and motor aspects of communication	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 15, Page 290,293) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 70, Page 1211)	• https://www.sciencedirect.com/science/article/abs/pii/S0021992422000892 https://www.stroke.org.uk/what-is-aphasia/types-of-aphasia
	• Define Wernicke's aphasia, Motor aphasia & Global aphasia	C1				
	• Explain Wernicke's aphasia, Motor aphasia & Global aphasia	C2				
	• Describe function of corpus callosum & anterior commissure in transferring information between two cerebral hemispheres	C1				
	• Define memory & classify its various types	C1		MCQ	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 15, Page	• https://youtu.be/EqdsQDM5Fys
	• Describe role of synaptic inhibition and synaptic facilitation in memory	C1				

Learning and memory	• Explain mechanism of short term, intermediate and long-term memory	C2	LGIS	SEQ VIVA	283) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 112) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 09 Page 332) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 58, Page 735)	https://www.sciencedirect.com/topics/psychology/learning-and-memory
	• Describe mechanism of consolidation of memory	C1				
	• Enumerate specific parts of brain involved in memory	C2				
	• Explain the role of each part	C2				
Reticular activating system and sleep	• Describe activating driving system of the brain	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 14, Page 269,272,278) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10 Page 344) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 70, Page 12031208) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 60, Page 753)	• https://youtu.be/TdGQvWAZ0Cs https://www.physio-pedia.com/Reticular Formation
	• Explain the reticular activating system	C2				
	• Discuss the control of cerebral activity by signals from brain stem	C2				
	• Explain neurohormonal system of the brain	C2				
	• Define sleep and enumerate types of sleep	C1				
	• Compare and contrast between two types of sleep	C2				
	• Describe the basic theories of sleep in detail	C1				
	• Explain physiological effects of sleep	C2				
	• Describe sleep and wakefulness cycle	C1				
	• Describe brain waves	C1			• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 14, Page	https://www.webmd.com/epilepsy/guide/types-epilepsy
	• Enumerate different types of brain wave	C2				
	• Explain the origin of different brain waves	C2				

EEG and epilepsy	• Describe EEG	C1	LGIS	MCQ SEQ VIVA	275) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 42) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 70, Page 1209) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 60, Page 756)	https://youtu.be/T7MKlPYiL48
	• Define epilepsy	C1				
	• Enumerate various types of epilepsy	C1				
	• Explain various types of epilepsy	C2				
	• Describe role of nor-epinephrine, serotonin and	C1				
	• dopamine in psychotic disorders	C1				
	• Describe the causes, symptoms & treatment of depression & bipolar disorder	C1				
	• Discuss causes, types, symptoms and treatment of schizophrenia	C2				
	• Define Alzheimer's disease. Mention its causes, clinical features, incidence and treatment	C1				
Introduction to motor nervous system & Reflex action Conditioned reflexes & properties Properties of reflex action Control of spinal cord reflexes by higher centers	• Outline brief introduction of motor nervous system	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of MedicalPhysiology.25TH Edition. Section 02 • (Chapter 12, Page 237,240) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 110) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. • Section 09.(Chapter 56, Page 697)	https://www.physio-pedia.com/Extrapyramidal_and_Pyramidal_Tracts https://youtu.be/B88BNYWVkWE
	• Give concept of cortical & subcortical motor control	C1				
	• Briefly explain UMN, LMN, anterior motor neurons & interneurons	C2				
	• Define reflex action	C1				
	• Define and draw reflex arc	C1				
	• Enumerate components of reflex arc	C1				
	• Classify the reflexes	C2				
	• Define conditioned reflex	C1				
	• Enlist and describe properties of conditioned reflexes	C1				
	• Give examples of conditioned reflex	C1				
	• Enlist and Explain properties of reflex action	C1,C2				
	• Compare & contrast spinal animal with decerebrate	C2				

	animal					
	• Describe organization of spinal cord for motor functions	C1				
	• Explain the concept of cortical & subcortical control. • Define UMN & LMN	C2				
Introduction to cerebellum Neuronal circuits of cerebellum Cerebellum and its motor functions	• Describe physiological anatomy of cerebellum	C1	LGIS	MCQ SEQ VIVA		
	• Classify the functional parts of cerebellum & mention their functions	C2				
	• Describe neuronal circuits of cerebellum in detail	C1				
	• Enumerate the afferent and efferent pathways	C1				
	• Describe the functional unit of cerebellar cortex & deep cerebellar nuclei	C1				
	• Explain the role of purkinje cell, Deep nuclear cells and inhibitory cells of cerebellum in overall functions of cerebellum	C2				
	• Explain role of climbing fibers	C2				
	• Discuss the turn-on and turn-off mechanism	C2				
	• Enlist and explain motor functions of cerebellum	C1				
	• Explain the role of vestibulo cerebellum, spino cerebellum & neocerebellum in overall motor control by cerebellum	C2				
Muscle spindle & Golgi tendon organ Role of muscle	• Describe muscle spindle & Golgi tendon organ in detail	C1	LGIS	MCQ SEQ	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 12, Page 229,234) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 68, Page 476)	https://www.osmosis.org/learn/Muscle_spindles_and_golgi_tendon_organs https://youtu.be/CzeAcc39Cyo
	• Explain the receptor function of the Muscle Spindle & Golgi tendon organ	C2				
	• Draw muscle spindle and Golgi tendon organ showing the sensory and motor innervation	C1				
	• Explain the dynamic and static response of	C2				

spindle and Golgi tendon organ in voluntary motor activity	muscle spindle & Golgi tendon organ			VIVA	Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 55, Page 686,691)	
	• Briefly describe muscle stretch reflex	C1				
	• Draw the neuronal circuitry of the stretch reflex	C1				
	• Explain the static and dynamic components of stretch reflex	C2				
	• Discuss the clinical applications of stretch reflex	C2				
	• Explain negative stretch reflex	C2				
	• Explain lengthening reaction and its significance	C2				
	• Describe role of muscle spindle and Golgi tendon organ in voluntary muscle activity	C1				
	• Explain the role of alpha gamma co activation	C2				
Manifestations of cerebellar disease	• Enlist and explain clinical abnormalities of cerebellum	C2	LGIS	MCQ SEQ VIVA		
Polysynaptic reflexes Transection of spinal cord Role of brain stem in controlling motor functions Lesions of motor system	• Enlist polysynaptic reflexes	C1	LGIS	MCQ SEQ VIVA		
	• Describe the polysynaptic reflexes	C1				
	• Explain mechanism of reciprocal inhibition and reciprocal innervation	C2				
	• Enlist and describe reflexes of posture and locomotion	C1				
	• Explain scratch reflex	C2				
	• Enumerate the spinal cord reflexes that cause muscle spasm	C1				
	• Enlist autonomic reflexes in the spinal cord	C1				
	• Briefly describe transection of spinal cord	C1				
	• Explain stages of complete transection	C2				
	• Briefly explain stages of complications in	C2				

	complete transection of spinal cord					
	• Describe hemi section of spinal cord	C1				
	• Explain brown-sequard syndrome	C1				
	• Enumerate and explain role of brainstem in controlling motor function	C1,C2				
	• Explain role of pontine & medullary reticular nuclei	C2				
	• Briefly write role of vestibular nuclei in antigravity muscle control	C1				
	• Summarize decerebrate rigidity	C1				
	• Enlist the effects of damage to specialized areas of motor cortex	C1				
	• Differentiate UMN Lesion and LMN Lesion	C2				
	• Explain decorticate rigidity	C2				
	• Briefly explain the pathophysiology of syringomyelia, tabs- dorsalis & poliomyelitis	C2				
Motor cortex & physiological importance of neocortex Corticospinal or pyramidal tract Extra pyramidal system	• Briefly describe motor areas in cortex	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 12, Page 243) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 110) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 69, Page 1194) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section	• https://youtu.be/hxvep2Y8ShI https://www.sciencedirect.com/science/article/pii/S2214751923000026 https://teachmeanatomy.info/neuroanatomy/structures/basal-ganglia
	• Draw motor & somatic association areas of motor cortex	C1				
	• Explain functions of motor & somatic association areas	C2				
	• Explain allocortex & neocortex	C2				
	• Describe medial and lateral descending pathways	C1				
	• Explain transmission of signals from motor cortex to muscle	C2	LGIS	MCQ SEQ		
	• Draw course of pyramidal tract	C1				
	• Enlist the functions of pyramidal tract	C1				

Basal Ganglia & Lesions	• Mention the effects of lesions in Corticospinal tract	C1		VIVA	09.(Chapter 57, Page 720)	
	• Briefly describe extra pyramidal descending tracts	C1				
	• Describe rigidity and spasticity	C1				
	• Describe location and function of red nucleus	C1				
	• Describe physiological anatomy of basal ganglia	C1				
	• Draw neuronal circuits of basal ganglia	C1				
	• Explain the role of neuronal circuits in functioning of basal ganglia	C2				
	• Enlist and explain the physiological role of neurotransmitters in basal ganglia system	C1				
	• Enumerate the clinical abnormalities caused by damage to basal ganglia	C1				
	• Briefly explain Parkinson disease regarding its causes, signs and symptoms & treatment	C2				
	• Explain Huntington‘s Chorea regarding its causes, signs and symptoms	C2				

Topic	At The End Of This LGIS, Second Year MBBS Students Should Be Able To:	Learning Objectives	Teaching Strategy	Assessment Tools
Synapse & Sensory Receptors	• Describe the general organization of nervous system	C1	LGIS	MCQ SEQ VIVA
	• Describe major levels of CNS functions	C1		
	• Briefly explain nerve fiber structure, classification & properties	C2		
	• Describe labeled line principle	C1		
	• Define synapse	C1		
	• Enumerate & compare types of synapses	C2		
	• Describe process of synaptic transmission	C1		
	• Enumerate the important neurotransmitters of nervous system	C1		
	• Enumerate & explain different types of sensory receptors according to function	C1		MCQ
	• Enumerate & explain different types of sensory receptors according to location	C2		
	• Enlist various properties of sensory receptors	C1		
	• Describe mechanism of signal transduction & generation of receptor potential	C1		

	• Describe mechanism of adaptation of different types of receptors	C1	LGIS	SEQ VIVA
	• Describe the properties of sensory receptors	C1		
	• Describe the types and characteristics of tactile receptors	C1		
	• Briefly explain the electrical events during neuronal excitation and inhibition	C2	LGIS	MCQ SEQ VIVA
	• Explain temporal and spatial summation	C1		
	• Enlist & explain various characteristics of synaptic transmission	C1		
	• Describe visceral pain and its causes	C1		
	• Define headache	C1		
	• Enlist the types of headache & their causes	C1		
	• Explain the analgesia system	C2		
	• Describe thermal receptors	C1		
	• Explain mechanism of excitation of thermal receptors	C2		
	• Describe transmission of thermal signals in nervous system	C1		
Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function	• Describe general organization of autonomic nervous system	C1	LGIS	MCQ SEQ VIVA
	• Enumerate the functions of autonomic nervous system	C1		
	• Describe sympathetic and parasympathetic nervous system	C1		
	• Enumerate & explain their receptors, neurotransmitters & physiological effects	C1		
	• Describe physiological anatomy & effects of adrenal medulla	C1		
	• Briefly explain physiological actions of ANS, vasomotor tone, vagal tone & sympathetic stress response	C2	LGIS	MCQ SEQ VIVA
	• Draw a table showing autonomic effects on various body organs	C1		
	• Briefly describe the pharmacology of autonomic nervous system	C1		
Introduction to motor nervous system & Reflex action Conditioned reflexes & properties Properties of reflex action Control of spinal cord reflexes by higher centers	• Outline brief introduction of motor nervous system	C1	LGIS	MCQ SEQ VIVA
	• Give concept of cortical & subcortical motor control	C1		
	• Briefly explain UMN, LMN, anterior motor neurons & interneurons	C2		
	• Define reflex action	C1		
	• Define and draw reflex arc	C1		
	• Enumerate components of reflex arc	C1		
	• Classify the reflexes	C2		
	• Define conditioned reflex	C1		
	• Enlist and describe properties of conditioned reflexes	C1		

	• Give examples of conditioned reflex	C1		
	• Enlist and Explain properties of reflex action	C1,C2		
	• Compare & contrast spinal animal with decerebrate animal	C2		
	• Describe organization of spinal cord for motor functions	C1		
	• Explain the concept of cortical & subcortical control. • Define UMN & LMN	C2		
Introduction to cerebellum Neuronal circuits of cerebellum Cerebellum and its motor functions	• Describe physiological anatomy of cerebellum	C1	LGIS	MCQ SEQ VIVA
	• Classify the functional parts of cerebellum & mention their functions	C2		
	• Describe neuronal circuits of cerebellum in detail	C1		
	• Enumerate the afferent and efferent pathways	C1		
	• Describe the functional unit of cerebellar cortex & deep cerebellar nuclei	C1		
	• Explain the role of purkinje cell, Deep nuclear cells and inhibitory cells of cerebellum in overall functions of cerebellum	C2		
	• Explain role of climbing fibers	C2		
	• Discuss the turn-on and turn-off mechanism	C2		
	• Enlist and explain motor functions of cerebellum	C1		
	• Explain the role of vestibulo cerebellum, spino cerebellum & neocerebellum in overall motor control by cerebellum	C2		
Muscle spindle & Golgi tendon organ Role of muscle spindle and Golgi tendon organ in voluntary motor activity	• Describe muscle spindle & Golgi tendon organ in detail	C1	LGIS	MCQ SEQ VIVA
	• Explain the receptor function of the Muscle Spindle & Golgi tendon organ	C2		
	• Draw muscle spindle and Golgi tendon organ showing the sensory and motor innervation	C1		
	• Explain the dynamic and static response of muscle spindle & Golgi tendon organ	C2		
	• Briefly describe muscle stretch reflex	C1		
	• Draw the neuronal circuitry of the stretch reflex	C1		
	• Explain the static and dynamic components of stretch reflex	C2		
	• Discuss the clinical applications of stretch reflex	C2		
	• Explain negative stretch reflex	C2		
	• Explain lengthening reaction and its significance	C2		
	• Describe role of muscle spindle and Golgi tendon organ in voluntary muscle activity	C1		
	• Explain the role of alpha gamma co activation	C2		
	• Enlist polysynaptic reflexes	C1		
	• Describe the polysynaptic reflexes	C1		

	• Explain mechanism of reciprocal inhibition and reciprocal innervation	C2	LGIS	MCQ SEQ VIVA
	• Enlist and describe reflexes of posture and locomotion	C1		
	• Explain scratch reflex	C2		
	• Enumerate the spinal cord reflexes that cause muscle spasm	C1		
	• Enlist autonomic reflexes in the spinal cord	C1		
	• Briefly describe transection of spinal cord	C1		
	• Explain stages of complete transection	C2		
	• Briefly explain stages of complications in complete transection of spinal cord	C2		
	• Describe hemi section of spinal cord	C1		
	• Explain brown-sequard syndrome	C1		
	• Enumerate and explain role of brainstem in controlling motor function	C1,C2		
	• Explain role of pontine & medullary reticular nuclei	C2		
	• Briefly write role of vestibular nuclei in antigravity muscle control	C1		
	• Summarize decerebrate rigidity	C1		
	• Enlist the effects of damage to specialized areas of motor cortex	C1		
	• Differentiate UMN Lesion and LMN Lesion	C2		
	• Explain decorticate rigidity	C2		
	• Briefly explain the pathophysiology of syringomyelia, tabs- dorsalis & poliomyelitis	C2		
Motor cortex & physiological importance of neocortex Corticospinal or pyramidal tract Extra pyramidal system Basal Ganglia & Lesions	• Briefly describe motor areas in cortex	C1	LGIS	MCQ SEQ VIVA
	• Draw motor & somatic association areas of motor cortex	C1		
	• Explain functions of motor & somatic association areas	C2		
	• Explain allocortex & neocortex	C2		
	• Describe medial and lateral descending pathways	C1		
	• Explain transmission of signals from motor cortex to muscle	C2	LGIS	MCQ SEQ VIVA
	• Draw course of pyramidal tract	C1		
	• Enlist the functions of pyramidal tract	C1		
	• Mention the effects of lesions in Corticospinal tract	C1		
	• Briefly describe extra pyramidal descending tracts	C1		
	• Describe rigidity and spasticity	C1		
	• Describe location and function of red nucleus	C1		
	• Describe physiological anatomy of basal ganglia	C1		
	• Draw neuronal circuits of basal ganglia	C1		
	• Explain the role of neuronal circuits in functioning of basal ganglia	C2		
	• Enlist and explain the physiological role of neurotransmitters in basal ganglia system	C1		
	• Enumerate the clinical abnormalities caused by damage to basal ganglia	C1		
	• Briefly explain Parkinson disease regarding its causes, signs and symptoms &	C2		

	treatment			
	• Explain Huntington‘s Chorea regarding its causes, signs and symptoms	C2		
Limbic system Functions of hypothalamus	• Describe the concept of limbic system	C1		
	• Describe physiological anatomy of limbic system	C1		
	• Enumerate and explain the roles of hippocampus, amygdala and limbic cortex	C1		
	• Describe physiological anatomy of hypothalamus	C1		
	• Enlist functions of hypothalamus	C1		
	• Explain role of hypothalamus in: ○ Vegetative function ○ Endocrine function Behavioral function • Reward and punishment function	C2		

Topics	Learning objectives	Learning Resources
Pathways for transmitting somatic signals	• Classify somatic senses • Describe the sensory pathways for transmission of somatic sensations to central nervous system. • Enumerate sensations carried by dorsal column system and anterolateral system • Describe the characteristics of transmission in the dorsal column medial lemniscal system and anterolateral system • Compare and contrast dorsal column medial lemniscal system and anterolateral system	• Ganong’s Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609) • https://youtu.be/432AD7JZnKE • https://www.osmosis.org/learn/Somatosensory_pathways
Somatosensory cortex & lesions of Somatosensory cortex	• Explain cortical mapping & association cortex • Describe lesions of somatosensory areas • Summarize role of thalamus in somatic sensations • Interpret the importance of dermatomes	• Textbook of Medical Physiology by Guyton & Hall.14th Edition.(Chapter 48,Page 603) • https://nba.uth.tmc.edu/neuroscience/m/s2/chapter04.html • https://teachmeanatomy.info/neuroanatomy/pathways/ascending-tracts-sensory/
	• Describe general organization of autonomic nervous system • Enumerate the functions of autonomic nervous system • Describe sympathetic and parasympathetic nervous system • Enumerate & explain their receptors, neurotransmitters & physiological effects • Describe physiological anatomy & effects of adrenal medulla	• Ganong’s Review of Medical Physiology.25TH Edition. (Chapter 13, Page 255,259) • Physiology by Linda S. Costanzo 6th Edition. Autonomic Nervous System(Chapter 02. Page 47,59)

Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function		• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 11 Page 392) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 61, Page 763,765) • . https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system • https://youtu.be/j9pUItHAAhs 7 https://youtu.be/7pGKa-1tSJw https://youtu.be/gBOAYgMxq-Q
Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation	• Briefly explain physiological actions of ANS, vasomotor tone, vagal tone & sympathetic stress response • Draw a table showing autonomic effects on various body organs • Briefly describe the pharmacology of autonomic nervous system	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 13, Page 264) • Physiology by Linda S. Costanzo 6th Edition. Autonomic Nervous • System(Chapter 02. Page 55) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 11 Page 397) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 61, Page 768) • https://youtu.be/7pGKa-1tSJw • https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system • https://www.diffen.com/difference/Parasympathetic_nervous_system_vs_Sympathetic_nervous_system
, Blood brain barrier, Blood CSF Barrier, Lumber puncture	• Describe briefly the physiological anatomy of cerebral blood flow • Explain cerebrospinal fluid system • Describe the CSF pressure, its • measurement by lumbar puncture, & hydrocephalus • Explain blood CSF barrier • & BBB • Describe brain edema	• Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 113) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 62, Page 777-784) • https://youtu.be/f9xi1Rf5m9w • https://www.sciencedirect.com/topics/neuroscience/blood-cerebrospinal-fluid-barrier

Limbic system, Functions of hypothalamus	• Describe the concept of limbic system	• Textbook of Medical Physiology by Guyton & Hall.14th Edition • https://youtu.be/h3K9RfGw8sI • https://www.endocrineweb.com/endocrinology/overview-hypothalamus
Learning and memory	• Define memory & classify its various types • Describe role of synaptic inhibition and synaptic facilitation in memory Explain mechanism of short term, intermediate and long-term memory Describe mechanism of consolidation of memory Enumerate specific parts of brain involved in memory • Explain the role of each part	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 15, Page 283) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 112) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 09 Page 332) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 58, Page 735) • https://youtu.be/EqdsQDM5Fys • https://www.sciencedirect.com/topics/psychology/learning-and-memory
Concept of Association areas, Concept of Dominant and non-dominant cerebral hemispheres	• Draw association areas of brain • Describe association areas of brain regarding their physiological role • Explain briefly the clinical features, if • the association areas become damaged • Describe concept of dominant hemisphere • Enlist role of parietooccipito temporal cortex in non-dominant hemisphere	• Textbook of Medical Physiology by Guyton & Hall.14th Edition. • Section 09.(Chapter 58, Page 727) • https://my.clevelandclinic.org/health/articles/23073-cerebral-cortex https://youtu.be/2Z425-CHY1c
Speech and aphasia	• Describe sensory and motor aspects of communication Define Wernicke's aphasia, Motor aphasia & Global aphasia • Explain Wernicke's aphasia, Motor aphasia & Global • aphasia • Describe function of corpus callosum & anterior commissure in transferring information between two cerebral hemispheres	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 15, Page 290,293) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 70, Page 1211) • https://www.sciencedirect.com/science/article/abs/pii/S0021992422000892 • https://www.stroke.org.uk/what-is-aphasia/types-of-aphasia
	• Describe brain waves • Enumerate different types of brain wave • Explain the origin of different brain waves • Describe EEG • Define epilepsy	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 14, Page 275) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 42) • Physiological Basis of Medical Practice by Best &

EEG and epilepsy	• Enumerate various types of epilepsy • Explain various types of epilepsy • Describe role of norepinephrine, serotonin and • dopamine in psychotic disorders • Describe the causes, symptoms & treatment of depression & bipolar disorder • Discuss causes, types, symptoms and treatment of • Schizophrenia • Define Alzheimer‘s disease. Mention its causes, clinical features, incidence and treatment	Taylor’s.13th Edition. (Chapter 70, Page 1209) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 60, Page 756) • https://www.webmd.com/epilepsy/guide/types-epilepsy https://youtu.be/T7MKlPYiL48
Reticular activating system and sleep	• Describe activating driving system of the brain Explain the reticular activating system Discuss the control of cerebral activity by signals from brain stem Explain neurohormonal system of the brain • Define sleep and enumerate types of sleep • Compare and contrast between two types of sleep Describe the basic theories of sleep in detail • Explain physiological effects • of sleep • Describe sleep and wakefulness cycle	• Ganong’s Review of Medical Physiology.25TH Edition. Section 02 (Chapter 14, Page 269,272,278) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10 Page 344) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 70, Page 12031208) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 60, Page 753) • https://youtu.be/TdGQvWAZ0Cs • https://www.physio-pedia.com/Reticular Formation
Muscle spindle & Golgi tendon organ, Role of muscle spindle and Golgi tendon organ in voluntary motor activity	• Describe muscle spindle & • Golgi tendon organ in detail • Explain the receptor function of the Muscle Spindle & Golgi tendon organ • Draw muscle spindle and Golgi tendon organ showing the sensory and motor innervation • Explain the dynamic and static response of muscle spindle & Golgi tendon organ • Briefly describe muscle stretch reflex • Draw the neuronal circuitry of the stretch reflex • Explain the static and dynamic components of stretch reflex • Discuss the clinical applications of stretch reflex • Explain negative stretch reflex • Explain lengthening reaction and its significance • Describe role of muscle spindle and Golgi tendon organ in voluntary muscle • activity • Explain the role of alpha gamma co activation	• Ganong’s Review of Medical Physiology.25TH Edition. Section 02 (Chapter 12, Page 229,234) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 68, Page 476) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 55, Page 686,691) • https://www.osmosis.org/learn/Muscle_spindles_and_golgi_tendon_organs https://youtu.be/CzeAcc39Cyo

Motor cortex & physiological importance of neocortex, Corticospinal or pyramidal tract, Extra pyramidal system	• Briefly describe motor areas in cortex • Draw motor & somatic association areas of motor cortex • Explain functions of motor & somatic association areas • Explain allocortex & neocortex • Describe medial and lateral descending pathways • Explain transmission of signals from motor cortex to muscle • Draw course of pyramidal tract • Enlist the functions of pyramidal tract • Mention the effects of lesions in Corticospinal tract • Briefly describe extra pyramidal descending tracts • Describe rigidity and • spasticity • Describe location and function of red nucleus	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 • (Chapter 12, Page 237,240) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 110) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. • Section 09.(Chapter 56, Page 697) • https://www.physio-pedia.com/Extrapyramidal_and_Pyramidal_Tracts https://youtu.be/B88BNYWVkWE
Basal Ganglia & Lesions	• Describe physiological anatomy of basal ganglia • Draw neuronal circuits of basal ganglia • Explain the role of neuronal circuits in functioning of basal ganglia • Enlist and explain the physiological role of neurotransmitters in basal ganglia system • Enumerate the clinical abnormalities caused by damage to basal ganglia • Briefly explain Parkinson disease • regarding its causes, signs and symptoms & treatment • Explain Huntington's Chorea regarding its causes, signs and symptoms	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 12, Page 243) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 110) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 69, Page 1194) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 57, Page 720) • https://youtu.be/hxvep2Y8ShI • https://www.sciencedirect.com/science/article/pii/S2214751923000026 https://teachmeanatomy.info/neuroanatomy/structures/basal-ganglia/

Practicals

Practical	At The End Of This Skill Lab, Should Be Able To Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools	References
	• Apparatus identification	C1	Skill lab	OSPE	
	• Principle	C1			
	• Procedure	A, P			

Examination of sensory nervous system	• Precautions	P			Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Recall sensations transmitted by sensory pathways	C1			
	• Recall the effects of lesions of these pathways	C1			
Examination of motor nervous system	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall descending pathways & their functions	C1			
	• Recall effects of lesions of these pathways	C1			
Examination of cerebellar System	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall functions of cerebellum & effects of lesions of cerebellum/	C3			
Ophthalmoscopy	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Clinical Correlation	C1			
Determination of Eye field	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			

	• Clinical Correlation	C3			
Recording of body temperature	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Record oral, axillary & rectal temperature	C1			
	• Recall abnormalities of body temperature	C1			
Examination of superficial & deep reflexes	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall reflex arc	C1			
	• Recall effects of UMNL & LMNL on reflexes	C1			
Examination of 3^{rd}, 4^{th} & 6^{th} cranial nerves	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall functions & pathways of various cranial nerves	C1			
	• Recall effects of lesions of cranial nerves	C1			
Examination of 5^{th}, & 7^{th} cranial nerves / Examination of 8^{th} , 9^{th}, 10, 11^{th}, 12^{th} cranial nerves	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail

Biochemistry				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**C/P/A**	**Teaching Strategy**	**Assessment Tool**
Triglyceride Metabolism, Fatty acid transport	• Describe synthesis & breakdown of TAGs and factors affecting it	C2	LGIS	MCQs SAQs Viva
	• Explain entry of fatty acid into mitochondria (carnitine shuttle)	C2		
Oxidation of fatty acid	• Describe steps, enzymes, energy calculations of β- oxidation of saturated fatty acid (Odd + Even)	C2	LGIS	MCQs SAQs Viva
Oxidation of fatty acid	• Discuss other types of oxidations and related disorders	C2	LGIS	MCQs SAQs Viva
Fatty acid synthesis	• Explain the steps, regulation and related diseases of fatty acid synthesis	C2	LGIS	MCQs SAQs Viva
Cholesterol Synthesis	• Describe the steps, regulation and related disorders of Cholesterol Synthesis	C2	LGIS	MCQs SAQs Viva
Plasma Cholesterol level	• Recall normal Plasma Cholesterol level and factors controlling it	C1	LGIS	MCQs SAQs Viva
Ketone bodies metabolism	• Explain the synthesis and breakdown of Ketone bodies with related diseases (ketoacidosis)	C2	LGIS	MCQs SAQs Viva

Metabolism of Glycerophospholipid	• Describe the steps of biosynthesis of Glycerophospholipids with its regulation and clinical significance	C2	LGIS	MCQs SAQs Viva
Metabolism of Sphingophospholipids	• Explain the steps of biosynthesis of sphingophospholipids with its regulation and clinical significance	C2	LGIS	MCQs SAQs Viva
Introduction to Lipoproteins	• Discuss the functions and roll of Lipoproteins & apolipoprotein	C2	LGIS	MCQs SAQs Viva

LDL& HDL	• Explain the composition, functions and clinical significance of LDL& HDL	C2	LGIS	MCQs SAQs Viva
	• Illustrate the mechanism of reverse cholesterol transport	C3		
Disorders of lipoprotein metabolism	• Classify and explain the disorders of lipoprotein metabolism. • (hyper & hypo lipoproteinemia)	C2	LGIS	MCQs SAQs Viva
Fatty Liver & Adipose Tissue	• Interpret conditions leading to Fatty liver	C3	LGIS	MCQs SAQs Viva
	• Describe metabolism of adipose tissue & Brown fat	C2		
Disorders of lipoprotein metabolism	• Classify and explain the disorders of lipoprotein metabolism. • (hyper & hypo lipoproteinemia)	C2	LGIS	MCQs SAQs Viva

Topics	Learning objectives	Learning Resources
Chylomicron metabolism	• Describe synthesis of chylomicron, its breakdown and factors affecting it	• Lippincott Biochemistry Chapter. 18 page 253 https://www.ncbi.nlm.nih.gov/books/NBK305896/
HDL & LDL metabolism	• Explain composition functions and clinical significance of LDL & HDL • Illustrate mechanism of revise cholesterol synthesis	• Lippincott Biochemistry Chapter. 18 page 253 • https://www.alilamedicalmedia.com/-/g...

Fatty acid oxidation	• Describe steps enzymes energy calculation of Beta oxidation of saturated fatty acid	• Lippincott Biochemistry Chapter. 16 page 213 • https://ninjanerd.org
Synthesis &Interconversion of Ketone Bodies, Regulation of Ketogenesis, Ketolysis	• Explain synthesis and breakdown of ketone bodies and related disorders	• Lippincott Biochemistry Chapter. 27 page 411 • https://youtu.be/GuSqOsm3QV8
Synthesis of Cholesterol and its regulation	• Describe steps regulation and related disorders of cholesterol synthesis	• Lippincott Biochemistry Chapter. 18 page 244 • https://youtu.be/y9zsDFdMvZY

	• Principle	C1		
	• Procedure	A,P		
	• Precautions	P		
	• Recall functions & pathways of various cranial nerves	C1		
	• Recall effects of lesions of cranial nerves	C1		

Topic	At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Color Test For Sterols	Perform Color test four sterols	P	Skill Lab	OSPE
Detection of Cholesterol Crystals	Perform cholesterol Crystals Deduction Test.	P	Skill Lab	OSPE
Estimation of serum TAGS	Perform triglyceride estimation	P	Skill Lab	OSPE
Estimation of Serum HDL	Perform HDL Estimation	P	Skill Lab	OSPE
Lipid Solubility & Acrolein test	Perform Lipid Solubility & Acrolein test.	P	Skill Lab	OSPE

Basic and Clinical Sciences (Vertical Integration)

Anatomy, Physiology & Biochemistry			
Clinical Themes			
Subject	**Topic**	**At the End Of Lecture Students Should Be Able To**	**Learning Domain**
Anatomy	• Cystic Astrocytoma of cerebellum	Apply basic knowledge of subject to study clinical case.	C3
	• Stroke	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• CVA	Apply basic knowledge of subject to study clinical case.	C3
	• Gullain Barr syndrome	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• IHD	Apply basic knowledge of subject to study clinical case.	C3
	• Respiratory Distress Syndrome	Apply basic knowledge of subject to study clinical case.	C3

Pathology				
Theory				
Topic	**At the end of this LGIS students of should be able to:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Patterns of injury in nervous system	• Describe edema ,herniation and hydrocephalous	C2	LGIS	MCQ'S
	• Classify cerebrovascular diseases	C2		
	• Explain CNS trauma	C2		
	• Identify Congenital malformation	C1		
Diseases of myelin and neurodegenerative diseases	Students should be able to • describe the pathophysiology and histomorphology of Alzheimer's disease, Parkinson's Disease, Huntington's disease and Multiple sclerosis	C2	LGIS	MCQ'S
Meningitis	• Classify types of meningitis	C2	LGIS	MCQ'S
	• Enlist causes of meningitis	C1		
	• Describe lab diagnosis of meningitis	C2		
	• Enlist complication of meningitis	C2		

Pharmacology				
Theory				
Topic	**At the end of this LGIS students of should be able to:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Introduction to CNS Pharmacology	• List the major neurotransmitters in the CNS	C1	LGIS	MCQ
	• List the major classes of receptors for each of the primary neurotransmitters and their associated relevant disorders	C1		
	• Identify the special considerations associated with CNS drug delivery	C1		
	• Cite main drug groups acting on the CNS	C1		

Medicine				
Theory				
Topic	**At The End Of This Skill Lab, Should Be Able To Illustrate:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Stroke	• Discuss pathophysiology, Blood supply of brain (Anterior and posterior Circulation), which part of brain supplied by various arteries, Physiology of brain pathways (Corticospinal and Corticobulbar pathways), Types of Stroke, clinical features, management	C1 C2	LGIS	MCQs
Spinal Cord and Peripheral Nervous system	• Various types of pathways and cells, Peripheral Nerves and neuromuscular junction, difference between upper and lower motor neurons, various types of Plegias (Paraplegia, Hemiplegia, Quadriplegia), Various types of neuropathies and myasthenia Gravis and discuss pathophysiology	C1 C2	LGIS	MCQs
Cerebellar Disorders	• Brain parts involved in Movement and Co-ordination, how movements are brought about, possible lesions and discuss pathophysiology, types of disorders, clinical features, management	C1 C2	LGIS	MCQs
Meningitis	• Define and discuss pathophysiology and discuss symptoms and signs	C1	LGIS	MCQs
	• Discuss the causes	C2		
	• Describe the management	C2		
Epilepsy and other convulsive disorders	• Define and discuss pathophysiology	C1	LGIS	MCQs
	• Discuss the causes	C2		

	• Describe the management	C2		
Encephalitis	• Define and discuss and discuss pathophysiology, symptoms and signs	C1	LGIS	MCQs
	• Discuss the causes	C2		
	• Describe the management	C2		

Surgery				
Theory				
Topic	**At The End Of This LGIS, Second Year MBBS Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Brain tumors	• Classify Brain Tumors	C1	LGIS	MCQ
	• Outline clinical features of brain tumors. • Approach towards a SOL brain	C1		
Brain abscess	• Define Brain Abscess	C1	LGIS	MCQ
	• Outline clinical features of brain abscess	C1		
Head injury	• Define head injury	C1	LGIS	MCQ
	• Mechanism of Head injury	C1		
	• Clinical features of head injury	C1		
	• Glassgow coma Scale	C1		
Poly trauma Patient	• Define polytrauma	C1	LGIS	MCQ
	• Describe triage	C1		
	• ATLS Protocol	C1		

Obstetrics & Gynecology				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Seizures during pregnancy(eclampsia/epilepsy)	• Enumerate common neurological disorders during pregnancy (eclampsia, epilepsy)	C1	LGIS	MCQs
	• Understand neurological changes leading to eclampsia and epilepsy	C1		
	• Understand the effects of epilepsy and anti-epileptic drugs on mother and fetus	C1		
	• Comprehend the principles of management of epilepsy during pregnancy	C1		

Pediatrics				
Theory				
Topic	**At The End Of This Skill Lab, Should Be Able To Illustrate:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Meningitis	Scenario of a patient with fever & fits		LGIS	MCQs
	• Define meningitis.	C1		
	• Discuss Epidemiology &Pathophysiology	C1		
	• Discuss Etiological organisms at different ages	C1		
	• Discuss Clinical features	C1		
	• Discuss Diagnosis & Management	C1		
	• Discuss Complications & prognosis	C1		
	• Discuss Prevention of meningitis	C1		
	• Scenario of a Cerebral Palsy patient			
	• Student will be able to know			
	• Discus Brief anatomy of brain	C2		

Cerebral Palsy	• Definition of cerebral palsy	C1	LGIS	MCQs
	• Discuss Epidemiology	C2		
	• Discuss Etiology	C2		
	• Discuss Pathophysiology	C2		
	• Discuss Clinical presentation & anatomic classification of Cerebral Palsy	C2		
	• Discuss Associated problems	C2		
	• Discuss Management & Prevention	C2		
Polio	• Scenario of a patient with acute flaccid paralysis	C1	LGIS	MCQs
	• Student will be able to know	C1		
	• AFP definition	C1		
	• Discuss Etiology & Epidemiology of Polio	C2		
	• Discuss Pathogenesis	C2		
	• Discuss Clinical features	C2		
	• Discuss Management	C2		
	• Discuss Complications & sequel	C2		
	• Prevention – vaccination	C1		

Radiology				
Theory				
Practical	**At The End Of This Skill Lab, Should Be Able To Illustrate:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Skull radio graph	• Interprat Normal Skull Radioghraph	C1	LGIS	MCQs
	• Discuss fractures and other diseases with their clinical significance	C2		
CT- scan brain	• Interpret normal anatomical structures	C2	LGIS	MCQs
MRI & CT Scan	• List some indications for contrast enhanced MRI and CT	C1	LGIS	MCQs
CT scan	• Discriminate between a subdural and epidural hematoma at CT (4) Describe imaging signs of a subarachnoid hemorrhage	C2	LGIS	MCQs

ENT				
Theory				
Topic	**At The End Of This LGIS, Second Year MBBS Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Acoustic neuroma	• Recognize signs and symptoms of acoustic neuroma	C1	LGIS	MCQs

Ophthalmology				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Chalazion	• Discuss in detail the clinical features and management	C2	LGIS	MCQs
Strabismus	• Discuss in detail the clinical features and management	C2	LGIS	MCQs

List of CNS Module Vertical Courses Lectures					
Date/Day	**Department**	**Time**	**Week**	**Topic Of Lectures**	**Teachers**
29-07-2024 Monday	Pharmacology (LGIS)	11:20AM – 12:10 PM	1st Week	Introduction to CNS pharmacology	Dr. Omaima Asif (Even)
					Dr Arsheen (Odd)
02-08-2024 Friday	Pediatrics (LGIS)	08:00AM – 09:00 AM	1st Week	Meningitis	Dr. Mamoona Qudrat (Even)
					Dr. Tanzeela Rani (Odd)
03-08-2024 Saturday	Pathology (LGIS)	10:30AM – 11:20 AM	1st Week	Introduction to ANS ,Basic Characteristics of Sympathetic & Parasympathetic System	Dr. Nida Fatima (Even)
				Meningitis	Dr. Kiran Ahmad (Odd)
05-08-2024	Pathology (LGIS)	11:20AM - 12:10 PM	2nd Week	Patterns of injury in nervous system	Dr. Nida Fatima (Even)

Monday					Dr Kiran Ahmad (Odd)
07-08-2024 Wednesday	Surgery (LGIS)	11:20AM - 12:10 PM	2nd Week	Spinal injury and Head injury	Dr. Soban Sarwar Gondal (Even)
					Dr. Usman Malik (Odd)
08-08-2024 Thursday	Radiology (LGIS)	10:30AM – 11:20 AM	2nd Week	Skull Radiograph	Dr Riffat (Even)
					Dr Saba (Odd)
09-08-2024 Friday	Medicine (LGIS)	08:00AM – 09:00 AM	2nd Week	Spinal cord and peripheral nervous system	Dr Javeria Malik (Even)
					Dr Riffat (Odd)
10-08-2024 Saturday	Gynecology &OBS (LGIS)	11:00AM – 12:10 PM	2nd Week	Seizures during pregnancy(eclampsia/epilepsy)	Dr Ismat Batool (Even)
					Dr Sadia Waheed (Odd)
17-08-2024 Saturday	Medicine (LGIS)	11:20AM – 12:10 PM	3rd Week	Cerebellar disorders	Dr Javeria Malik (Even)
					Dr Faran Maqbool (Odd)
19-08-2024 Monday	Surgery (LGIS)	10:30AM – 11:20 AM	4th Week	Management of hydrocephalus	Dr. Fraz Mehmood (Even)
					Dr. Ammad ul Haq (Odd)
19-08-2024 Monday	Medicine (LGIS)	11:20AM – 12:10 PM	4th Week	Epilepsy and other convulsive disorders	Dr Javeria Malik (Even)
					Dr Faran Maqbool (Odd)
21-08-2024 Wednesday	Medicine (LGIS)	11:20AM – 12:10 PM	4th Week	Encephalitis	Dr Javeria Malik (Even)
					Dr Faran Maqbool (Odd)
26-08-2024 Monday	Medicine (LGIS)	10:30AM – 11:20 AM	5th Week	Stroke	Dr Javeria Malik (Even)
					Dr Faran Maqbool (Odd)
28-08-2024 Wednesday	Radiology	10:30AM - 11:20 AM	5th Week	CT scan and MRI (Brain and Spinal Cord)	Dr Anum Zahoor (Even)
					Dr Faisal (Odd)
28-08-2024 Wednesday	Surgery (LGIS)	11:20AM – 12:10 PM	5th Week	Poly trauma patient	Dr. Fraz Mehmood (Even)
					Dr. Ali Tasaddaq (Odd)

Spirally Integrated Courses / General Education Cluster (GEC) Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Pak Studies/Islamiyat**
    - **Family Medicine**
    - **Behavioral Sciences**
    - **Biomedical Ethics**
    - **Early Clinical Exposure (ECE)**

Behavioral Sciences				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Emotions	• To be able to define emotions.	C1	LGIS	MCQs
	• To understand the neuroanatomy and neurochemistry of emotion way to deal with emotion	C2		
Memory	• To be able to outline the types of memory.	C2	LGIS	MCQs
	• To be able to explain the areas in brain responsible for memory storage and Retrieval	C2		

Biomedical Ethics				
Theory				
Topics	**At the end of session students should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Ethical dilemmas in healthcare practice involving breach in principle of autonomy	• Analyze ethical dilemmas in healthcare practice involving breach in principle of autonomy. • Explain what procedures adopted to maintain patient autonomy. • Identify situations in which doctor may have to take decisions in the best interest of the patients	C3 C2 C1	Short video demonstration on violation of Ethical principle of autonomy from suit CBEC Video resources	• Assignment based assessment involving real life case scenarios under aggregate Marks. (Internal Assessment) • Assignment to be uploaded on LMS
Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence	• Analyze ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence • Explain what procedures adopted to maintain the principle of beneficence and non-maleficence in	C3 C2	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources	• Assignment based assessment involving real life case scenarios under aggregate Marks

	challenging situations • Identify situations in which a doctor may have to take decisions in the best interests of the patient considering the principle of beneficence and non-maleficence	C1	Students deliberations and reflections Reflective writing	(Internal Assessment) • Assignment to be uploaded on LMS
Ethical dilemmas practice involving breach in principle of justice	• Analyze ethical dilemmas in healthcare practice involving breach in principle of justice • Explain what procedures adopted to maintain the principle of justice in challenging situations • Identify situations in which a doctor may have to take decisions in the best interests of the patient considering the principle of justice	C3 C2 C1	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources Students deliberations and reflections Reflective writing	• Assignment based assessment involving real life case scenarios under aggregate Marks (Internal Assessment) • Assignment to be uploaded on LMS

Family Medicine				
Theory				
Topic	**Learning Objectives** **At the end of the lecture the student should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Approach to a patient with headache	• Describe presenting complains of patients with Headache • Discuss complications of Headache • Describe initial treatment of patients with Headache • Know when to refer patient to consultant/ Hospital	C3	LGIS-1	MCQs

Early Clinical Exposure (ECE)		
Rotation to Department of Medicine		
Session	**Learning Objectives**	**Teaching Strategy**
I Cases of stroke	At the end of the session students will be able to • Observe and describe the different types of stroke, including ischemic and hemorrhagic strokes, and explain the pathophysiological changes that occur in the brain as a result of these conditions. • Discuss the major risk factors for stroke, such as hypertension, atrial fibrillation, and diabetes, and recognize the early clinical signs and symptoms using the FAST (Face drooping, Arm weakness, Speech difficulties, Time to call emergency services) mnemonic. • Describe the initial steps in the management of stroke, including the importance of rapid assessment and intervention, the role of imaging in diagnosis, and the basic treatment strategies for ischemic versus hemorrhagic stroke	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II Paraplegia	• Outline the anatomical structures of the spinal cord and its functional relationship with the body, understanding how injuries or diseases affecting these areas can lead to paraplegia. • Discuss the various etiologies of paraplegia, including traumatic spinal cord injury, tumors, infectious diseases, and degenerative disorders, and explain the pathophysiological mechanisms that result in the loss of motor and sensory functions below the level of injury. • Describe the initial clinical assessment of a patient with suspected paraplegia, including the importance of a thorough neurological examination and the use of diagnostic imaging. They will also learn about the basic principles of acute management and the multidisciplinary approach needed for long-term rehabilitation.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
III Vegetative state	• Define a vegetative state and differentiate it from other conditions affecting consciousness, such as coma and minimally conscious states, based on clinical characteristics and brain activity. • Identify and explain the various causes that can lead to a vegetative state, including traumatic brain injury, severe brain hypoxia, and major neurological diseases, and discuss the underlying pathophysiological changes in the brain. • Describe assessment techniques used to determine the extent of brain function, the typical medical care provided, and the ethical challenges involved in decisions about long-term care, including discussions on quality of life and end-of-life decisions.	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit

Rotation to Department of Surgery/ Neurosurgery		
Session	**Learning Objectives**	**Teaching Strategy**
I Head injury	At the end of the session students will be able to • Classify head injuries into major categories such as concussions, contusions, skull fractures, and intracranial hematomas, and understand the mechanisms that typically cause these injuries. • Recognize the immediate and delayed signs and symptoms of head injuries, including changes in consciousness, visible head trauma, cognitive impairments, and neurological deficits. • Describe the basic pathophysiological changes that occur in the brain following different types of head injuries, such as the cascading effects of brain swelling, the impact of blood-brain barrier disruptions, and neuronal damage. • Understand the initial steps in the assessment and management of a patient with a head injury, including maintaining airway, breathing, and circulation, the use of imaging modalities like CT scans to assess internal damage, and the criteria for when to escalate care to neurosurgical interventions.	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II Nerve injuries	• Describe the basic anatomy of peripheral nerves and be able to classify nerve injuries according to severity, using the Sunderland and Seddon classification systems, which categorize injuries based on the extent of damage to nerve fibers and surrounding structures. • List the common causes of nerve injuries, including traumatic injuries (such as lacerations and avulsions), compression (from tumors or entrapment syndromes), and iatrogenic injuries (resulting from medical or surgical procedures). • Understand how to recognize the clinical manifestations of nerve injuries, such as loss of sensation, motor function, or autonomic dysfunction in the affected area, and how these symptoms correlate with the specific nerve damaged. • Discuss the initial steps in the management of nerve injuries, including the importance of a thorough neurological examination, the use of diagnostic tools like electromyography (EMG) and nerve conduction studies, and the principles guiding acute treatment and referral for possible surgical intervention.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
	• Define coma as a deep state of unconsciousness and distinguish it from other states such as vegetative state, minimally conscious state, and brain death by understanding the clinical and neurological criteria for each. • Explain the underlying pathophysiological mechanisms that can induce coma, including traumatic brain injuries, strokes, brain tumors, infections, and metabolic imbalances. They will also discuss the role of disruptions in the reticular activating system and cerebral cortex in the maintenance of consciousness.	• Bedside teaching • Duration 1 hrs

	• Use the Glasgow Coma Scale (GCS) to assess the level of consciousness in a patient, interpreting scores to gauge the severity of the coma and potential outcomes. They will also identify other important clinical signs such as pupillary responses and motor reflexes that help differentiate the cause of coma. • Understand the initial diagnostic steps required when assessing a comatose patient, including neuroimaging, blood tests, and possibly lumbar puncture. They will also discuss the basic management principles aimed at preserving life and brain functions.	• Conducted by senior faculty member of unit

Rotation to Department of Radiology		
Session	**Learning Objectives**	**Teaching Strategy**
I CT scan Brain • Normal • Stroke • Hemorrhage • Infarction	At the end of the session students will be able to • Recognize the normal anatomical structures visible on a CT scan of the brain, including the cerebral hemispheres, cerebellum, brainstem, ventricles, and major sulci and gyri. They will also understand the typical appearances of these structures in different slices (axial, coronal, and sagittal). • Identify the CT findings associated with ischemic and hemorrhagic strokes, including areas of hypodensity in ischemic stroke and hyper density in hemorrhagic stroke. They will understand the importance of timing in the imaging of stroke for optimal diagnosis and management. • Describe the key differences in appearance between brain hemorrhages and infarctions on CT scans. They will be able to describe the characteristics of hemorrhages (e.g., acute intracerebral hemorrhage appearing as a hyperdense area) and infarctions (e.g., loss of cortical definition and the appearance of infarcted areas as hypodense). • Interpret CT images in the context of clinical symptoms to make preliminary diagnoses and understand potential management strategies. This objective aims to integrate their radiographic findings with clinical reasoning to enhance their diagnostic acumen.	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II Hydrocephalus	• Define hydrocephalus as the abnormal accumulation of cerebrospinal fluid (CSF) within the ventricles of the brain. • Distinguish between the types of hydrocephalus, including communicating, non-communicating (obstructive), and ex-vacuo, and understand the mechanisms that lead to each type. • Identify the common causes of hydrocephalus, such as congenital malformations, infections, tumors, and traumatic injuries. • Discuss the pathophysiological changes that occur, focusing on the dynamics of CSF production, flow, and absorption. • Describe the clinical manifestations of hydrocephalus, which may vary by age and the rate of CSF accumulation. • Discuss the diagnostic tools used to identify hydrocephalus, primarily imaging techniques such as ultrasound in infants, CT scans, and MRIs.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit

	• Describe the treatment options available, including surgical interventions like ventriculoperitoneal shunt placement and endoscopic third ventriculostomy.	
III Brain atrophy	• Define brain atrophy as the loss of neurons and the connections between them, resulting in decreased brain volume. They will differentiate between focal atrophy, which affects specific areas of the brain, and generalized atrophy, which involves a reduction in the size of multiple brain regions. • Identify the various causes of brain atrophy, including neurodegenerative diseases (such as Alzheimer's disease and Parkinson's disease), traumatic brain injuries, stroke, and infectious diseases. • Describe the signs and symptoms of brain atrophy, such as cognitive decline, memory impairment, changes in motor skills, and alterations in behavior or personality, depending on the areas of the brain that are affected. • Discuss the role of imaging studies, such as MRI and CT scans, in diagnosing brain atrophy, and how these images can be used to assess the extent and pattern of atrophy. • Discuss the management approaches aimed at slowing the progression of symptoms and improving quality of life, including pharmacological treatments and supportive therapies.	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit
IV Brain Edema	• Define brain edema • Distinguish between the two main types of brain edema: cytotoxic edema, which involves fluid buildup within brain cells due to cellular injury, and vasogenic edema,. • Identify various causes of brain edema, including traumatic brain injury, ischemic stroke, infections, tumors, and toxic exposures. • Describe the clinical signs and symptoms of brain edema, which may include headache, nausea, vomiting, altered consciousness, and neurological deficits such as weakness or speech disturbances, depending on the severity and location of the edema. • Understand the diagnostic techniques used to identify brain edema, primarily imaging studies like CT and MRI scans • Discuss the management options available, including medical treatments to reduce swelling (such as corticosteroids and osmotic diuretics), surgical interventions to relieve pressure, and the importance of addressing the underlying cause of the edema.	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit
	• Classify the types of skull fractures (such as linear, depressed, diastatic, and basilar) and spine fractures (including compression, burst, flexion-distraction, and fracture-dislocation). • Describe the Pathophysiology of Skull and Spine Fractures: Students will explore the pathophysiological implications of these fractures, including potential complications such as intracranial hemorrhage from skull fractures and spinal cord injury from spine fractures. They will examine how the location and severity of the fracture impact neurological outcomes.	

V Skull/ spine Fractures	• Identify the clinical manifestations associated with skull and spine fractures. For skull fractures, symptoms may include visible deformities, cerebrospinal fluid leakage from nose or ears, and neurological deficits. For spine fractures, symptoms can include pain, paralysis, loss of sensation, and autonomic dysregulation. • Understand the diagnostic procedures used to assess skull and spine fractures, primarily focusing on imaging techniques like X-rays, CT scans, and MRI. • Discuss initial management strategies, including stabilization, neurologic assessment, and when to refer for surgical intervention.	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit
VI MRI Brain/ Spine	• Describe the fundamental principles of MRI technology, including how magnetic fields and radio waves are used to create detailed images of the brain and spinal structures. • Enlist the key indications for using MRI over other imaging modalities, such as its superior ability to differentiate between soft tissues and its usefulness in diagnosing conditions like tumors, inflammatory diseases, and vascular anomalies. • Recognize normal anatomical structures of the brain and spine on MRI scans. • Identify common pathological findings, such as signs of herniated discs, spinal stenosis, brain tumors, multiple sclerosis plaques, and evidence of acute or chronic stroke. • Develop skills in interpreting MRI features that are specific to neurological conditions, • Describe the safety considerations associated with MRI, including the importance of screening for contraindications like implanted metallic devices.	• Bedside teaching • Duration 1 hrs Conducted by senior faculty member of unit

List of CNS Module Spiral Courses Lectures					
Date/Day	**Department**	**Time**	**Week**	**Topic Of Lectures**	**Teachers**
02-08-2024 Friday	Quran Translation	10:00AM – 11:00 AM	1st Week	Imaniyaat-5	Mufti Naeem Sherazi (Odd)
02-08-2024 Friday	Quran Translation	11:00AM – 12:00 PM	1st Week	Imaniyaat-6	Mufti Naeem Sherazi (Even)
09-08-2024 Friday	Quran Translation	10:00AM – 11:00 AM	2nd Week	Musawat	Mufti Naeem Sherazi (Even)
				Tehreek-e-Pakistan (1940-1947	Qari Aman Ullah (Odd)
09-08-2024 Friday	Quran Translation	11:00AM – 12:00 PM	2nd Week	Tehreek-e-Pakistan (1940-1947	Qari Aman Ullah (Even)
				Musawat	Mufti Naem Sherazi (Odd)
16-08-2024 Friday	Pakstudies/Islammiyat	10:00AM – 11:00 AM	3rd Week	Khwateen k hakook	Mufti Naem Sherazi (Odd)
				Qayam e Pakistan, ibtidaimushkilaat	Qari Aman Ullah (Even)
16-08-2024 Friday	Pakstudies/Islammiyat	11:00AM – 12:00 PM	3rd Week	Qayam e Pakistan, ibtidaimushkilaat	Qari Aman Ullah (Even)
				Khwateen k hakook	Mufti Naem Sherazi (Odd)
26-08-2024 Monday	Family Medicine (LGIS)	11:20AM – 12:10 PM	5th Week	Approach to a patient with neuronal disease	Dr. Sadia
27-08-2024 Tuesday	Behavioral Sciences (LGIS)	11:20AM – 12:10 PM	5th Week	Memory & Emotions	Dr. M. Azeem Rao (Even)
					Dr. Zarnain Umar (Odd)
29-08-2024 Thursday	Behavioral Sciences (LGIS)	11:20AM – 12:10 PM	5th Week	Metacognition	Dr. Zarnain Umar (Even)
					Dr. Ali Tasaddaq (Odd)
30-08-2024 Friday	Quran Translation IV	08:00AM – 09:00 AM	5th Week	Momalat-I	Mufti Naeem Sherazi (Odd)
	Quran Translation V	09:00AM – 10:00 AM		Momalat-II	Mufti Naeem Sherazi (Even)

Block-III

Module No. 5 - Special Senses

Duration 5 Weeks

Special Senses Module Team

Module Name	:	Reproduction Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Rahat
Co-coordinator	:	Dr. Fareed Ullah
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Minahil Haq (Senior Demonstrator of Anatomy)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Romessa (Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Fareed Ullah Khan (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Themes							
Block	**Subjects**	**Embryology**	**Histology**	**Histology Practical SKL. Lab.**	**Gross Anatomy**	**CBL**	**SDL**
\ III	• Anatomy	• Development of Eye • Development of Pharyngeal arches • Development of Ear	• Histology of Eye • Histology of Ear	• Cornea • Retina • External and Internal ear	• Facial and superior aspect of cranium (Norma frontalis, Norma verticalis) • External surface of cranial base (Norma basalis) • Lateral and occipital aspect of cranium (Norma lateralis, occipitalis) • Mandible • Temporomandibular joint • Face • Scalp • Orbit boundaries and Extraocular muscles • Vessels and nerves of orbit • Eyeball • Eyelid and lacrimal apparatus • Parotid and temporal region • Infratemporal fossa • Pterygopalatine fossa • External and middle ear • Inner ear • Nose and paranasal sinuses	• Oculomotor nerve palsy • Extra Dural hemorrhage	• Norma frontalis, verticalis and basalis • Lateralis and occipitalis, TMJ & Mandible Orbit boundaries • Extraocular muscles • Vessels and Nerves of orbit • Temporal and Infra temporal region, Pterygopalatine fossa • External and middle ear
	• Physiology	• Physiology of Ear & Eye					
	• Biochemistry	• Receptors, Second messengers, Neurotransmitters, Vitamin A role in vision					
	Spiral Courses						
	• The Holy Quran Translation	•					
	• Islamiayat	• Imaniat (Hadith) • Zimidaari aur taluqaat • Uswa-e-hasna					
	• Pak Studies	• Pakistan ki jughrafiyai ahmiyat aur difai haisiyat • Pakistan k hamsaya mumalik se taluqaat					

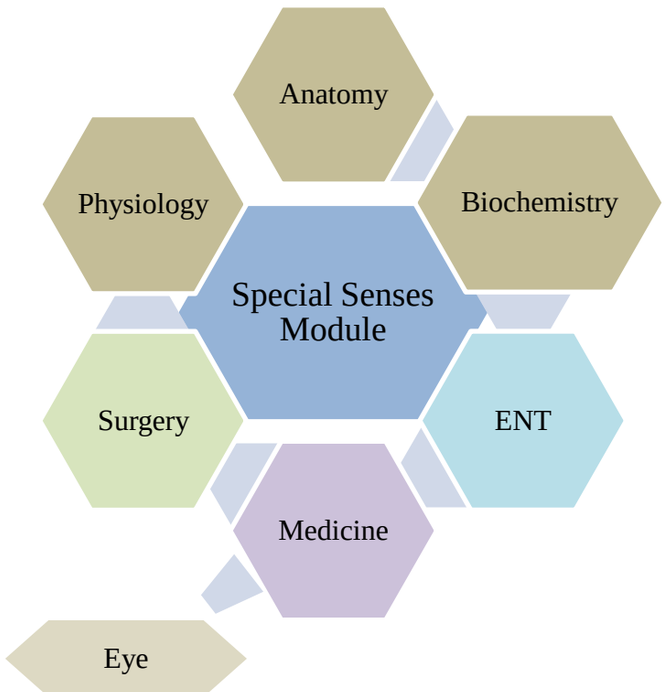
		• Pakistan k qudrati wasail-maadniyaat
	• Biomedical Ethics / Professinalism	• Ethical dilemmas Involving breach in Justice
	• Behavioral Sciences	• Perception
	• Radiology & Artificial Intelligence	• General radiologic concepts
	• Family Medicine	• Approach to a patient with earache
	Vertical Integration	
	• Surgery	• Plastic surgery
	• ENT	• Nasal polyp & Sinusitis & Diseases of External Nose • Otitis Media Ear Discharge &Hearing Problems in Children • Facial fractures
	• Medicine	• Management Of Covid-19 Sense of Smell
	• Eye	• Refractive Errors Strabismus • Ocular trauma & Ocular Procedures • Conjunctivitis Chalazion • Cataract & Glaucoma & Anti glaucoma drugs
	Early Clinical Exposure (ECE)	
	• Medicine	• Hyperthyroidism • Hypothyroidism • Cushing Syndrome
	• Surgery	• Thyroid Nodule • Multi nodular Goiter • CA Thyroid • Graves Diseases
	• Eye	• Blindness • Visual field defect • Cataract
	• Otolaryngology	• Deafness • Hearing tests • Nasal Obstruction
Clinical Themes		
	• Pathophysiology of Cataracts and Management Options • Glaucoma: Types, Mechanisms, and Treatment • Otitis Media and Externa: Causes and Management • Hearing Loss: Types and Clinical Evaluation	

	• Pathophysiology of Rhinitis and Sinusitis • Diagnosis and Management of Nasopharyngeal Carcinoma • Vertigo: Peripheral vs. Central Causes • Retinal Detachment: Diagnosis and Surgical Management • Disorders of Taste and Smell: Causes and Clinical Features • Basics of Audiometry in Hearing Assessment

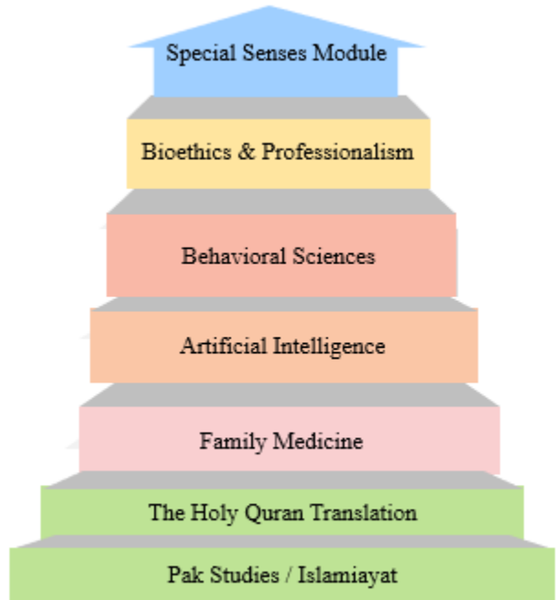
Implementation of Terms of Reference (TORS)

- Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are predefined as per the guidelines of PMDC and to be strictly followed.
- The hours mentioned within each module are the mandatory minimum required.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these. However, the level of cognition can be kept at a higher level.
- The Table of Specifications provided will be used for the three papers of the first professional examination.
- The same table of specifications should be used for the respective block exams for internal assessment.
- The criteria defined for continuous internal assessment is to be followed for each module and block respectively

Integration of Disciplines in Special Senses Module



Spiral / General Education Cluster Courses



Module No. 3 – Special Senses

Rationale: Visual system is a blessing, and no one can underestimate the importance of sight in ones life. It is a highly sensitive system. Unfortunately, it is among the neglected parts of health care and millions of people are getting blind either due to negligence or inappropriate treatment. Refractive errors, cataract, glaucoma and diabetic eye disease are among the ophthalmic diseases which can be easily treated, and morbidity prevented if diagnosed earlier. A young doctor must know how to screen out eye diseases and treat where possible. It is our responsibility to provide them with the required acumen.

Ear, Nose and Throat disorders are very common in the community and form a major portion of clinical practice of a general / family physician. Common ENT problems like phayngitis, tonsillitis, Otitis media, rhinosinusitis, nasal allergy, deafness, vertigo and balance problems can be diagnosed and treated easily. The prevalence of cancer of the upper aerodigestive tract is very high in Pakistan. These patients must be diagnosed and treated at the early stages to reduce morbidity and mortality. Medical students must be made aware of the importance of proper management of ENT problems for the benefit of community and humanity.

Module Outcomes

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

Knowledge

- Integrate the basic knowledge and clinical problems.
- Take detailed history, examine the patients and make a provisional diagnosis with the plan of management.
- Timely refer the patient to an ophthalmologist or ENT specialist.
- Used technology based Medical Education including **Artificial Intelligence**
- Appreciate concept and importance of **Family Medicine, Biomedical Ethics, & Research.**

Skills

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

Attitude

- Demonstrate effective communication skill strategies while interacting with patients.
- Demonstrate teamwork and positive interaction with colleges.
- Demonstrate self learning attitude and problem-solving skills.

Syllabus of Special Senses (Module No. 5)

Anatomy				
Theory				
7Topics	**At the end of lecture students should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Development				
Development of Pharyngeal apparatus	• Define the pharyngeal arch apparatus. • Describe components of pharyngeal arches. • Enlist derivatives of each of pharyngeal arch. • Describe the development of pharyngeal grooves and pharyngeal membranes. • Enlist the derivates of pharyngeal pouches and clefts. • Enlist common birth defects associated with pharyngeal apparatus. • Explain the embryological basis of these defects. • Understand the bio-physiological aspects of arches. • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C1 C2 C1 C2 C1 C1 C2 C2 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Development of face, nasal cavities	• Describe the developmental stages of face. • Discuss the role of neural crest cells in development of facial skeleton and pharyngeal arch derivatives. • Describe the molecular regulation of facial development. • Discuss the congenital anomalies of face. • Describe the development of nasal cavities and paranasal sinuses.	C2 C2 C2 C3 C2	LGIS	MCQ SAQ VIVA OSPE

	• Understand the bio-physiological aspects of face & nasal cavities • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C3 C3 C3 C3 C2 C3 C3		
Development of palate	• Discuss the development of primary and secondary palate. • Enlist the different varieties of cleft palate. • Discuss the etiology of cleft lip and cleft palate. • Describe embryological basis of craniofacial anomalies. • Understand the bio-physiological aspects of Palate. • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C1 C3 C3 C2 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Development of Eye I	• Describe the different embryological sources of development of eye. • Describe development of eye field on rostral neural tube. • Enlist derivatives of optic cup and development of retina. • Recall the differentiation of optic grooves and optic vesicle. • Discuss transformation of optic vesicles into optic cup. • Describe development of retina.	C2 C2 C1 C2 C2	LGIS	MCQ SAQ VIVA OSPE

(Optic Cup & Retina)	• Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C3 C3 C3 C3		
Development of Eye II (Congenital defects)	• Describe formation of optic stalk. • Explain induction of optic placodes and lens primordia. • Enumerate neural crest cell and mesenchymal derived eye structures. • Enlist the molecular regulation of eye development. • Discuss birth defects of the eye. • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C2 C1 C1 C2 C3 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE

Development of Ear	• Explain the development of optic placodes, otic pit, otic vesicle and otic capsule. • Enlist derivatives of otic vesicle and otic capsule. • Describe development of middle ear cavity and Eustachian tube from tubotympanic recess. • Describe the development of auditory ossicles, tympanic membrane and mastoid antrum. • Discuss development of external acoustic meatus. • Enlist commom congenital anomalies associated with ear development. • Describe the embryological basis of these anomalies • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C1 C2 C2 C2 C1 C2 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Histology				
Histology of Ear	• Describe the structural differences between outer, middle and inner ear. • Discuss the functions of different parts of ear. • Distinguish the auditory part of inner ear from the vestibular system. • Discuss their roles in hearing & balance • Describe the fuction of sensory hair cells. • Describe the appearance and function of spinal ganglia.	C2 C2 C2 C2 C2	LGIS	MCQ SAQ VIVA

	• Understand the bio-physiological aspects of hearing • Correlate with the clinical conditions. • Understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C3 C3 C3 C3 C3 C3		OSPE
Histology of Eye I (Fibrous & Vascular coat)	• Discuss the histology of different coats of the eyeball. • Describe histological sections of sclera & Cornea. • Describe the histology of choroid, ciliary body and iris. • Discuss histological sections of accessory structures of the eye. • Discuss the histological details of lens chamber & Vitroeus body. • Understand the bio-physiological aspects of vision • Correlate with the clinical conditions like glaucoma, cataract. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C2 C2 C2 C2 C2 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
	• Describe layers of retina • Discuss retinal pigment epithelium	C2 C2		

Histology of Eye II (Retina & Photoreceptors)	• Discuss histology& functions of neuronal retina. • Describe photoreceptors & rod cells. • Understand the bio-physiological aspects of Palate. • Correlate with the clinical conditions like retinal detachment • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C2 C2 C3 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE

Topics	At the end of lecture students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Facial & Superior Aspect of Cranium (Norma Frontalis & Verticalis.)	• Define boundaries of Norma frontalis and verticalis.	C1	Skills Lab	MCQ SAQ VIVA OSPE
	• Enumerate their muscle attachment.	C1		
	• Describe and features of its structure	C2		
	• Correlate with the clinical conditions.	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
External Surface of Cranial Base (Norma Basalis)	• Describe bones forming the base of skull	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Explain the details of anterior, middle and posterior part of base of skull	C2		
	• Identify different foramina and structures passing through them.	C1		
	• Explain the attachments and relations of base of skull.	C2		
	• Fracture of cranial base	C2		
	• Head injuries and intracranial hemorrhage	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		

	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Lateral & Occipital Aspect of Cranium (Norma Lateralis. & Occipitalis)	• Enlist various bones in normal lateralis. Describe the cranial and facial subdivision. Define external acoustic meatus,	C1	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss attachments of mastoid and styloid process.	C2		
	• Explain the boundaries of Norma occipitalis.	C2		
	• Identify different foramina and structures passing through them at the base.	C1		
	• Explain its attachments and relations.	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Mandible	• Describe the anatomical features of mandible	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe parts of mandible	C2		
	• Explain structural features of each part	C2		
	• Enlist attachments of each part	C1		
	• Describe blood and nerve supply of mandible.	C2		
	• Interpret applied anatomy of mandible.	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Temporomandibular joint (TMJ)	• Discuss the temporomandibular joint, its type, formation and neurovascular supply.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe the movement's axis and muscles involved.	C2		
	• Correlate clinically disorders of the temporo- mandibular joint.	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		

	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Face	• Discuss limits of face.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Tabulate the muscles of face. (Superficial and deep) origin, insertion, nerve supply and action.	C2		
	• Discuss their role in facial expression.	C2		
	• Describe facial nerve palsy upper and lower motor neuron.	C3		
	• Discuss nerve supply of face.	C1		
	• Discuss superficial and deep vasculature of face.	C1		
	• Map the outline of facial artery and vein on simulated patient / model.	P+A		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Scalp and temple	• Explain the extent of scalp	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe the Scalp layers, nerves &vessels	C2		
	• Discuss the clinical correlates like scalp injuries and scalp wounds.	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Orbit	• Discuss its location, surfaces and borders	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe its muscular and ligamentous attachment.	C2		
	• Describe eyeball movements in relation to recti and oblique muscles.	C2		
	• Discuss role of levator palpebrae superioris	C2		
	• Discuss clinical correlations of different coats of eyeball.	C2		
	• Explain extent and subdivisions of pharynx	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		

	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Eyeball	• Describe anatomy of eyeball with suspensory apparatus.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss different coats of eyeball with their nerve and blood supply.	C2		
	• Discuss refractive media and compartments of eyeball.	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Eyelid & lacrimal app	• Discuss the different components of lacrimal apparatus	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe the lacrimal gland and its neurovascular supply	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Parotid & Temporal Region	• Describe boundaries of parotid region.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss surfaces, innervation and relations of parotid gland.	C2		
	• Understand the bio-physiological aspects of arches	C2		
	• Map the outline of parotid gland and duct on simulated patient / model.	P+As		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Infra temporal Fossa	• Discuss the boundaries and contents of temporal region.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe the temporalis muscle and its relations	C2		
	• Enumerate the boundaries and contents of infratemporal region.	C1		
	• Discuss muscles of mastication	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		

Pterygopalatine Fossa	• Discuss the boundaries and contents of pterygopalatine fossa.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss the communications of pterygopalatine fossa.	C2		
	• Understand the bio-physiological aspects of arches	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
External & Medal Ear	• Describe parts of the ear.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss walls and contents of external and middle ear,	C2		
	• Discuss their blood and nerve supply.	C2		
	• Explain pharynges tympanic tube, mastoid antrum and air cells.	C2		
	• Relation of chorda tympani and facial nerve.	C1		
	• Discuss Mastoiditis and tubal blockage	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Inner Ear	• Discuss membranous and bony labyrinth.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe internal acoustic meatus.	C2		
	• Explain the course of 7th and 8th cranial nerve in detail.	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Nose & Paranasal Sinuses	• Discuss anatomy and location of paranasal air sinuses separately.	C2	Skills Lab	MCQ SAQ VIVA
	• Define & list names of paranasal sinuses	C1		
	• Describe their blood and nerve supply	C2		
	• Describe functions of paranasal sinuses.	C2		
	• Discuss drainage of paranasal sinuses.	C2		
	• Identify carious sinuses in radiographs	C1		
	• Describe anatomy of external nose and features of nasal septum, side and anatomical position.	C2		

	• Describe details of olfactory receptors and formation of olfactory nerve.	C2		OSPE
	• Discuss blood and nerve supply of external nose and nasal septum.	C2		
	• Explain functions of nose.	C2		
	• Discuss in detail clinical correlates of external nose and nasal septum. Lateral nasal wall and their importance.	C2		
	• Discuss on clinical importance of nasal cavity.	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Cross Sectional Anatomy	Identify the structures at • Sagittal section of head • Level passing through the vestibule of the nose, the inferior nasal the temporomandibular joint , the pons and the occipital lobe of the cerebrum.	C3		

Topics	Learning objectives	Learning Resources
Norma Frontalis and Verticalis.	• Define boundaries of Norma frontalis and verticalis. • Enumerate their muscle attachment. • Describe and features of its structure • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 823-8291). • https://youtu.be/rr3-V7Qhf8E • https://youtu.be/35Y71cRBqs8
External Surface of Cranial Base Norma Basalis.	• Describe bones forming the base of skull • Explain the details of anterior, middle and posterior part of base of skull • Identify different foramina and structures passing through them. • Explain the attachments and relations of base of skull. • Fracture of cranial base • Head injuries and intracranial hemorrhage • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, P829-836). • https://youtu.be/6ZjJPLOJ0N8 • https://youtu.be/75lLaDFJTP4 • https://youtu.be/fteiKT_wQDE
Lateral & Occipital Aspect of Cranium Norma Lateralis. Norma Occipitalis	• Enlist various bones in normal lateralis. Describe the cranial and facial subdivision. • Define external acoustic meatus, • Discuss attachments of mastoid and styloid process. • Explain the boundaries of Norma occipitalis. • Identify different foramina and structures passing through them at the base.	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 827-829). • https://youtu.be/tkpzPMXzwiM • https://youtu.be/9Msvtw5CjFY

	• Explain its attachments and relations. • Read relevant research article	
Mandible	• Define location of mandible • Describe parts of mandible • Explain structural features of each part • Enlist attachments of each part • Describe blood and nerve supply of mandible. • Interpret applied anatomy of mandible. • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Pae 827). • https://youtu.be/_lHosB-c_fQ • https://youtu.be/Qc0ysewMJg4
Temporomandibular joint	• Discuss the temporomandibular joint, its type, formation, and neurovascular supply • Describe the movement's axis and muscles involved. • Correlate clinically disorders of the temporo- mandibular joint. • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 916-920). • https://youtu.be/6tJsi5oghNY • https://youtu.be/0BKU04QLzV0
Orbit	• Discuss its location, surfaces and borders • Describe its muscular and ligamentous attachment. • Describe eyeball movements in relation to recti and oblique muscles. • Discuss role of levator palpebrae superioris • Discuss extraocular muscles of orbit. • Supporting apparatus of eyeball. • Nerves of eye ball • Vasculature of orbit • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 889-906). • https://youtu.be/HKEA4p5k66U • https://youtu.be/Oz4kGGiJNrA
Temporal Region	• Describe boundaries of parotid region. • Discuss surfaces, innervation and relations of parotid gland. • Understand the bio-physiological aspects of arches • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 914-916). • https://youtu.be/HB6bN-rs2NU • https://youtu.be/zo7DDK-h1Mg

Infra temporal Fossa	• Discuss the boundaries and contents of temporal region. • Describe the temporalis muscle and its relations • Enumerate the boundaries and contents of infratemporal region. • Discuss muscles of mastication • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 916-926). • https://youtu.be/z2GlluoOtMY • https://youtu.be/ixCCX46XWHA
Pterygopalatine Fossa	• Discuss the boundaries and contents of pterygopalatine fossa. • Discuss the communications of pterygopalatine fossa. • Understand the bio-physiological aspects of arches • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 951-954) • https://youtu.be/9taW-Th3ycc • https://youtu.be/o_JbDynMZjo
External & Middle Ear	• Describe parts of the ear. • Discuss walls and contents of external and middle ear , • Discuss their blood and nerve supply. • Explain pharyngo tympanic tube, mastoid antrum and air cells. • Relation of chorda tympani and facial nerve. • Discuss Mastoiditis and tubal blockage • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 966-973). • https://youtu.be/VRLm7cpmZSk • https://youtu.be/unDpXRE_PPA

Practicals				
Topics	**At the End of Demonstration Student Should Be Able To**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Cornea	• Identify the histological slide cornea. • Illustrate the microscopic picture of Cornea. • Enlist two points of identification of each • Read a relevant research article	P C2 C1 C3	Skill Lab	OSPE
Retina	• Identify the histological slide of retina. • Illustrate the microscopic picture of retina • Enlist two points of identification • Read a relevant research article	P C2 C1 C3	Skill Lab	OSPE
Ear	• Identify the histological slide of ear • Illustrate the microscopic picture of ear • Enlist two points of identification of each • Read a relevant research article	P C2 C1 C3	Skill Lab	OSPE

Physiology						
Theory						
Topics	**Learning Objectives**	**References**	**Learning Resources**	**Learning Domains**	**Learning Strategy**	**Assessment Tools**
Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction	1. Explain the basic physiology of eye and its refractive surfaces 2. Discuss the physical principles of optics 3. Describe the mechanism of accommodation and its control 4. Describe the errors of refraction (Myopia, hyperopia, astigmatism and their correction by using different lens systems	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 177,185) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 85 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 374-378) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1086) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 627-635)	• https://www.britannica.com/science/human-eye • https://youtu.be/laEFdlxW0rA	1.C2 2. C2 3. C2 4.C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Introduction to Physiology of external ear, Middle ear	1.Describe physiology of external ear 2.Describe physiology of middle ear 3. Explain structure of middle ear	• Ganong's Review of Medical Physiology.25TH Edition.Section 02, (Chapter 10, Page 199) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 92 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page	• https://youtu.be/VRLm7cpmZSk • https://www.sciencedirect.com/science/article/pii/S0378595522002192	1. C2 2. C2 3. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment)

		364-371) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 663)				OSPE
Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina	1.Describe the formation and circulation of aqueous humor 2.Explain the mechanism of regulation of intraocular pressure 3.Define glaucoma and its treatment	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 178) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1094) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 635) (Chapter 51,Page 639)	• https://youtu.be/CKtLlOSh8o4 • https://youtu.be/7CFY4gxLnMY • https://my.clevelandclinic.org/health/body/24611-aqueous-humor-vitreous-humor	1. C2 2. C2 3. C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Functions of Inner ear, Physiology of Hearing	1. Describe the physiology of hearing and function of tympanic membrane and ossicular system. 2. Define impendence matching and attenuation reflex 3. Explain the conduction of sound waves in the cochlea	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 200,204) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 93 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 371-374) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 664,669)	1. https://youtu.be/Ie2j7GpC4JU 2. https://youtu.be/qgdqp-oPb1Q 3. https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02025	1. C2 2. C1 3. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Photochemistry of vision	1. Describe the physiology of retinal layers 2. Explain photochemistry of vision (rhodopsin - retinal)	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 182)	1. https://www.brainkart.com/article/Photochemistry-of-Eye-	1. C2 2. C2 3. C2	LGIS	MCQ

&Physiological basis for photo transduction	3. Describe the mechanism of activation of Rods 4. Explain the photochemistry of color vision	• Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 87 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 379-387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 51, Page 641)	Vision_19676/ 2. https://youtu.be/k9lrM5iPNuY	4. C2		SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Hearing abnormalities, Tuning fork tests and audiometry	1. Explain the auditory nervous pathway and abnormalities associated with it. 2. Describe the function of cerebral cortex in hearing.	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition(Chapter 62,Page 1067) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 672)	1. https://youtu.be/FgF91K7dU8Y 2. https://youtu.be/acYMy9b0F2A 3. https://www.uptodate.com/contents/image?imageKey=PC%2F58032&topicKey=PC%2F15359&source=see_link	1. C2 2. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Light & dark adaptation, Color vision, Neural functions of the retina, Central neurophysiology of vision, Neural pathways for analysis of visual information	1. Explain the neural circuitry of the Retina 2. Describe the physiology of visual pathway 3. Name the optic lesion associated with visual pathway	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 189,193) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 90 • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 51, Page 644)(Chapter 52,Page 653-657)	**1.** https://youtu.be/wiYmTAuVimg 2. https://youtu.be/cG5ZuK0_qtc 3. https://teachmeanatomy.info/head/cranial-nerves/optic-cnii/	1.C2 2.C2 3.C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Vestibular system	1. Describe the function of the organ of corti 2. Explain vestibular system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 209) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 95 • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,(Chapter 63,Page 1072)	1. https://www.physio-pedia.com/Vestibular_System 2. https://youtu.be/ryGMI3SpxCE 3. https://youtu.be/mcp7qLh8_5c	1. C2 2. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Lesions of visual pathway and its effects on field of vision, Movements of eye ball along with neural control	1. Explain the muscular control of eye movement 2. Describe the fixation movements of eye 3. Define accommodation reflex and pupillary light reflex 4. Name the optic lesion associated with visual pathway	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 190) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 374-378) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 52, Page 657)	1. https://youtu.be/evLyI35m8xU 2. https://teachmeanatomy.info/head/organs/eye/extraocular-muscles/	1. C2 2. C2 3. C2 4. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Sense of Taste and pathophysiology	• List the primary sensation of taste • Explain the mechanism of taste perception and its transmission into central nervous system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 221) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 100 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 361) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 675-679)	1. https://youtu.be/K9JSBzEEA0o 2. https://youtu.be/mFm3yA1nslE 3. https://www.sciencedirect.com/topics/nursing-and-health-professions/taste	1. C1 2. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Physiology of accommodation and clinical abnormalities	1. Define accommodation reflex and pupillary light reflex 2. Explain Clinical abnormalities associated with accommodation	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 188) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 52, Page 660)	1. https://youtu.be/xj0blrAx3_s 2. https://teachmephysiology.com/nervous-system/ocular-physiology/ocular-accommodation/	1. C1 2. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Sense of Smell and pathophysiology	1. List the primary sensation of smell 2. Describe the stimulation of olfactory cells and its transmission into central nervous system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 217) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 98 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 358) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 679)	1. https://www.alimentarium.org/en/fact-sheet/senses-smell 2. https://youtu.be/mFm3yA1nslE	3. C1 4. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Topics	Learning Objectives	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Physiology of Vision	1. Explain the basic physiology of eye and its refractive surfaces 2. Discuss the physical principles of optics 3. Describe the mechanism of accommodation and its control	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 177,185) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 85 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 374-378)	1. https://www.britannica.com/science/human-eye 2. https://youtu.be/laEFdlxW0rA	1.C2 2. C2 3. C2 4.C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,

	4. Describe the errors of refraction (Myopia, hyperopia, astigmatism and their correction by using different lens systems	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1086) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 627-635)				MST based Assessment) OSPE
Physiology of Hearing	1. Describe the physiology of hearing and function of tympanic membrane and ossicular system. 2. Define impendence matching and attenuation reflex 3. Explain the conduction of sound waves in the cochlea	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 200,204) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 93 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 371-374) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 664,669)	1. https://youtu.be/Ie2j7GpC4JU 2. https://youtu.be/qgdqp-oPb1Q 3. https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02025	1. C2 2. C1 3. C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Sense of Taste and Smell	1. List the primary sensation of taste 2. Explain the mechanism of taste perception and its transmission into central nervous system 3. List the primary sensation of smell 4. Describe the stimulation of olfactory cells and its transmission into central nervous system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 221) (Chapter 11, Page 217) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 100 , chapter 3, page 98 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 361) (Chapter 10,Page 358) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 675-679) . (Chapter 54, Page 679)	1. https://youtu.be/K9JSBzEEA0o 2. https://youtu.be/mFm3yA1nslE 3. https://www.sciencedirect.com/topics/nursing-and-health-professions/taste 4. https://www.alimentarium.org/en/fact-sheet/senses-smell 5. https://youtu.be/mFm3yA1nslE	1.C1 2.C2 3.C1 4.C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Topics Of SDL	Learning Objective	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools

ON CAMPUS Introduction to Physiology of external ear, Middle ear	1.Describe physiology of external ear 2.Describe physiology of middle ear 3. Explain structure of middle ear	• Ganong's Review of Medical Physiology.25TH Edition.Section 02, (Chapter 10, Page 199) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 92 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 364-371) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 663)	1. https://youtu.be/VRLm7cpmZSk **2.** https://www.sciencedirect.com/science/article/pii/S0378595522002192	1. C2 2. C2 3. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Functions of Inner ear, Physiology of Hearing	1.Describe the physiology of hearing and function of tympanic membrane and ossicular system. 2.Define impendence matching and attenuation reflex 3. Explain the conduction of sound waves in the cochlea	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 200,204) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 93 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 371-374) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 664,669)	1. https://youtu.be/Ie2j7GpC4JU 2. https://youtu.be/qgdqp-oPb1Q 3. https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02025	1.C2 2.C1 3. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Hearing abnormalities, Tuning fork tests and audiometry	1.Explain the auditory nervous pathway and abnormalities associated with it. 2. Describe the function of cerebral cortex in hearing.	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition(Chapter 62,Page 1067) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 672)	1. https://youtu.be/FgF91K7dU8Y 2. https://youtu.be/acYMy9b0F2A 3. https://www.uptodate.com/contents/image?imageKey=PC%2F58032&topic	1.C2 2. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation

			Key=PC%2F15359&source=see_link			
OFF CAMPUS Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction	1. Explain the basic physiology of eye and its refractive surfaces 2. Discuss the physical principles of optics 3. Describe the mechanism of accommodation and its control 4. Describe the errors of refraction (Myopia, hyperopia, astigmatism and their correction by using different lens systems	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 177,185) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 85 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 374-378) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1086) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 627-635)	• https://www.britannica.com/science/human-eye https://youtu.be/laEFdlxW0rA	1.C2 2. C2 3. C2 4.C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina	1.Describe the formation and circulation of aqueous humor 2.Explain the mechanism of regulation of intraocular pressure 3.Define glaucoma and its treatment	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 178) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1094) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 635) (Chapter 51,Page 639)	• https://youtu.be/CKtLlOSh8o4 • https://youtu.be/7CFY4gxLnMY • https://my.clevelandclinic.org/health/body/24611-aqueous-humor-vitreous-humor	1. C2 2. C2 3. C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Photochemistry of vision	1. Describe the physiology of retinal layers 2. Explain photochemistry of vision (rhodopsin - retinal)	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 182)	3. https://www.brainkart.com/article/Photochemistry-of-Eye-Vision_19676/	1. C2 2. C2 3. C2 4. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based

&Physiological basis for photo transduction	3. Describe the mechanism of activation of Rods 4. Explain the photochemistry of color vision	• Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 87 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 379-387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 51, Page 641)	https://youtu.be/k9lrM5iPNuY			Aseessment, MST based Assessment) OSPE SDL Evaluation
Vestibular system	1. Describe the function of the organ of corti 2. Explain vestibular system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 209) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 95 Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,(Chapter 63,Page 1072)	4. https://www.physio-pedia.com/Vestibular_System 5. https://youtu.be/ryGMI3SpxCE https://youtu.be/mcp7qLh8_5c	1. C2 2. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Sense of Taste and pathophysiology	1. List the primary sensation of taste 2. Explain the mechanism of taste perception and its transmission into central nervous system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 221) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 100 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 361) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 675-679)	3. https://youtu.be/K9JSBzEEA0o 4. https://youtu.be/mFm3yA1nslE 5. https://www.sciencedirect.com/topics/nursing-and-health-professions/taste	1.C1 2. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
	1. List the primary sensation of smell	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 217)	6. https://www.alimentarium.org/en/fact-	1.C1 2.C2		MCQ SEQ VIVA VOCE

Sense of Smell and pathophysiology	2. Describe the stimulation of olfactory cells and its transmission into central nervous system	• Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 98 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 358) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 679)	7. sheet/senses-smell https://youtu.be/mFm3yA1nslE		SDL	MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation

Practicals					
Topic	**Learning Objectives**	**Reference**	**Learning Domains**	**Learning Strategy**	**Assessment Tools**
Estimation of Visual Acuity	• Apparatus identification • Principle • Procedure • Precautions • Recall normal value of visual acuity • Use of Snellen's chart & jaeger's chart • Recall the different Errors of refraction	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	P C1 P C1 C1 P C1	Practicals/skill lab	Viva Voce Ospe Video Assissted Assessment
Examination of 8th Cranial Nerve (vestibular function)	• Apparatus identification • Principle • Procedure • Precautions • Use various hearing tests & interpretation of their results • Recall deafness, its types & causes	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	P C1 P C1 C1 C1	Practicals/skill lab	Viva Voce Ospe Video Assissted Assessment

Performance of Hearing Test (cochlear function)	• Apparatus identification • Principle • Procedure • Precautions • Use various hearing tests & interpretation of their results • Recall deafness, its types & causes	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	P C1 P C1 C1 C1	Practicals/skill lab	Viva Voce Ospe Video Assissted Assessment

Biochemistry				
Theory				
Topic	**Learning Objectives** **At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Receptors and their classification	Define receptors. Classify Receptors	C1 C2	LGIS	MCQs, SAQs& Viva
Signal transduction G proteins	Explain the structure and function of G proteins	C2	LGIS	MCQs, SAQs & Viva
Signal transduction Second messenger system	Describe different types of second messengers	C2	LGIS	MCQs, SAQs & Viva
Neurotransmitters	Explain synthesis & functions of neurotransmitters. Discuss related clinical disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Role of vitamin A in vision	Explain the role of vitamin A in vision. Discuss related clinical abnormalities	C2 C3	LGIS	MCQs, SAQs & Viva

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Receptors & G proteins	Explain different types of receptors and G proteins	C2	SGD	MCQs, SAQs& Viva
Neurotransmitters	Discuss synthesis, functions & clinical significance of neurotransmitters	C2	SGD	MCQs, SAQs & Viva

Topics Of SDL	Learning Objectives	Learning resources
Neurotransmitter	• Explain synthesis & functions of neurotransmitters • Discuss related clinical disorders	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 13, 21 page 166 & 317 - 319) • Use digital library ◦ https://www.khanacademy.org/science/biology/human-biology/neuron-nervous-system/a/neurotransmitters-their-receptors ◦ https://youtu.be/LOHKVp8hn7o ◦ https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=neurotransmitters&oq=Neurotransmitter#:~:text=Axelrod%C2%A0%2D%20Scientific%20American%2C%201974%20%2D%20JSTOR
Receptors	• Define receptors • Classify Receptors	• Text book of Biochemistry Lehninger 8th edition (Chapter 12, page 439- 440) • Use digital library ◦ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4817805/ ◦ https://www.sinobiological.com/research/receptors/what-are-receptors#:~:text=Receptors%20are%20proteins%2C%20usually%20cell,cells%2C%20monocytes%20and%20stem%20cells. ◦ https://youtu.be/vjFes5I07c0
G - Proteins	• Explain the structure and function of G proteins	• Harper's Illustrated Biochemistry 32th edition (Chapter 42, page 503 – 505) • Use digital library

		• https://youtu.be/GHwMJnxaiys • https://www.britannica.com/science/G-protein-coupled-receptor • https://www.nature.com/scitable/topicpage/gpcr-14047471/
Role of Vitamin A in Vision	• Explain the role of vitamin A in vision • Discuss related clinical abnormalities	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 28, page 433-434) • Use digital library • https://www.bing.com/search?pglt=41&q=role+of+vitamin+a+in+vision&cvid=dddf1e33ab0a45318ddff31539f0445a&aqs=edge.2.69i57j0l8.11403j0j1&FORM=ANSPA1&PC=U531#:~:text=https%3A//pubmed.ncbi.nlm.nih.gov/27830507 • https://www.bing.com/search?pglt=41&q=role+of+vitamin+a+in+vision&cvid=dddf1e33ab0a45318ddff31539f0445a&aqs=edge.2.69i57j0l8.11403j0j1&FORM=ANSPA1&PC=U531#:~:text=Vision%20%E2%80%93%20Introduction%20to%20%E2%80%A6-,https%3A//mtsu.pressbooks.pub/.../8f%2Dvision%2Dvitamins,-Web • https://youtu.be/wo7i9bFs4Bw
Second Messenger System	• Describe different types of second messengers	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 8, page 103- 105) • Harper's Illustrated Biochemistry 32th edition (Chapter 42, page 506 – 509) • Use digital library • https://www.britannica.com/ • https://youtu.be/PzA5Z3DXfrQ

Practicals				
Topic	**Learning Objectives At The End Of Practical Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Urine report	Write and interpret urine report	P	Skill Lab	OSPE
Lipid Profile	Write and interpret lipid profile	P	Skill Lab	OSPE
Revision of Spectrophotometer	Understand principle and uses of spectrophotometer	P	Skill Lab	OSPE

Basic and Clinical Sciences (Vertical Integration)

Case Based Learning Objectives (CBL)

Anatomy, Physiology & Biochemistry			
Clinical Themes			
Subjects	**Topics**	**At the end of the session the student should be able to**	**Learning Domains**
Anatomy	• Extra dural Haemorrhage (Norma lateralis & occipitalis)	Apply basic knowledge of subject to study clinical case.	C3
	• Occulo Motor nerve palsy (Extra ocular muscles)	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Night Blindness	Apply basic knowledge of subject to study clinical case.	C3

Pharmacology				
Theory				
Topic	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Anti glaucoma drugs	• Recall the process of production and drainage of aqueous humor	C1	LGIS	MCQ
	• Outline the range of normal IOP	C1		
	• Enumerate main drug groups used in treatment of glaucoma	C1		
	• Briefly discuss IOP lowering mechanism of main groups	C2		

Medicine				
Theory				
Topic	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Management Of Covid-19 Sense of Smell	• Discuss pathophysiology, signs and symptoms of patients with COVID-19.	C2	LGIS	MCQ
	• Discuss How will you investigate the patient with COVID-19.	C2		
	• Explain the management of COVID-19.	C2		

Sugery				
Theory				
Topic	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Plastic surgery	• Introduction to Plastic Surgery	C2	LGIS	MCQ
Burn	• Define Burn	C1	LGIS	MCQ
	• Types of Burns	C2		
	• Classification of Burns			
	• Percentages of Burn			
Burn Managment	• Approach toward Burn patient?	C1	LGIS	MCQ
	• Physiological changes because of Burn	C2		
	• Importance of Fluid Management in burn			
Foot Ulcer	• Classify Foot Ulcer	C1	LGIS	MCQ
	• Differentiate among Venous/Arterial /Traumatic and Diabetic Ulcer	C2		
	• Grading of Diabetic foot ulcers	C3		
Skin ulcer	• Classify Skin Ulcers	C1	LGIS	MCQ
	• Differentiate between marjolin ulcer, basal cell carcinoma and squamous cell carcinoma	C2	LGIS	MCQ

Peadiatrics				
Theory				
Topic	**At the End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Preventive Pediatrics	• Classify the degree of malnutrition in a malnourished child	C1	LGIS	MCQs
	• Differentiate between clinical features of kwashiorkor and marasmus on a patient	C2	LGIS	MCQs

Radiology				
Theory				
Topic	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
General radiologic concepts	• Categorize different tissues from most to least opaque on x-ray including bone, soft tissue, air, metal, and fat.	C2	LGIS	MCQs

ENT				
Theory				
Topic	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Deafness	• Know various cases of deafness	C1	LGIS	MCQs,
	• Understand the etiology, Pathology of various cases of deafness in external middle and internal ear and to know how to treat them.	C2		
DNS & Rhinitis	• Should define the turns	C1	LGIS	MCQs,
	• Know various causes of DNS and Rhinitis	C1		
	• Must be able to know treatment of all.	C1		
	• Know definition of polyp	C1		

Nasal polyp	• Know different types of nasal Polyps, their etiology, pathophysiology and treatment	C1	LGIS	MCQs,
	• Know latest management	C1		
Diseases of External Nose	• Know various diseases of external nose, their etiology	C1	LGIS	MCQs,
	• Pathophysiology and know how to treat them	C1		
Ear Discharge	• Know Various cases of ear discharge	C1	LGIS	MCQs,
	• Understand the etiology, Pathology of various cases of ear discharge in external and middle ear.	C2		
	• Know how to treat these causes.	C1		
Dizziness and Vertigo.	• Recognise signs and symptoms of acoustic neuroma.	C1	LGIS	MCQs,
	• Identify treatment options and risks	C2		
Facial fractures	• Classify facial fractures	C1	LGIS	MCQs,
	• Enumerate treatment options for facial fractures	C2		
Sinusitis	• Classify Sinusitis	C1	LGIS	MCQs,
	• Enlist clinical features of sinusitis.	C2		
Hearing Problems in Children	• Define deafness	C1	LGIS	MCQs,
	• State the aetiology of hearing loss	C1		
	• Elaborate the types of hearing loss	C1		
	• Discuss the investigations of hearing loss	C2		
	• Describe the treatment options for hearing loss patients.	C2		

Eye				
Theory				
Topic	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Refractive Errors	Refractive Errors	C1	LGIS	MCQs,
	• Types			
	• Treatment			
	ColourVison			
	• Types			
	• Inheritence			
	• Gender Predisposition			
	Night Blindness	C1		
	• Etiology			
	• Treatment			
Glaucoma	Glaucoma	C1	LGIS	MCQs,
	• What is Glaucoma			
	• Classification			
	• Treatment			
Cataract	Cataract	C1	LGIS	MCQs,
	• Define			
	• Types of cataract			
	• Surgical procedures			
	Ocular Trauma	C1		
	• Blunt			
	• Penetrating			

Ocular trauma & Ocular Procedures	• Chemical Burns		LGIS	MCQs,
	• Laceration			
	Ocular Procedures	C1		
	• Cataract surgeries			
	• Glaucoma Surgeries			
	• Laser And refractive Surgeries			
Cornea	Corneal Ulcer	C1	LGIS	MCQs,
	• Bacterial			
	• Viral			
	• Fungal			
Conjunctivitis	• Define conjunctivitis	C1	LGIS	MCQs,
	• Discuss the causes & types			
	• Explain management in detail			

Spirally Integrated Courses / General Education Cluster (GEC) Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Pak Studies/Islamiyat**
    - **Family Medicine**
    - **Behavioral Sciences**
    - **Biomedical Ethics**
    - **Early Clinical Exposure (ECE)**

Family Medicine				
Theory				
Topic	**At the End of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Approach to a patient with earache	• Define earache.	C1	LGIS	MCQs
	• Discuss various types of earache.	C2		
	• Discuss the signs and symptoms of a patient with earache.	C2		
	• Discuss the workup for diagnosis of different types of earache.	C2		
	• Discuss management of Various types of earache.	C2		
	• Appreciate approach to a patient with earache.	C3		

Biomedical Ethics & Professionalism				
Theory				
Topics	**At the end of session students should be able to:**	**Learning Domains**	**Teaching Strategy**	**Assessment Tools**
Ethical dilemmas practice involving breach in principle of justice	• Analyze ethical dilemmas in healthcare practice involving breach in principle of justice. • Explain what procedures adopted to maintain the principle of justice in challenging situations. • Identify situations in which a doctor may have to take decisions in the best interests of the patient considering the principle of justice	C3 C2 C1	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources Students' deliberations and reflections Reflective writing	• Assignment based assessment involving real life case scenarios under aggregate Marks. (Internal Assessment) • Assignment to be uploaded on LMS

Behavioural Sciences				
Theory				
Topic	**At The End Of Lecture, Students Should Be Able To:**	**Learning Domain**	**Teaching Strategy**	**Assessment Tools**
Perception	• To be able to define perception and basic perceptual abilities. • To identify abnormalities of perceptions and their role in disease causation	C2	LGIS	MCQs,
Sleep and arousal	• To be able to understand the physiology of sleep. Disorders of sleep and their management	C2	LGIS	MCQs,

Block-III

Module No. 6 - Endocrinology

Duration 4 Week

Endocrinology Module Team

Module Name	:	Endocrinology Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Sidra Hamid
Co-coordinator	:	Dr. Aneela Yasmeen
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Sidra Hamid (Assistant Professor of Physiology)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. (Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Aneela Yasmeen (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

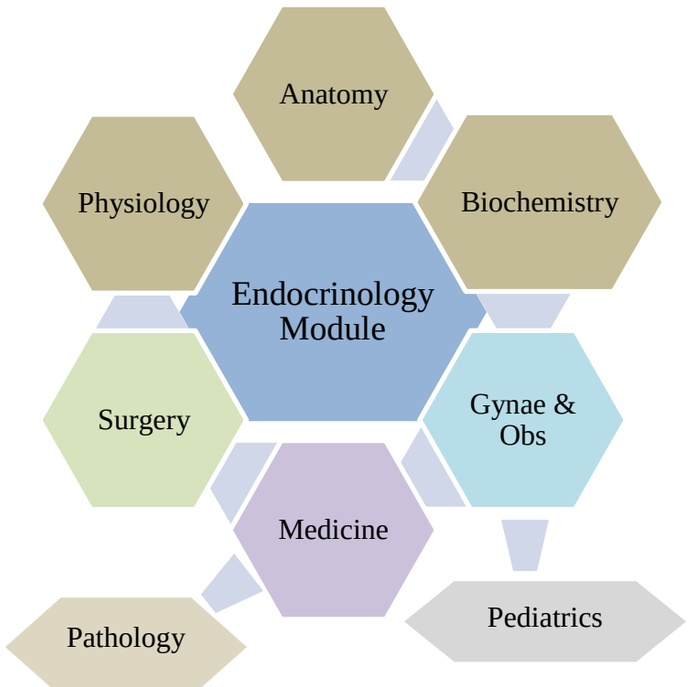
Themes							
Block	**Subjects**	**Embryology**	**Histology**	**Histology Practical SKL. Lab.**	**Gross Anatomy**	**CBL**	**SDL**
III	• Anatomy	• Development of pituitary & pineal gland • Developmnt of thyroid & parathyroid gland • Developmnt adrenal gland and pancreas	• Pituitary & pineal gland • Thyroid & parathyroid gland • Adrenal gland and pancreas	• Pituitary Gland • Thyroid & parathyroid gland • Adrenal gland • Pancreas	• Bones of neck. Hyoid Bone & Cervical vertebrae • Fascias of Neck • Superficial structurs of neck • Lateral-cervical region (muscles & triangles) • Latera-cervical-region (neurovascular organization) • Interior-cervical region(muscles) • Interior-cervical region (vessels of neck & cervical plexus) • Submandular region • Soft palate • Deep structures of neck • Root of neck • Thyroid&Parathyroid gland • Larynx • Pharynx • pancreas		• Bones of neck • SCM region & superficial & deep fascia • lateral cervical region • Anterior Triangle of neck & its subdivisions • Thyroid and para thyroid gland • Online SDL Evaluation • soft palate, larynx
	• Physiology	• Classification of hormones, Mechanism of action of different hormones Physiology of Thyroid hormones, Adrenal hormones, Insulin and glucagon, Blood glucose regulation, Role of Calcium & Phosphate					
	• Biochemistry	• Classification of hormones, Thyroid hormones, Adrenal hormones, Insulin and glucagon, Blood glucose regulation, Calcium revisit					
	Spiral Courses						
	• The Holy Quran Translation	•					
	• Islamiayat	•					
	• Biomedical Ethics	• History of Medical Ethics					

	• Behavioral Sciences	• Professionalism In Healthcare
	• Radiology & Artificial Intelligence	• Basics of Radiology
	• Family Medicine	• Approach to patient diabetes mellitus
	Vertical Components	
	• Peads	• Growth problems due to Endocrine causes
	• Surgery	• Thyroid Disorders
	• Pathology	• Hypothyroidism and hyperthyroidism
	• Medicine	• Diabetes Mellitus
	• Obs & Gynae	• Endocrine Disorders in Pregnancy (Diabetes Mellitus, Thyroid Disorders)
	Early Clinical Exposure (ECE)	
	• Medicine	• Thyroid disorders • Hyperthyroidism • Hypothyroidism • Cushing Syndrome
	• Surgery	• Thyroid Nodule • Multi nodular Goiter • CA Thyroid • Graves Diseases
	• Eye	• Blindness • Visual field defect • Cataract
	• Otolaryngology	• Deafness • Hearing tests • Nasal Obstruction
	Clinical Themes	
	• Pathophysiology and Clinical Features of Diabetes Mellitus • Hypothyroidism and Hyperthyroidism: Diagnosis and Management • Adrenal Insufficiency: Causes and Treatment (e.g., Addison's disease) • Cushing's Syndrome: Clinical Presentation and Management • Pituitary Adenomas and Their Effects (e.g., prolactinoma) • Pathophysiology of Hyperparathyroidism and Hypoparathyroidism • Clinical Features and Management of Acromegaly • Disorders of Growth Hormone: Dwarfism and Gigantism • Mechanisms of Hypercalcemia and Hypocalcemia • Pheochromocytoma: Diagnosis and Management	

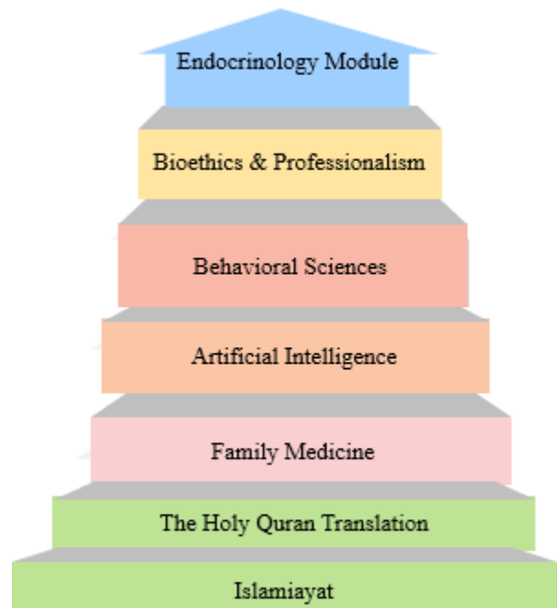
Implementation of Terms of Reference (TORS)

- Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are predefined as per the guidelines of PMDC and to be strictly followed.
- The hours mentioned within each module are the mandatory minimum required.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these. However, the level of cognition can be kept at a higher level.
- The Table of Specifications provided will be used for the three papers of the first professional examination.
- The same table of specifications should be used for the respective block exams for internal assessment.
- The criteria defined for continuous internal assessment is to be followed for each module and block respectively

Integration of Disciplines in Endocrinology Module



Spiral / General Education Cluster Courses



Module No. 6 – Endocrinology

Rationale: The endocrine system is one of the two control systems of the body. It consists of many small organs responsible for the release of hormones. The endocrine system regulates metabolism, growth and development, tissue function and mood of a person. This system acts by means of hormones secreted into the blood to control process that require duration rather than speed e.g, metabolic activities and water and electrolyte balance. In this module we will concentrate on the integrating functions of the endocrine system and focus our teaching on the interaction of hormones and their integration to produce homeostatic regulation.

Module Outcomes

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

Knowledge

- The students should know the hormones and the organs producing them. They should know the chemical nature, biosynthesis and the physiological functions on their target organs. The student should understand & apply the concepts & principles of the basic sciences in context of clinical signs & symptoms to commonly occurring diseases of the endocrine.
- Used technology based Medical Education including
  Artificial Intelligence
- Appreciate concept and importance of
  Family Medicine
  Biomedical Ethics & Professional
  Research

Skills

- Students should be able to recognize the histological features of all the endocrine glands under microscope.

Attitude

- Student should observe lab safety rules
  Should have professional Attitude

s

Syllabus of Endocrinology Module (Module No. 6)

Anatomy				
Theory				
Topic	**Learning Objectives** **At the end of lecture students should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Histology of pituitary gland and pineal gland	• Describe histological structure of pituitary and pineal gland • Enumerate different cells present in both glands • Discuss bio-physiological aspects related to their secretions • Discuss the related clinical • Read relevant research article • Use digital library	C2 C1 C2 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA
Histology of thyroid and parathyroid glands	• Describe histological structure of thyroid and parathyroid gland • Enumerate different cells present in both glands • Discuss bio-physiological aspects related to their secretions • Discuss the related clinical • Read relevant research article • Use digital library	C2 C1 C2 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA
Histology of adrenal gland	• Describe histological structure of adrenal gland. • Enumerate different cells present in gland • Discuss bio-physiological aspects related to secretions. • Discuss the related clinical • Read relevant research article • Use digital library	C2 C1 C2 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA
Development of pituitary and pineal gland	• Describe stages of development of pituitary and pineal glands • Enumerate structures involved in development of glands • Discuss congenital abnormalities related to development of glands • Read relevant research article • Use digital library	C2 C1 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA

Development of thyroid and parathyroid glands	• Describe a stage of development of thyroid and parathyroid glands • Enumerate structures involved in development of glands • Discuss congenital abnormalities associated with their development • Read relevant research article • Use digital library	C2 C1 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA
Development of adrenal gland	• Describe stages of development of adrenal glands • Enumerate structures involved in the development of gland. • Discuss congenital abnormalities associated with its development. • Read relevant research article • Use digital library	C2 C1 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Bones of neck Hyoid Bone Cervical vertebrae	• Describe the borders and surfaces of body and the two cornuas of hyoid bone.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss the attachments on the hyoid bone.	C2		
	• Discuss the related applied of hyoid.	C2		
	• Describe anatomical features of cervical typical & atypical vertebrae .	C2		
	• Discuss the intervertebral joints& movements of cervical region of vertebral column.	C2		
	• Discuss the anatomical basis of cervical pain & injuries of cervical vertebral column	C2		
	• Read relevant research article	C3		
	• Use digital library.	C3		
Fascias of Neck.	• Understand cervical subcutaneous tissue & platysma.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss the deep cervical fascia and the formation of layers due to its condensation.	C2		
	• Discuss the attachments and special features of the investing layer.	C2		
	• Describe the attachments and special features of prevertebral fascia.	C2		
	• Describe the attachments and special features of pretracheal fascia.	C2		
	• Discuss the carotid sheath formation, contents and relations.	C2		
	• Differentiate between the buccopharyngeal fascia and pharyngobasilar	C2		

	fascia.			
	• Discuss related clinicals	C3		
	• Read relevant research article	C3		
	• Use digital library.	C3		
Superficial structures of the neck	• Discuss the location, attachments & actions of SCM & trapezius.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Describe boundaries & location of posterior cervical region .	C2		
	• Discuss suboccipital triangle of neck & its contents.	C2		
	• Discuss related clinicals	C3		
	• Discuss the location, attachments & actions of SCM & trapezius .	C2		
	• Describe boundaries & location of posterior cervical region .	C2		
	• Discuss related clinicals	C2		
	• Read relevant research article	C3		
	• Use digital library.	C3		
lateral cervical region-(Muscles & triangles)	• Describe boundaries of posterior triangle.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss the muscles in lateral cervical region.(splenius capitus ,levator scapulae ,middle scalene &posterior scalene.	C2		
	• Describe boundaries and contents of occipital triangle	C2		
	• Discuss boundaries and contents of subclavian triangle	C2		
	• Discuss related clinicals	C3		
	• Read relevant research article	C3		
	• Use digital library.	C3		
lateral cervical region-(Neuro vascular organization)	• Discuss arteries in lateral cervical region (supra scapular artery, 3rd part of subclavian artery ,	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss veins of lateral cervical region (EJV&subclavian vein)	C2		
	• Discuss nerve supply of lateral cervical region	C2		
	• Discuss lymphatic drainage in lateral cervical region.	C2		
	• Discuss related clinicals	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Anterior cervical region-(Muscles)	• Discuss the Muscles in anterior cervical region (suprahyoid muscle group & infrahyoid muscle group)	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss the anatomical basis of torticollis	C3		
	• Discuss related clinicals.	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		

Anterior Cervical Region- (Vessels of neck & Cervical plexus)	• Discuss arterial supply in anterior cervical region (carotid system of arteries)	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss venous drainage in anterior cervical region	C2		
	• Discuss formation of cervical plexus	C2		
	• Enumerate branches of cervical plexus	C2		
	• Discuss area of distribution	C2		
	• Describe clinical and applied anatomy	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Submandibular Region	• Discuss the relations of digastric, mylohyoid and hyoglossus muscles.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Describe the gross features, relations, blood supply, lymphatic drainage and nerve supply of submandibular salivary gland.	C2		
	• Describe the details of Wharton's duct, its opening and related clinicopathological conditions	C2		
	• Describe the gross features, relations, blood supply, lymphatic drainage and nerve supply of sublingual salivary gland.	C2		
	• Tabulate the comparison of three salivary glands.	C2		
	• Describe the connections and branches with area of supply by the sub-mandibular ganglion.	C2		
	• Read relevant research article	C3		
	• Use digital library	C3		
Soft Palate	• Discuss the anatomy of soft palate along with attachment of muscles and their actions.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Describe boundaries of tonsillar fossa.	C2		
	• Discuss related clinicals	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Deep structures of neck	• Discuss prevertebral muscles (ant.vertebral muscles & lateral vertebral muscles)	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss related clinicals.	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Root of Neck	• Discuss arteries & veins in root of neck.	C2	Skill lab	MCQS SEQS
	• Discuss nerve supply in root of neck.	C2		
	• Discuss related clinicals.	C3		
	• Read a relevant research article	C3		

	• Use digital library	C3		VIVA OSPE
Thyroid and para thyroid glands	• Discuss anatomy & functions of thyroid & parathyroid gland	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss blood supply of thyroid gland	C2		
	• Discuss lymphatic drainage & nerve supply of thyroid gland	C2		
	• Discuss related clinicals.	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		
larynx	• Discuss larynx in detail with its cartilages and muscles.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss blood supply of larynx	C2		
	• Discuss functions of larynx • Discuss trachea (revisit).	C2		
	• Discuss related clinicals	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		
Pharynx	• Tabulate muscles of pharynx with origin, insertion, nerve supply and actions	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss nerve supply of Pharynx	C2		
	• Discuss blood supply of larynx	C2		
	• Discuss esophagus (revisit)	C2		
	• Discuss related clinicals	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		
Pancreas & Adrenal gland	• Describe location of pancreas & Adrenal gland	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Enlist different parts of pancreas	C2		
	• Describe relations of pancreas	C2		
	• Discuss blood supply of pancreas	C2		
	• Discuss the clinical Anatomy of pancreas	C3		
	• Discuss related clinicals	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		

Practicals				
Topic	**Learning Objectives** **At the end of practical students should be able to**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Histology of pituitary gland	• Identify the histological slide of the pituitary gland	P	Skill lab	OSPE VIVA
	• Illustrate the histological structure of the pituitary gland	C2		
	• Enlist two points of identification	C1		
Histology of adrenal gland	• Identify the histological slide of the adrenal gland	P	Skill Lab	OSPE VIVA
	• Illustrate the histological structure of the adrenal gland	C2		
	• Enlist two points of identification	C1		
Histology of thyroid and parathyroid gland	• Identify the histological slide of the thyroid and parathyroid gland	P	Skill lab	OSPE VIVA
	• Illustrate the histological structure of the thyroid and parathyroid gland	C2		
	• Enlist two points of identification	C1		
Histology of pancreas	• Identify the histological slide of the pancreas	P	Skill lab	OSPE VIVA
	• Illustrate the histological structure of the pancreas	C2		
	• Enlist two points of identification	C1		

Physiology						
Theory						
Topic	**At The End Of Lecture Students Should Be Able To**	**References**	**Learning Resources**	**Learning Domains**	**Learning Strategy**	**Assessment Tools**
Introduction to endocrinology & Signal transduction - I	• Define endocrinology • Describe several types of chemical messenger systems • Enumerate endocrine glands in the body along with their secretions • Compare two major control systems of the body • Identify different locations and properties of hormone receptors • Explain various intracellular signaling pathways after hormone receptor activation • Describe various mechanism of actions of hormones in detail	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 16, Page 299) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 395) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 231) (Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 50,Page 817) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 75, Page 915-928)	• https://youtu.be/QLcxQT1fb_c • https://www.khanacademy.org/science/ap-biology/cell-communication-and-cell-cycle/cell-communication/a/introduction-to-cell-signaling • https://youtu.be/GHwMJnxaiys	1. C1 2. C1 3. C1 4. C2 5.C1 6.C2 7.C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Hypothalamic–pituitary axis & GH	• Recall the physiological anatomy and parts of pituitary gland • Enumerate various cell types in pituitary gland along with their secretion and function • Explain connections of anterior and posterior pituitary gland with hypothalamus • Enlist various hormones secreted from anterior & posterior pituitary gland • Describe metabolic functions of growth hormone • Elaborate the role of growth	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 17, Page 307,313,324) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 407,411) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 241) (Chapter 23,Page 775)	• https://www.mdpi.com/2072-6694/15/15/3820 • https://youtu.be/fqz4WOwfz4Q • https://resources.wfsahq.org/atotw/the-hypothalamic-pituitary-axis-part-1-anatomy-physiology/	C1 C1 C2 C1 C1 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

	hormone in soft tissue and bone growth • Discuss role of somatomedins in relation with growth hormone • Explain regulation of secretion	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 51,Page 837) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 76, Page 929)				
Introduction to endocrinology & Signal transduction- II	• Classify hormones according to solubility and chemical nature • Describe the nature& synthesis of hormones • Differentiate different classes of hormones • Describe the secretion, transport, feedback control& clearance of hormones Differentiate different classes of hormones	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 16, Page 301,304) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 395) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 235,250) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 50,Page 817-831) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 75, Page 915-928)	• https://youtu.be/QLcxQT1fb_c • https://www.khanacademy.org/science/ap-biology/cell-communication-and-cell-cycle/cell-communication/a/introduction-to-cell-signaling • https://youtu.be/GHwMJnxaiys	C2 C1 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Abnormalities of growth hormone secretion	• Enlist abnormalities of GH secretion • Describe pan hypopituitarism • Discuss in detail dwarfism & its treatment • Explain gigantism & acromegaly • Differentiate gigantism & acromegaly	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 18, Page 321-334) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 412) • Human Physiology by Dee	1. https://youtu.be/0GuRf5YPGiA 2. https://www.ncbi.nlm.nih.gov/books/NBK278971/	C1 C1 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

		Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 775) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 76, Page 936)				
Insulin and glucagon: Structure and metabolic functions	• Describe physiological anatomy of pancreas • Describe chemistry, synthesis and transport of insulin • Describe the factors which affect secretion of insulin • Discuss mechanism of action of insulin • Describe the physiological actions of insulin • Explain mechanism of insulin secretion • Describe mechanism of action of glucagon • Discuss regulation of secretion of glucagon • Explain the functions of glucagon	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 429,445) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 440,446) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 902) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 973,982)	1. https://youtu.be/1c6a0BNsyek 2. https://www.britannica.com/science/insulin 3. https://www.medicalnewstoday.com/articles/316427#overview	C1 C1 C1 C2 C1 C2 C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Hormones of posterior pituitary gland (oxytocin and ADH)	• Recall site of synthesis and secretion of posterior pituitary hormones • Describe mechanism of action, stimuli for secretion, functions and regulation of ADH • Discuss functions of oxytocin	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 17, Page 311) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 415) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 241) • Physiological Basis of Medical	1. https://youtu.be/EGl1Oeetxpg 2. https://teachmephysiology.com/endocrine-system/hypothalamus-pituitary/posterior-pituitary/posterior-pituitary-gland/ 3. https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/posterior-pituitary-hormones	C1 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

		Practice by Best & Taylor's.13th Edition. Section 07(Chapter 51,Page 849) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 76, Page 938)				
Regulation of blood Glucose & Diabetes mellitus	• Describe various factors regulating blood glucose concentration • Discuss the importance of blood glucose regulation • Discuss the pathophysiology of diabetes mellitus • Explain the physiology of diagnosis of diabetes mellitus • Explain the treatment of diabetes mellitus • Differentiate between type I & type II diabetes mellitus • Differentiate between diabetes mellitus & diabetes insipidus	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 435-438,446-448) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 445) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 915) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 983)	1. https://youtu.be/KY85BUcQZew 2. https://www.pharmaguideline.com/2022/01/hormonal-regulation-of-blood-glucose-level.html 3. https://www.medicalnewstoday.com/articles/316427	C1 C2 C2 C2 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Aldosterone and cortisol	• Describe physiological anatomy of adrenal gland • Enumerate its various hormones • Describe synthesis, transport & metabolism of adrenocortical hormones • Describe mechanism, physiological actions of aldosterone • Explain the phenomenon of aldosterone escape • Describe regulation of aldosterone secretion	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 351-364) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 427) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765)	1. https://youtube/2-Z3Q6BZuBY 2. https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 3. https://www.britannica.com/science/aldosterone	C1 C1 C1 C1 C2 C1 C1 C2 C2 C1 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

	• Enlist abnormalities of aldosterone secretion • Describe mechanism, physiological actions of cortisol Discuss anti stress and anti-inflammatory actions of cortisol • Describe regulation of cortisol secretion • Discuss functions of adrenal androgens • Describe the chemistry, secretion regulation of secretion of ACTH • Discuss the actions of ACTH	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 866) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78,Page 955)				
Thyroid hormone: Production, storage and release	• Recall physiological anatomy of thyroid gland • Briefly explain secretions of thyroid gland • Compare the features of tri iodothyronine with thyroxine • Describe the steps of synthesis of thyroid hormone • Discuss in detail half-life, release, and transport of thyroid hormones • Explain regulation of secretion of thyroid hormone	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 337) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 419) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 770) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 855) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 941)	1. https://youtu.be/afVX3mlNB80 2. https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thyroid-hormone-release 3. https://byjus.com/biology/thyroid-hormone/	C1 C2 C2 C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Abnormalities of	• Discuss in detail Cushing's syndrome • Differentiate between Cushing disease and Cushing's syndrome • Discuss adrenogenital syndrome • Discuss the physiological anatomy of adrenal medulla	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 364-373) • Physiology by Linda S. Costanzo 6th Edition. Endocrine	1. https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 2. https://youtu.be/pSeU9Ei-3u4 3. https://medlineplus.gov/adrena	C2 C2 C2 C2 C1 C1 C2	LGIS	MCQ SEQ VIVA VOCE

adrenocortical hormone	• Enumerate various hormones secreted by adrenal medulla • Describe the steps involved in synthesis of catecholamines • Explain the function of catecholamines • Discuss stress response • Describe pheochromocytoma	Physiology (chapter 09, page 431,434,437) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 874,875) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78, Page 969)	lglanddisorders.html	C2 C1		MCQ (LMS based Aseessment, MST based Assessment) OSPE
Physiological role of thyroid hormone	• Describe mechanism of action of thyroid hormone • Explain physiological functions of thyroid hormone	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 343,345) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 423) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 770) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 855) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 944)	1. https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thyroid-hormone-release 2. https://youtu.be/IXjRsX50JB4 3. https://journals.physiology.org/doi/full/10.1152/physrev.2001.81.3.1097	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Calcium homeostasis (Vitamin D, parathyroid	• Discuss normal levels and metabolism of calcium and phosphate • Describe the effects of hypocalcemia & hypercalcemia • Explain the absorption and	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 375-386) • Physiology by Linda S.	1. https://youtu.be/JYQL7JEsF_4 2. https://teachmephysiology.com/biochemistry/electrolytes/calcium-regulation	C2 C1 C2 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS

hormone and calcitonin)	excretion of calcium and phosphate • Discuss in detail bone physiology • Describe the steps involved the activation of Vitamin D • Discuss the actions of vitamin D • Describe the physiological anatomy of parathyroid glands • Describe the chemistry & regulation of secretion of parathyroid hormone • Explain the actions of parathyroid hormones • Describe functions and regulation of calcitonin	Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 448) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 777,779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54,Page 881,890) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 991)		C1 C1 C2 C1		based Aseessment, MST based Assessment) OSPE
Abnormalities of thyroid hormone (Goiter, hypothyroidism and hyperthyroidism)	• Enlist disorders of thyroid gland • Discuss in detail causes, symptoms, diagnosis and treatment of hyperthyroidism • Discuss in detail causes, symptoms, diagnosis and treatment of hypothyroidism • Compare hypothyroidism with hyperthyroidism • Differentiate between pituitary dwarfism and cretinism	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 344,345) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 425) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 773) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 861) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 950)	1. https://www.hopkinsmedicine.org/health/conditions-and-diseases/disorders-of-the-thyroid 2. https://youtu.be/0vnpmaSI57c	C1 C2 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Bone pathophysiology	• Discuss in detail hypoparathyroidism • Describe hyperparathyroidism	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21,	1. https://www.orthobullets.com/basic-science/9031/rickets 2. https://youtu.be/Srm2GH1dus	C2 C1 C1		MCQ SEQ

(rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism)	• Describe osteoporosis	Page 378,380,381,385,387) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 453) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54, Page 881,890) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 1003,1006)	g 3. https://www.webmd.com/osteoporosis/what-is-osteomalacia		LGIS	VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Topic	At The End Of Lecture Students Should Be Able To	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Signal transduction & Growth hormone.	• Define endocrinology • Describe several types of chemical messenger systems • Enumerate endocrine glands in the body along with their secretions • Compare two major control systems of the body • Identify different locations and properties of hormone receptors • Explain various intracellular signaling pathways after hormone receptor activation • Describe various mechanism of actions of hormones in detail	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 16, Page 299) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 395) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 231) (Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 50,Page 817) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 75, Page 915-928)	• https://youtu.be/QLcxQT1fb_c • https://www.khanacademy.org/science/ap-biology/cell-communication-and-cell-cycle/cell-communication/a/introduction-to-cell-signaling https://youtu.be/GHwMJnxaiys	1. C1 2. C1 3. C1 4. C2 5.C1 6.C2 7.C1	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Thyroid Hormones	• Recall physiological anatomy of thyroid gland • Briefly explain secretions of thyroid gland • Compare the features of tri iodothyronine with thyroxine • Describe the steps of synthesis of thyroid hormone • Discuss in detail half-life, release, and transport of thyroid hormones Explain regulation of secretion of thyroid hormone	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 337) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 419) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 770) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 855) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 941)	1. https://youtu.be/afVX3mlNB80 2. https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thyroid-hormone-release **3.** https://byjus.com/biology/thyroid-hormone/	C1 C2 C2 C1 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Insulin and Glucose Metabolism	• Describe physiological anatomy of pancreas • Describe chemistry, synthesis and transport of insulin • Describe the factors which affect secretion of insulin • Discuss mechanism of action of insulin • Describe the physiological actions of insulin • Explain mechanism of insulin secretion • Describe mechanism of action of glucagon • Discuss regulation of secretion of glucagon Explain the functions of glucagon	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 429,445) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 440,446) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 902) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 973,982)	1. https://youtu.be/1c6a0BNsyek 2. https://www.britannica.com/science/insulin 3. https://www.medicalnewstoday.com/articles/316427#overview	C1 C1 C1 C2 C1 C2 C1 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism	• Discuss in detail hypoparathyroidism • Describe hyperparathyroidism Describe osteoporosis	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 378,380,381,385,387) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 453) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54, Page 881,890) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 1003,1006)	1. https://www.orthobullets.com/basic-science/9031/rickets 2. https://youtu.be/Srm2GH1dusg 3. https://www.webmd.com/osteoporosis/what-is-osteomalacia	C2 C1 C1	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Insulin and Glucagon:Structure and metabolic functions (Second week)	• Describe physiological anatomy of pancreas • Describe chemistry, synthesis and transport of insulin • Describe the factors which affect secretion of insulin • Discuss mechanism of action of insulin • Describe the physiological actions of insulin • Explain mechanism of insulin secretion • Describe mechanism of action of glucagon • Discuss regulation of secretion of glucagon Explain the functions of glucagon	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 429,445) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 440,446) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 902) 4. Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 973,982)	1. https://youtu.be/1c6a0BNsyek 2. https://www.britannica.com/science/insulin 3. https://www.medicalnewstoday.com/articles/316427#overview	C1 C1 C1 C2 C1 C2 C1 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Adrenal gland and its hormones (Fourth week)	• Describe physiological anatomy of adrenal gland • Enumerate its various hormones • Describe synthesis, transport & metabolism of adrenocortical hormones • Describe mechanism, physiological actions of aldosterone • Explain the phenomenon of aldosterone escape • Describe regulation of aldosterone secretion • Enlist abnormalities of aldosterone secretion • Describe mechanism, physiological actions of cortisol Discuss anti stress and anti-inflammatory actions of cortisol • Describe regulation of cortisol secretion • Discuss functions of adrenal androgens • Describe the chemistry, secretion regulation of secretion of ACTH Discuss the actions of ACTH	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 351-364) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 427) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 866) 5. Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78,Page 955)	1. https://youtube/2-Z3Q6BZuBY 2. https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 3. https://www.britannica.com/science/aldosterone	C1 C1 C1 C1 C2 C1 C1 C2 C2 C1 C2 C1 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Topic	At The End Of Lecture Students Should Be Able To	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
(ON CAMPUS) Regulation of blood Glucose & Diabetes mellitus	• Describe various factors regulating blood glucose concentration • Discuss the importance of blood glucose regulation • Discuss the pathophysiology of diabetes mellitus • Explain the physiology of diagnosis of diabetes mellitus • Explain the treatment of diabetes	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 435-438,446-448) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 445) • Human Physiology by Dee	1. https://youtu.be/KY85BUcQZew 2,https://www.pharmaguideline.com/2022/01/hormonal-regulation-of-blood-glucose-level.html 3.https://www.medicalnewstoday.com/article	C1 C2 C2 C2 C2 C2 C2 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS

	mellitus • Differentiate between type I & type II diabetes mellitus • Differentiate between diabetes mellitus & diabetes insipidus	Unglaub Silver thorn. 8TH Edition.(Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 915) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 983)	s/316427			based Aseessment,MST based Assessment) OSPE SDL Evaluation
Abnormalities of adrenocortical hormone	• Discuss in detail Cushing's syndrome • Differentiate between Cushing disease and Cushing's syndrome • Discuss adrenogenital syndrome • Discuss the physiological anatomy of adrenal medulla • Enumerate various hormones secreted by adrenal medulla • Describe the steps involved in synthesis of catecholamines • Explain the function of catecholamines • Discuss stress response • Describe pheochromocytoma	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 364-373) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 431,434,437) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 874,875) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78, Page 969)	https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 https://youtu.be/pSeU9Ei-3u4 https://medlineplus.gov/adrenalglanddisorders.html	C2 C2 C2 C2 C1 C1 C2 C2 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism)	• Discuss in detail hypoparathyroidism • Describe hyperparathyroidism • Describe osteoporosis	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 378,380,381,385,387) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 453) • Human Physiology by Dee	https://www.orthobullets.com/basic-science/9031/rickets https://youtu.be/Srm2GH1dusg https://www.webmd.com/osteoporosis/what-is-osteomalacia	C2 C1 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based

		Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54, Page 881,890) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 1003,1006)				Aseessment,MST based Assessment) OSPE SDL Evaluation
(OFF CAMPUS) Hypothalamic–pituitary axis & GH	• Recall the physiological anatomy and parts of pituitary gland • Enumerate various cell types in pituitary gland along with their secretion and function • Explain connections of anterior and posterior pituitary gland with hypothalamus • Enlist various hormones secreted from anterior & posterior pituitary gland • Describe metabolic functions of growth hormone • Elaborate the role of growth hormone in soft tissue and bone growth • Discuss role of somatomedins in relation with growth hormone • Explain regulation of secretion	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 17, Page 307,313,324) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 407,411) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 241) (Chapter 23,Page 775) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 51,Page 837) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 76, Page 929)	https://www.mdpi.com/2072-6694/15/15/3820 https://youtu.be/fqz4WOwfz4Q https://resources.wfsahq.org/atotw/the-hypothalamic-pituitary-axis-part-1-anatomy-physiology/	1. C1 2. C1 3. C2 4. C1 5. C1 6. C2 7. C2 8. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
Introduction to endocrinology & Signal transduction	• Classify hormones according to solubility and chemical nature • Describe the nature& synthesis of hormones • Differentiate different classes of hormones • Describe the secretion, transport,	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 16, Page 301,304) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page	https://youtu.be/QLcxQT1fb_c https://www.khanacademy.org/science/ap-biology/cell-communication-and-cell-cycle/cell-	C2 C1 C2 C1 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS

	feedback control& clearance of hormones • Differentiate different classes of hormones	395) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 235,250) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 50,Page 817-831) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 75, Page 915-928)	communication/a/introduction-to-cell-signaling https://youtu.be/GHwMJnxaiys			based Aseessment,MST based Assessment) OSPE SDL Evaluation
Insulin and glucagon:	• Describe physiological anatomy of pancreas • Describe chemistry, synthesis and transport of insulin • Describe the factors which affect secretion of insulin • Discuss mechanism of action of insulin • Describe the physiological actions of insulin • Explain mechanism of insulin secretion • Describe mechanism of action of glucagon • Discuss regulation of secretion of glucagon • Explain the functions of glucagon	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 429,445) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 440,446) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 902) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 973,982)	1. https://youtu.be/1c6a0BNsyek 2. https://www.britannica.com/science/insulin 3. https://www.medicalnewstoday.com/articles/316427#overview	C1 C1 C1 C2 C1 C2 C1 C2 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
	• Describe physiological anatomy of adrenal gland • Enumerate its various hormones • Describe synthesis, transport & metabolism of adrenocortical hormones	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 351-364) • Physiology by Linda S. Costanzo 6th Edition. Endocrine	1. https://youtube/2-Z3Q6BZuBY https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109	C1 C1 C1 C1 C2 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS

Aldosterone and cortisol	• Describe mechanism, physiological actions of aldosterone • Explain the phenomenon of aldosterone escape • Describe regulation of aldosterone secretion • Enlist abnormalities of aldosterone secretion • Describe mechanism, physiological actions of cortisol Discuss anti stress and anti-inflammatory actions of cortisol • Describe regulation of cortisol secretion • Discuss functions of adrenal androgens • Describe the chemistry, secretion regulation of secretion of ACTH • Discuss the actions of ACTH	Physiology (chapter 09, page 427) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 866) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78,Page 955)	https://www.britannica.com/science/aldosterone	C1 C2 C2 C1 C2 C1 C2		based Aseessment,MST based Assessment) OSPE SDL Evaluation
Thyroid hormone:	• Recall physiological anatomy of thyroid gland • Briefly explain secretions of thyroid gland • Compare the features of tri iodothyronine with thyroxine • Describe the steps of synthesis of thyroid hormone • Discuss in detail half-life, release, and transport of thyroid hormones • Explain regulation of secretion of thyroid hormone	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 337) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 419) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 770) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 855) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 941)	https://youtu.be/afVX3mlNB80 https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thyroid-hormone-release https://byjus.com/biology/thyroid-hormone/	C1 C2 C2 C1 C2 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
	• Enlist disorders of thyroid gland	• Ganong's Review of Medical	https://www.hopkinsm	C1		

Abnormalities of thyroid hormone (Goiter, hypothyroidism and hyperthyroidism)	• Discuss in detail causes, symptoms, diagnosis and treatment of hyperthyroidism • Discuss in detail causes, symptoms, diagnosis and treatment of hypothyroidism • Compare hypothyroidism with hyperthyroidism • Differentiate between pituitary dwarfism and cretinism	Physiology.25TH Edition.Section 03 (Chapter 19, Page 344,345) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 425) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 773) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 861) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 950)	edicine.org/health/conditions-and-diseases/disorders-of-the-thyroid https://youtu.be/0vnpmaSI57c	C2 C2 C2 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
Calcium homeostasis (Vitamin D, parathyroid hormone and calcitonin)	• Discuss normal levels and metabolism of calcium and phosphate • Describe the effects of hypocalcemia & hypercalcemia • Explain the absorption and excretion of calcium and phosphate • Discuss in detail bone physiology • Describe the steps involved the activation of Vitamin D • Discuss the actions of vitamin D • Describe the physiological anatomy of parathyroid glands • Describe the chemistry & regulation of secretion of parathyroid hormone • Explain the actions of parathyroid hormones Describe functions and regulation of calcitonin	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 375-386) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 448) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 777,779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54,Page 881,890) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 991)	1. https://youtu.be/JYQL7JEsF_4 2.https://teachmephysiology.com/biochemistry/electrolytes/calcium-regulation	C2 C1 C2 C2 C1 C2 C1 C1 C2 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation

Practicals					
Topic	**At The End Of Lecture Students Should Be Able To**	**References**	**Learning Resources**	**Learning Domains**	**Learning Strategy**
Examination of pupillary reaction	• Principle • Procedure • Precautions • Clinical correlation OF Pupillary Reactions	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	A3/P3/C1	Practicals/skill lab	Viva Voce Ospe Video Assissted Assessment
Checking for color vision	• Apparatus identification • Principle • Procedure • Precautions • Clinical correlation for color vision	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	A3/P3/C1	Practicals/skill lab	Viva Voce Ospe Video Assissted Assessment
Revision of practical	• Revision	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	A3/P3	Practicals/skill lab	Viva Voce Ospe Video Assissted Assessment

Biochemistry				
Theory				
Topic	**Learning Objectives** **At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Classification and mechanism of action of hormones	Classify hormones Explain the mechanism of action of hormones	C2 C2	LGIS	MCQs, SAQs & Viva
Thyroxin	Describe nature, formation and mechanism of action of thyroxin Discuss related clinical disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Parathyroid and Calcitonin	Discuss role of various hormones acting on calcium and phosphate metabolism Discuss related clinical disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Adrenal cortical hormones	Describe synthesis, mechanism of action and functions of aldosterone, cortisol and adrenal androgens Discuss related clinical disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Adrenal medullary hormones	Describe mechanism of action and role of adrenal medullary hormones Discuss related diseases	C2 C3	LGIS	MCQs, SAQs & Viva
Insulin and glucagon	Explain formation, mechanism of action and role of insulin and glucagon Discuss related diseases	C2	LGIS	MCQs, SAQs & Viva

		C3		
Blood glucose regulation	Describe regulation of normal plasma glucose level Explain hypoglycemia	C2 C3	LGIS	MCQs, SAQs & Viva

Topic	At The End Of Tutorial Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Classification of endocrine hormones,	• **Classify Endocrine hormones**	**C1**	**SGD**	MCQs SAQs Viva
	• Discuss the mechanism of action of endocrine hormones	C2		
Adrenocortical Hormones	• Elaborate formation, functions & related disorders of adrenocortical hormones	C2	SGD	MCQs SAQs Viva

Topic	At The End Of SDL Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool	Learning Resources
Classification & Mechanism of action of Endocrine Hormones	• Classify Endocrine Hormones	C1	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter 41, pages 482-484 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapter 18, pages 265-266 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6761896/ https://www.youtube.com/watch?v=KSclrkk_Ako
	• Discuss the Mechanism of action of various Endocrine Hormones	C2			

Formation & Mechanism of action of Thyroid Hormone	• Elaborate the nature, formation, mechanism of action and related diseases of Thyroxin	C2	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter 41, pages 492-493 and 498 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapter 29, pages 452-454 https://www.nature.com/articles/boneres201311 https://www.youtube.com/watch?v=cDGmsR2ZILE
Synthesis & Mechanism of Action of Adrenocortical Hormones	• Describe synthesis, mechanism of action and functions of Aldosterone, Cortisol and Adrenal androgens • Discuss related clinical disorders	C2	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter 41, pages 485-488, 491- 492, and 495-496, 498-499 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapter 18, pages 262-266 https://www.ncbi.nlm.nih.gov/books/NBK470339/
	• Describe mechanism of action and role of Adrenal Medullary Hormones • Discuss related diseases	C2			

					https://www.youtube.com/watch?v=JlI5N2N4d-k https://www.sciencedirect.com/topics/medicine-and-dentistry/adrenal-medulla https://www.youtube.com/watch?v=afzWLmd72Rk
Synthesis & Mechanism of Action of Insulin & Glucagon	• Explain formation, mechanism of action and role of Insulin and Glucagon • Discuss related diseases	C2	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter pages 493-494 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapter 23, pages 341-354 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6515536/ https://www.youtube.com/watch?v=1c6a0BNsyek https://www.youtube.com/watch?v=-3J6QRMerQE

Glucose Tolerance Test Curves Hypoglycemia Diabetic Ketoacidosis & Hyperosmolar Hyperglycemic State Online Clinical Evaluation	• Normal & abnormal curves of glucose tolerance test and factors effecting it. Interpretation of GTT curves for Diabetes Mellitus • Hypoglycemia, Hyperglycemia & Diabetic ketoacidosis	C2	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter pages 719-720, 136-138 & 469-470 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapters 23 & 25, pages 350-354 & 375-387 https://www.ncbi.nlm.nih.gov/books/NBK532915/ https://www.youtube.com/watch?v=SRZlYdQWO3g https://www.ncbi.nlm.nih.gov/books/NBK279052/ https://www.youtube.com/watch?v=jCf7W1U4JKE https://www.ncbi.nlm.nih.gov/books/NBK534841/

Practicals				
Topic	**At The End Of Practical Students Should Be Able To**	**C/P/A**	**Teaching Strategy**	**Assessment Tool**
Estimation of Blood Glucose	• Perform estimation of glucose by spectrophotometer	P	Skill lab	OSPE
GTT	• Explain the procedure of practical, normal & abnormal curves of glucose and factors effecting it Interpret the result of GTT	P	Skill lab	OSPE

Basic and Clinical Sciences (Vertical Integration)

Anatomy, Physiology & Biochemistry			
Clinical Themes			
Subjects	**Topics**	**At the end of the session the student should be ableto**	**Learning Domains**
Anatomy	• Multi Nodular Goitrewith Hypothyroidism	Apply basic knowledge of subject to study clinical case.	C3
	• Torticollis	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• AdrenocorticalHormone	Apply basic knowledge of subject to study clinical case	C3
Biochemistry	• Thyrotoxicosis	Apply basic knowledge of subject to study clinical case.	C3
	• Addison's Disease	Apply basic knowledge of subject to study clinical case	C3

Pathology				
Theory				
Topic	**At the end of this LGIS students of should be able to:**	**LearningDomain**	**TeachingStrategy**	**AssessmentTool**
Pituitary disorders	• Discuss pathogenesis of pituitary adenomas	C2	LGIS	MCQ's
	• Causes of hypopituitarism and posterior pituitary syndromes	C2		
Calcium metabolism disorders	• Describe pathogenesis of Tetany	C2	LGIS	MCQ's
	• Causes of Hypoparathyroidism and • Hyperparathyroidism (primary and secondary)	C2		
	• Describe the pathogenesis of Rickets and • Osteomalacia	C2		
	• Describe the pathological features of Osteoporosis andosteopetrosis	C2		
Adrenocortical disorders	• Define and discuss pathogenesis of	C2	LGIS	MCQ's
	• Addison's disease and Conn's syndrome	C2		
	• Describe the pathogenesis of Cushing syndrome	C2		

	• Explain dexamethasone suppression test and its role in diagnosis	C2		
Diabetesmellitus	• Define diabetes	C1	LGIS	MCQ's
	• Classify diabetes	C2		
	• Discuss pathogenesis of type I and type II diabetes mellitus	C2		
Diagnosis of Thyroid	• Define hypothyroidism and hyperthyroidism	C1	LGIS	MCQ's
	• Extract lab diagnosis of hypothyroidism and hyperthyroidism	C2		
	• Describe clinical features of hyper and hypothyroidism	C2		

Medicine

Theory

Topic	At the end of this LGIS students of should be able to:	Learningg Domain	TeachingStrategy	Assessment Tool
Hypothyroidism and hyperthyroidism	• Discuss discuss pathophysiology, clinical manifestations of hypothyroidism and hyperthyroidism	C2	LGIS	MCQ
	• Workup and management	C2		
Hypocalcemia and hypercalcemia	• Discuss pathophysiology, clinical manifestations of hypocalcemia and hypercalcemia	C2	LGIS	MCQ
	• Workup and management	C2		
Diabetes mellitus	• Discuss pathophysiology, clinical manifestations of type I and type II diabetes mellitus	C2	LGIS	MCQ
	• Discuss Workup and management	C2		
Syndrome of inappropriate ADH secretion (SIADH).	• Define and discuss pathophysiology	C2	LGIS	MCQs
	• Discuss the causes	C2		
	• Describe clinical features	C2		
	• Describe the management	C2		
Cushing syndrome	• Define and discuss pathophysiology	C1	LGIS	MCQs
	• Discuss the causes	C2		
	• Describe clinical features	C2		
	• Describe the management	C2		

Surgery				
Theory				
Topic	**At the end of this LGIS students of should be able to:**	**Learning Domain**	**TeachingStrategy**	**AssessmentTool**
Thyroid	• Enlist swellings infront of neck	C1	LGIS	MCQ
	• How to differentiate swellings in neck	C2		
	• Explain What is Hyperthyroidism	C2		
	• What is Hypothyroidism	C2		
	• Appreciate MNG	C2		
	• Appreciate Solitary Nodule	C2		
	• Appreciate Toxic Nodule	C2		
	• Outline the investigations for Thyroid pathologies	C2		
	• Outline the Management of different thyroidPathologies	C2		
AdrenalTumours	• Enlist hormones secreted by Adrenal Gland	C2	LGIS	MCQ
	• Describe Clinical Manifestations of differentadrenal disease	C2		
	• Outline the management plan	C2		
Diabetic foot	• Describe Diabetic Foot	C2	LGIS	MCQ
	• Classify Diabetic foot	C1		
	• Describe Pathophysiology of Diabetic foot	C2		
	• Outline Management of Diabetic foot	C2		

Gynecology & Obstetrics				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**TeachingStrategy**	**AssessmentTool**
Endocrine disorders in pregnancy (diabetes Mellitus, thyroid disorders)	Diabetes Mellitus: • Know why pregnancy is a diabetogenic state	C2	LGIS	MCQs
	• Define gestational diabetes mellitus (GDM)	C1		
	• Correlate clinical features with pathophysiology of GDM	C2		
	• Outline brief management plan for these conditions	C2		
	• Know the methods for screening of diabetes in pregnancy	C2		
	• Thyroid disorders:	C1		
	• Know pathophysiology of common thyroid disorders	C2		
	during pregnancy			
	• Understand clinical presentation of thyroid disorders inpregnancy	C2		
	• Comprehend effects of thyroid disorders on mother andfetus	C2		
Primary amenorrhoea/ delayed puberty	• Define primary amenorrhea, secondary amenorrhea andoligomenorrhoea.	C1	LGIS	MCQs
	• Enumerate the causes of amenorrhea: ➢ Hypothalamic ➢ Pituitary ➢ Ovarian ➢ Endometrial ➢ Structural	C1		
	• Understand physical and hormonal changes at puberty /secondary sexual characteristics	C2		
	• Know basic pathophysiology of disorders of puberty ➢ Precocious puberty ➢ Delayed puberty	C2		
	• Identify clinical features of precocious puberty	C1		

Pediatrics				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Endocrine Problems	• Differentiate between the clinical features of hypothyroidism	C2	LGIS	MCQs
	• Interpret the investigations required for diagnosis of hypothyroidism	C2	LGIS	MCQs

Spirally Integrated Courses / General Education Cluster (GEC) Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Pak Studies/Islamiyat**
    - **Behavioral Sciences**
    - **Biomedical Ethics**
    - **Early Clinical Exposure (ECE)**

Radiology & Artificial Intelligence				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Basics of Radiology	• Categorize different tissues from most to least opaque on x-ray including: bone,soft tissue, air, metal, and fat	C2	LGIS	MCQs
	• Distinguish between the different types of contrast used in imaging exams and thepotential diagnostic benefits of each	C2	LGIS	MCQs

Behavioral Sciences				
Theory				
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**
Psychosocial Assessment	• To be able to do a detailed interview keeping in mind the psychological and socialaspects in predisposing, precipitating and maintaining diseases.	C2	LGIS	MCQs
Psychosocial Assessment	• To be able to do a detailed interview keeping in mind the psychological and socialaspects in predisposing, precipitating and maintaining diseases.	C2	LGIS	MCQs

Biomedical Ethics & Professionalism					
Theory					
Topic	**At The End Of Lecture Students Should Be Able To**	**Learning Domain**	**Teaching Strategy**	**Assessment Tool**	
History of Medical Ethics	Discussion on Health Research ethics focusing; •Historical perspective of Tuskegee studies,Willow brook Experiment •Codes of medical ethics: traditional foundationsand contemporary practice •Nuremburg code, Belmont report, Declarationof Helsinki and importance of historical background of ethics in current research trends • General ethical principles including explanation of 04 basic principles of Beneficence, non-maleficence, respect andjustice. - Interpretation research ethics for; - Informed consent and confidentiality inresearch HR	At the end of the session students should be able to; • Explain the meaning of the term "'ethics'".**C1** • Describe the historical perspective of global development of medical ethics. **C1** • Describe the codes of medical ethics and their implications.**C1** • Recognize ethical issues relevant to the case situation and apply the ethical codes as appropriate. **C2** • Discuss the development of indigenous ethical codes in the South-East Asian Region. **C2.** • Demonstrate sensitivity to cultural diversity in medical care.**C3**	LGIS 1hr contact session in 2-4 parallelclasses, Conducted by Senior faulty.	1 MCQs of level C1 to C3 will cover this session teachings in relevant block examination in pool of total04 MCQs. Result / marks obtained will contribute towards Internal assessment (IA) in 1st Prof. MBBS exam.	Guidelines and Teachers Handbook for Introducing Bioethics to Medical and Dental Students http://nbcpakistan.org.pk/assets/may-16-bioethics-facilitator-book---may-16%2C-2017.pdf The Nuremberg Code: http://www.hhs.gov/ohrp/archive/nurcode.html 10 WMA Declaration of Helsinki: http://www.wma.net/en/30publications/10policies/b3/ CIOMS Guidelines: http://www.cioms.ch/publications/layout_guide2002.pdf . Nuffield Council on Bioethics Guidelines: http://www.sirc.org/news/nuffield.shtml

Section-IX

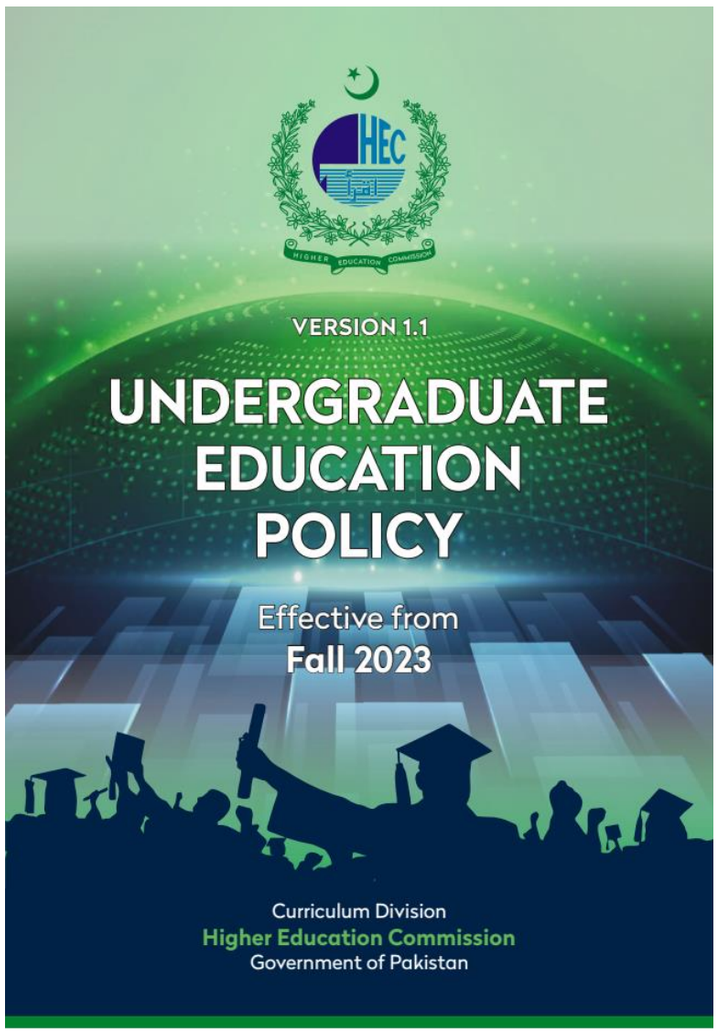
Spirally Integrated Courses in

HEC General Education Cluster (GEC) Module



Introduction

Preamble



In alignment with the Higher Education Commission's Undergraduate Policy 2023 and the Pakistan Medical and Dental Council's Guidelines 2024, This comprehensive module is designed to enrich the MBBS curriculum with a broad spectrum of interdisciplinary competencies.

The General Education Cluster encompasses essential domains—Leadership, Information Technology, Entrepreneurship, Expository Writing, Art and Humanities, Research, Bioethics, and Quran Translation—integrating these elements into a cohesive learning experience that extends across the five-year MBBS program.

This module is meticulously structured to enhance both professional and personal development, ensuring that medical graduates are not only adept in clinical skills but also well- rounded individuals equipped with a diverse skill set.

Rationale for the General Education Cluster Module

The General Education Cluster Module is conceived to address the multifaceted demands of modern medical education and practice. In accordance with the Higher Education Commission's Undergraduate Policy 2023 and the Pakistan Medical and Dental Council's Guidelines 2024, this module is designed to create a comprehensive educational framework that extends beyond traditional medical training.

he rationale behind this integrative approach includes:

1. Holistic Development: Medicine is a field that requires not only technical proficiency but also leadership, ethical judgment, and effective communication. By incorporating Leadership, Information Technology, Entrepreneurship, Expository Writing, Art and Humanities, Research and Bioethics, and Quran Translation into the curriculum, the module aims to

develop well-rounded professionals who excel in both clinical and non-clinical aspects of healthcare.

2. Adaptation to Technological Advancements: The rapid advancement of technology and artificial intelligence is transforming healthcare. Proficiency in Information Technology and AI is crucial for modern medical practitioners to effectively use digital tools, engage in data-driven decision-making, and contribute to innovations in patient care and research.

3. Leadership and Management Skills: Effective leadership and management are essential for navigating the complexities of the healthcare environment. By focusing on leadership skills, the module prepares students to lead teams, manage healthcare systems, and address challenges with strategic vision and ethical integrity.

4. Entrepreneurial Mindset: Entrepreneurship fosters innovation and problem-solving. By integrating entrepreneurial principles into the curriculum, students are encouraged to think creatively, develop new healthcare solutions, and drive positive change in the industry.

5. Enhanced Communication Skills: Expository writing is a fundamental skill for clear and effective communication in medical practice. Mastery of this skill is vital for documenting patient care, conducting research, and engaging in academic discourse.

6. Cultural and Ethical Awareness: The inclusion of Art and Humanities helps students understand the broader human context of medicine, fostering empathy and cultural sensitivity. Concurrently, the continued study of Quran Translation and Islamiyat reinforces the integration of cultural and ethical perspectives with medical practice.

7. Strengthening Research and Bioethics: Advanced knowledge in research methodologies and bioethics ensures that students are well-prepared to conduct and evaluate research ethically, contributing to the advancement of medical science while adhering to high standards of ethical practice.

8. Preparation for a Dynamic Healthcare Environment: The General Education Cluster Module equips students with a diverse skill set necessary to thrive in a rapidly evolving healthcare landscape. It prepares them to be versatile, innovative, and ethical practitioners capable of addressing the multifaceted challenges they will encounter.

In essence, this module represents a strategic response to the evolving needs of the healthcare profession, ensuring that medical graduates are not only technically proficient but also capable of leading, innovating, and communicating effectively in a complex and dynamic field.

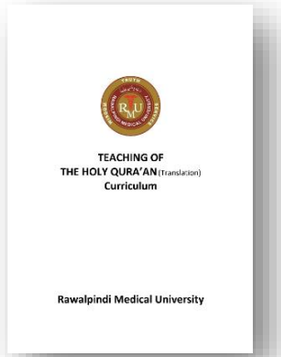
Alignment of RMU Spiral Courses as per HEC Undergraduate Policy 2023 and guidelines of PMDC 2024

Title	**Hours recommended by HEC/PMDC (to be covered from 1st to 4th year)**	**Teaching hours in RMUCurriculum**
Quran Kareem	50 hours (PMDC)	55 Hours
Bioethics / Professionalism	25 Hours (PMDC)	50 Hours
Leadership	25 Hours (PMDC)	30 Hours
Islamic Studies	2 credit hours (HEC)	17 Hours
Ideology & Constitution of Pakistan/Pakistan Studies	2 credit hours (HEC)25 hours (PMDC)	17 Hours
Quantitative Reasoning/Research	2 credit hours (HEC)100 Hours (PMDC)	120 Hours
Entrepreneurship	2 credit hours (HEC)	50 Hours
Arts and Humanities (Videography)	2 credit hours (HEC)	20 Hours
Expository writing	2 credit hours (HEC)	16 Hours
Applications of information and communication technologies (ICT)	2 credit hours (HEC)25 Hours (PMDC)	25 Hours
Family medicine	----------	30 Hours
Artificial intelligence	----------	25 Hours
Behavioral Sciences	100 Hours (PMDC)	150 Hours

- 1 credit hour = 16 teaching hours
- The minimum requirement for the general education component is 30 credits in all the undergraduate/equivalent degree programs including associate degree. References: undergraduate-policy-2023-1pdf/261474627

The Holy Quran Translation

The Quran Translation Course for undergraduate medical students is designed to deepen students' understanding of the Quran by focusing on the translation of key verses and chapters. This course aims to foster spiritual growth, enhance ethical decision-making, and integrate Islamic values into medical practice. Students will explore themes such as compassion, patience, and justice, which are fundamental to both Islamic teachings and the medical profession. By connecting Quranic principles with their daily work, students can develop a more holistic approach to healthcare, rooted in empathy and moral integrity.



The Holy Quran Curriculum

Lectures Distribution as per Criteria

القرآن بمعہ ترجمہ برائے جماعت ایم بی بی ایس سال اول تا پنجم											
سال	ایمانیات		عبادات		اخلاقیات		معاملات		معاشرت		کل لیکچرز
	فیصد	لیکچر	فیصد	لیکچر	فیصد	لیکچر	فیصد	لیکچر	فیصد	لیکچر	
سال اول	35	6	29	5	12	2	12	2	12	2	17
سال دوئم	35	6	24	4	18	3	12	2	12	2	17
سال سوئم	24	4	24	4	24	4	18	3	12	2	17
سال چہارم	18	3	12	2	24	4	24	4	24	4	17
سال پنجم	12	2	12	2	29	5	24	4	24	4	17
کل لیکچرز		21		17		18		15		14	85

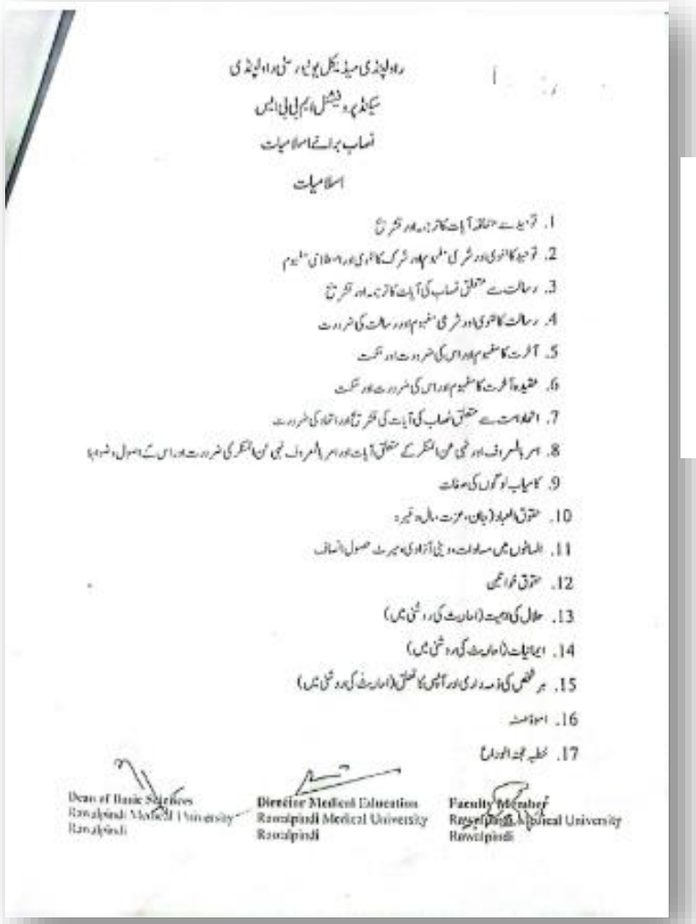
لیکچر نمبر	سال دوئم
	ایمانیات
1	دنیا کی زندگی کی مثال اور آخرت میں ایمان والوں کو اللہ تعالی کا دیدار اور مشرکین کا حال
2	توحید کی مثالیں
3	رسول اللہ ﷺ کی رسالت پر مشرکین کے اعترازات اور ان کے جوابات
4	تمام انبیا علیہم السلام کے بھیجنے کا مقصد
5	شرک کی مثال روز قیامت کے بعد احوال
6	اللہ تعالی کی وحدانیت اور رسول ﷺ کی رسالت کے دلائل
	عبادات
7	حج
8	امربالمعروف ونہی عن المنکر،دعوت الی اللہ
9	ہجرت و نصرت،استقامت
10	اعلاۓ کلمۃ اللہ (اللہ کے کلمے کو سربلند کرنا) جہاد
	اخلاقیات
11	سچائی و راست بازی
12	جھوٹ اور غلط بیانی
13	سخاوت و بخل
	معاملات
14	آدابِ رسولﷺ،افواہوں سے پرہیز
15	تمسخر،ایذا رسانی،بدگوئی،غیبت سے اجتناب
	معاشرت
16	کھانے پینے کے احکام
17	شراب اور جوا کی حرمت

Islamiat

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

Pakistan Studies

The Pakistan Studies Course for undergraduate medical students offers an overview of Pakistan's history, culture, and civic structure. It highlights the country's development and its healthcare challenges, helping students understand the socio-political context of medical practice in Pakistan. The course fosters responsible citizenship and awareness of the role medical professionals play in nation-building.


راولپنڈی میڈیکل یونیورسٹی راولپنڈی

سیکنڈ پروفیشنل ایم بی بی ایس

نصاب برائے اسلامیات

اسلامیات

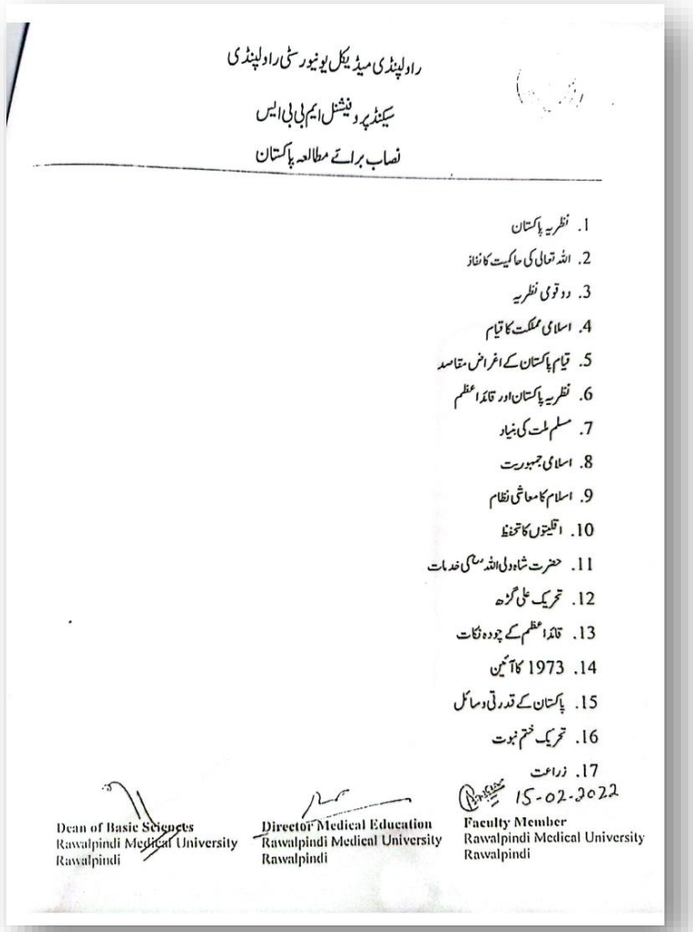
1. توحید سے متعلق آیات کا ترجمہ اور تشریح
2. توحید کا انفرادی اور شرک کا انفرادی اور اجتماعی مفہوم
3. رسالت سے متعلق نصاب کی آیات کا ترجمہ اور تشریح
4. رسالت کا انفرادی اور شرعی مفہوم اور رسالت کی ضرورت
5. آخرت کا مفہوم اور اس کی ضرورت اور حکمت
6. عقیدہ آخرت کا مفہوم اور اس کی ضرورت اور حکمت
7. اتحاد سے متعلق نصاب کی آیات کی تفسیر تاکید اتحاد کی ضرورت
8. امر بالمعروف اور نہی عن المنکر کے متعلق آیات اور امر بالمعروف نہی عن المنکر کی ضرورت اور اس کے اصول، شرائط
9. کامیاب لوگوں کی صفات
10. حقوق العباد (جان، عزت، مال، تجارت)
11. انسانوں میں مساوات، دینی آزادی، سیرت حصول انصاف
12. حقوق خواتین
13. حلال کی اہمیت (احادیث کی روشنی میں)
14. امانتیں (احادیث کی روشنی میں)
15. ہر شخص کی ذمہ داری اور آپس کا تعلق (احادیث کی روشنی میں)
16. اسوۂ حسنہ
17. خطبہ حجۃ الوداع

Dean of Basic Sciences
Rawalpindi Medical University
Rawalpindi

Director Medical Education
Rawalpindi Medical University
Rawalpindi

Faculty Member
Rawalpindi Medical University
Rawalpindi

Islammiayat / Pak Studies Curriculum


راولپنڈی میڈیکل یونیورسٹی راولپنڈی

سیکنڈ پروفیشنل ایم بی بی ایس

نصاب برائے مطالعہ پاکستان

1. نظریہ پاکستان
2. اللہ تعالیٰ کی حاکمیت کا نفاذ
3. دو قومی نظریہ
4. اسلامی مملکت کا قیام
5. قیام پاکستان کے اغراض و مقاصد
6. نظریہ پاکستان اور قائداعظم
7. مسلم ملت کی بنیاد
8. اسلامی جمہوریت
9. اسلام کا معاشی نظام
10. اقلیتوں کا تحفظ
11. حضرت شاہ ولی اللہ کی خدمات
12. تحریک علی گڑھ
13. قائداعظم کے چودہ نکات
14. 1973 کا آئین
15. پاکستان کے قدرتی وسائل
16. تحریک ختم نبوت
17. زراعت

15-02-2022

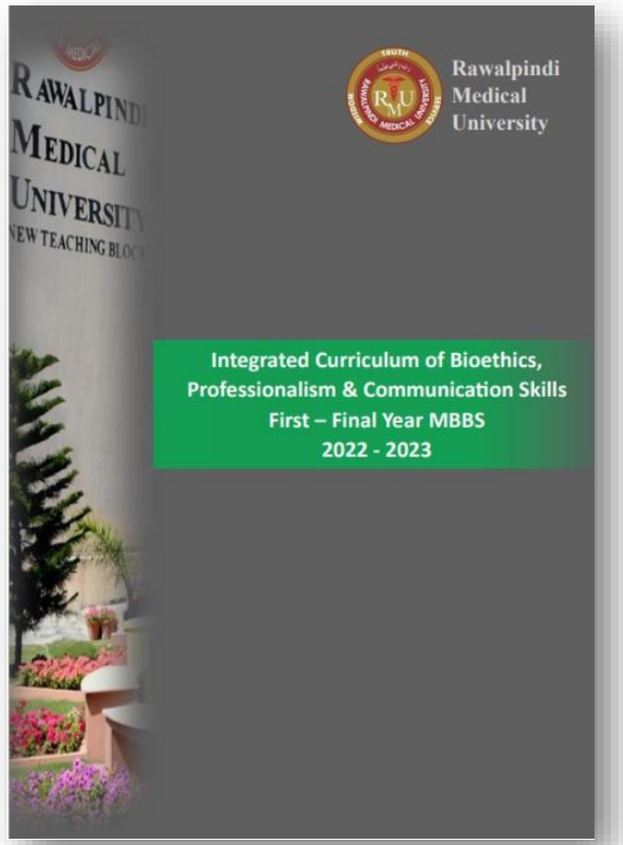
Dean of Basic Sciences
Rawalpindi Medical University
Rawalpindi

Director Medical Education
Rawalpindi Medical University
Rawalpindi

Faculty Member
Rawalpindi Medical University
Rawalpindi

Bioethics

The Bioethics Curriculum for undergraduate medical students integrates ethics and professionalism as a core, longitudinal theme across all five years of medical education. It aligns with global standards set by organizations like WFME and ACGME, as well as national guidelines from the Pakistan Medical Commission (PMC). The curriculum emphasizes key ethical principles such as patient welfare, autonomy, and social justice, while fostering professionalism, compassion, and accountability in medical practice. This integrated approach aims to develop not only scientifically competent doctors but also ethically responsible and community-oriented physicians.



At Rawalpindi Medical University (RMU), bioethics education includes both theoretical instruction and practical learning, drawing on national resources like the National Bioethics Committee (NBC) of Pakistan and international guidelines such as the WHO Bioethics Curriculum. The curriculum covers critical themes such as the doctor-patient relationship, professional integrity, conflict resolution, and group dynamics, ensuring that students are equipped with the skills necessary for ethical decision-making and compassionate care. Assessment of bioethics is incorporated throughout the program, with a focus on cultivating critical thinking, communication skills, and a humanistic approach to healthcare.

Framework of Bioethics Curricula at Rawalpindi Medical University

Biomedical Ethics Curriculum



Module - Il – Basic Bioethics Module

2nd year MBBS

Theoretical Component (Integrated Bioethics Methods: IBM-ll)

This module will cover Oath/Declaration by a Registered Medical or Dental Practitioner at time of graduation and importance of Pakistan Medical & Dental Council Code of Ethics of Practice for Medical and Dental Practitioners. This module make students cognizant with importance of Pakistan Medical and Dental Council of Pakistan to maintain the register of Medical and Dental practitioners, regulate the standards of medical practice, protect the interests of the patients, supervise medical education, and give guidelines on ethical issues. Another important theme of this module is explanation of four basic ethical principles: autonomy, beneficence, non-maleficence & justice and explaining the process of ensuring patient autonomy, beneficence, non-maleficence, respect & justice while informing/ deciding on a treatment modality.

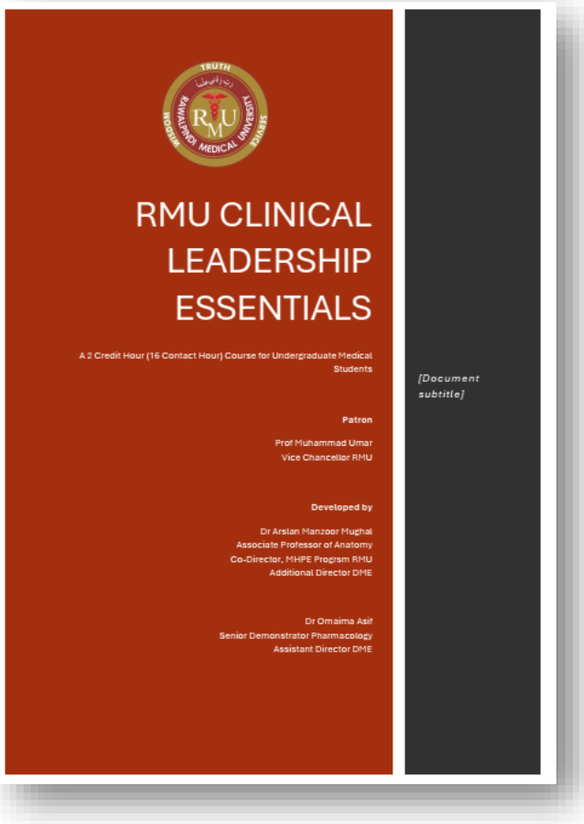
Practical Component (Student Practical Component: SPC -ll)

This module will cover historical aspect of ethical dilemma and the potential risk inflicted to participants as a result of violation in ethical practices from involvement in scientific research in past. Students will get familiar with the concept that how ethical dilemma in past led to evolution of several contemporary documents by video demonstration and case based discussions on real life scenarios violation in ethical principles namely autonomy, beneficence, non-maleficence and justice. Students will get familiar with the concept that



how ethical dilemma in past led to evolution of several contemporary documents which have been created to minimize such exploitation and safe guard the rights of participants.

Leadership & Professionalism



Professionalism in medicine is the GIT of public trust in healthcare providers, encompassing values such as competence, integrity, ethical conduct, and accountability. It involves prioritizing patient welfare, maintaining confidentiality, effective communication, and continuous professional development. Rawalpindi Medical University (RMU) integrates professionalism throughout its curriculum to prepare students for the complexities of healthcare, fostering respect, accountability, and compassion. Through theoretical instruction, practical training, and mentorship, RMU emphasizes ethical conduct and patient-centered care. This approach ensures that graduates are not only skilled but also committed to improving healthcare standards and outcomes with integrity and professionalism.

2nd Year MBBS:

Focus: Practical Application and Team Dynamics

Interactive Lectures:

Personal Values for Leadership (1 Hour)

respect, ethics, interpersonal connection, desire for change, commitment, and

emotional intelligence.

Team Values for Leadership (1 Hour)

Cooperation & sharing, cohesiveness & Collaboration, trust and conflict management.

Role Play:

Conflict Resolution (1 Hour)

Self-Assessment:

Emotional Management (1 Hour)

Reflective Journaling:

Continue reflective journaling, emphasizing reflections on values of leadership

Behavioral Sciences

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

MODULAR CURRICULUM OF BEHAVIOURAL SCIENCES FOR FIRST YEAR MBBS

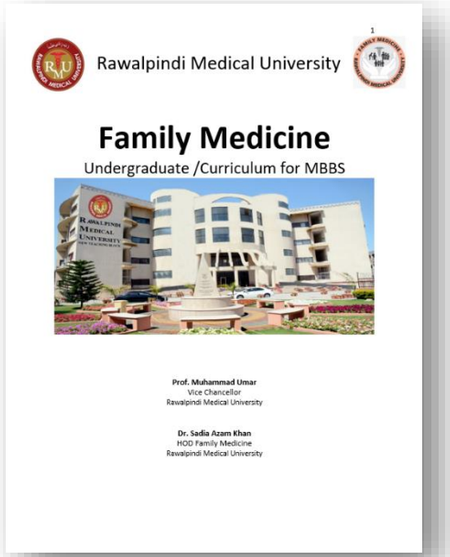
Institute of Psychiatry

Benazir Bhutto Hospital

Year	LGIS	SDL	CLINICAL ROTATION		Total
1st Year	**12 hours**	**20 hours**	**No clinical rotation**		**32 hours**
2nd Year	8 hours	20 hours	No clinical rotation		28 hours
3rd Year	**12 hours**	**30 hours**	**20 hours** 8am-10:30am 4 days a week, 2 weeks rotation	**28 hours** 2pm -6pm 7 days in 2 weeks rotation	90 hours
Total					**150 hours**

Module	Topic	Learning Outcome	Learning Domains	Mode of Teaching
GIT Module 1	Learning	The student should be able to • To define Learning. • To describe the types of Learning i.e Classical and Operant conditioning. • To relate the concept of different types of learning in everyday practice, disease causation and psychotherapy	C1 C2 C3	LGIS
	Memory	The student should be able to • To define the types of memory. • To explain the areas in brain responsible for memory storage and Retrieval. • To describe ways to improve memory	C2 C2 C3	LGIS
Renal Module 2	Perception	The student should be able to • To be able to define perception. • To be able to classify types of perception • To be able to identify perceptual abnormalities and relate them with illness	C2/ C3 C2/C3	LGIS
	Thinking and Motivation	The student should be able to • Define thinking and problem solving • Elaborate problem-solving method • Identify the barriers of creative thinking. • Define motivation and self-actualizer • Elaborate the Maslow's Hierarchy of Needs	C1 C2/ C3 C3	LGIS
Reproduction Module 3	Emotion	The student should be able to • To define emotions. • To explain the neuroanatomy and neurochemistry of emotion • To handle situations with heightened emotions encountered in daily life and clinical practice	C3 C3	LGIS
	Intelligence	The student should be able to • To define types of intelligence and thinking. • To differentiate between EQ and IQ. • To apply the components of EQ and IQ in everyday dealing with patients and peers	C2 C3	LGIS
CNS Module 4	Sleep and Arousal	The student should be able to • Understand the mechanism of sleep and arousal • Elaborate the stages of sleep • Understand the sleep disorders	C1 C2 C3	LGIS
	Defense Mechanism	The student should be able to • Understand the healthy and unhealthy defense mechanisms • Elaborate various defense mechanisms	C1 C3 C3	LGIS
Special Senses Module 5	Metacognition	The student should be able to • Define metacognition • Understand the neurobiological basis of metacognition	C1 C3	SDL
Endocrinology Module 6	Language	The student should be able to • Define language • Understand the neurobiological basis of language • Elaborate various parts of brain involved in language	C1/C2	SDL

Family Medicine



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

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

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

Summary of hours distribution of different teaching methods in Family Medicine training

Activity	**Method of learning**	**Duration of activity**	**Frequency of activity in days**	**No of students**	**Total hours**
Lecture to full class	Didactic	45 hours	9	Full class	45 hours
Workshops at campus	Experiential learning	10hours	2	~30	10 hours
Outdoor clinical teaching	Apprenticeship	45 hours	9 days	~2-3 per teacher	45 hours
Total					**100 hours**

Overview Of Training Structure

The total duration of Family Medicine training will be 100 hours. The Family Medicine training will be spread over 5 years with focused learning as follows:

Topic	**Year of study**	**Hours**	**Teaching method**	**Assessment**		
				K (Knowledge)	**S (Skills)**	**A (Attitude)**
1. Communication skills and consultation skills in Family Medicine Practice	1 st	5	Lectures		Rotation	Rotation
2. Ethics in Clinical Practice	2nd	5	Lectures			
3. Focused history taking, examination & assessment skills	3rd	10	Lectures	CBD	CBD	CBD
4. Appropriate use of clinical equipment and charts	3rd	10	Workshop		Rotation	Rotation
5. Define Family Medicine	4th	1	Lecture	Portfolio		
6. Role of Family Medicine in the health care system	4th	1	Lecture	Portfolio		
7. Core concepts of Family Medicine	4th	2	Lecture	Portfolio		
8. Scope of Family Medicine specialty	4th	2	Lecture	Portfolio		
9. Patient centered approach	4th	2	Lecture	Portfolio		Rotation
10. Family Medicine rotation in community based Family Practices	4th	45	Field posting	Portfolio CBD	Rotation CBD	Rotation CBD
11. Danger signs and referral system	5th	2	Lecture	SAQ		
12. Basic concepts of Elderly care	5th	2	Lecture	SAQ		
13. Basic concepts of Palliative Care	5th	2	Lecture	SAQ		
14. Practice Management in community setting	5th	2	Lecture	SAQ		
15. Cost effective and safe approach to Fever without any localizing symptoms in community setting	5th	1	Lecture	SAQ		
16. Cost effective and safe approach to Generalized weakness in community setting	5th	1	Lecture	SAQ		
17. Cost effective and safe approach to Generalized aches and pains in community setting	5th	1	Lecture	SAQ		
18. Cost effective and safe approach to Dizziness in community setting	5th	1	Lecture	SAQ		
19. Cost effective and safe approach to an unconscious patient in community setting	5th	1	Lecture	SAQ		
20. Application of Bio-Psycho-Social Model of Healthcare in community setting	5th	4	Lecture	SAQ		Portfolio

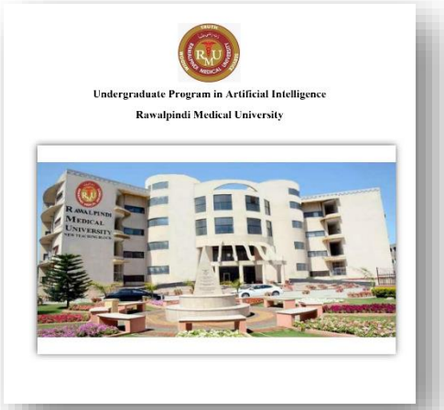
Specific Learning Objectives

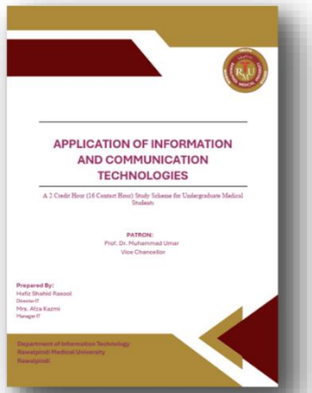
Subject	Topic	Hours needed	S. No	Learning Objectives At the end of this module, the students of MBBS will be able to:
A) Population Centered Care				
Community medicine	Social determinants of health	1	1	Describe the social determinants of health
	Environmental and climate factors in disease causation		2	Explain the role of environmental and climate factors in disease causation
	Principles of prevention and health promotion	1	3	Describe the Principles of prevention and health promotion
			4	Describe, the role of counseling and patient education in health promotion and disease prevention
Medical education	Patient safety, clinical governance and quality improvement	1	5	Explain the concept of patient safety, clinical governance and quality improvement in primary healthcare
Family Medicine	Violence against Healthcare Professionals	2	6	Describe violence and its types
			7	Explain, how to de-escalate violence against healthcare professionals
			8	Discuss the importance of effective communication
			9	Describe Rights & Responsibilities of Healthcare workers in violent situations
	Gender Based Violence	2	10	Define gender base violence
			11	Differentiate the different forms of gender- based violence
			12	Describe issues of gender, rights, equality, and gender-based violence including knowledge of how to access resources and support
			13	Describe the recommended ethical standards for reporting on issues related to the prevention of gender-based violence
			14	Discuss the preventing strategies for gender-based violence
			15	Describe the national and international legal frameworks for gender-based violence
B) Principles & practice of Family Medicine				
FM/ CM/ Medicine	History and current structure of general practice	1	16	Describe the historical perspectives of general practice
			17	Explain the structure of general practice nationally and internationally
	Models of healthcare and universal health coverage	1	18	describe the models of healthcare Learn the concept of universal health coverage
	Ethics in clinical practice	2	19	Define ethics , understand the scope ethical practice to realize the importance of applying ethics in clinical practice
	GP as a coordinator in healthcare (referral mechanisms)		20	Describe the role of a GP in monitoring and coordinating patients' treatment plans, educate them about their condition, connect them with health care providers, and evaluate their progress
			21	Describe the referral mechanisms in healthcare
	Holistic Approach in Family Practice	2	22	Explain the concept of Holistic Care

			23	Discuss Patient centered care
			24	Explain the influence of social, economic and environmental factors on the health status of individuals and groups, and suggest appropriate measures
			25	Discuss delivery of evidence based, comprehensive continuing care to the individuals and families
			26	Discuss quality care in preventive, therapeutic, rehabilitative and palliative curative and preventive domains of health care
			27	Describe effective use of available resources
	Documentation & Medical Records		28	Discuss the importance of documentation in medical practice.
			29	List the main elements of documentation
			30	Documentation of the diagnosis, management plan, treatment, safety netting and follow up arrangements
			31	Describe disease notification and reporting in primary care.
	Consultation Models in Family Practice		32	Describe various consultation models
			33	Discuss how to encourage the patient's contribution
			34	Explain, how to put patient's complaint in appropriate psychosocial contexts
			35	Describe patient's ideas, concerns, expectations and shared management plan
Pharmacology	Rationale use of drug prescribing in Family practices	1	36	Explain the steps of rational use of drug prescribing in family practices

Information Technology & Artificial Intelligence

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





Focus: Working with MS Word, Using Internet Services, Social Networks

Interactive Lectures:

• Working with MS Word- Word Document Operations and Formatting5 | P a g e
• Working with MS Word- Adding Multimedia and Objects
• Real-time communication on the Internet
• Wired and Wireless Networks
• Basics of Social Networking (Online)
• Use of Digital Library by Undergraduates (Online)

Workshop:

Workshop on effective use of HEC Digital Library by Medical students.

Collaborative Learning:

Effective use of Social Networking Platforms for Medical Appointments. Identify discrepancies if any.

Individual Project:

• Create a resume in Microsoft Word following specific formatting guidelines, such as page size and margins, and including their name, contact details, objective, qualifications listed in reverse chronological order, and any other details in a formatted table. The resume should have the student's own academic and professional details and can be extended over multiple pages to include all information.

• Develop a 3-pager Word Document of any medical research done that includes graphical objects (images, shapes, mathematical symbols and tables, hyperlinks)



Integrated Undergraduate Research Curriculum

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

Aim

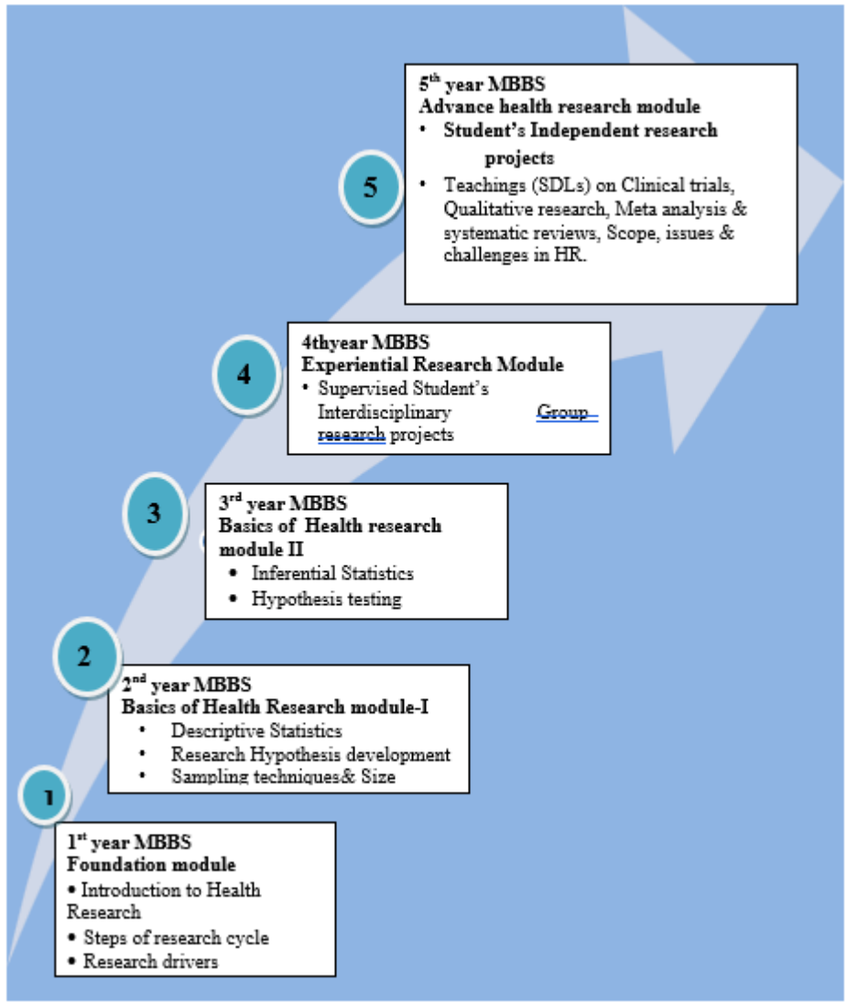
Aim of Integrated undergraduate research curriculum is to create center of excellence for future doctors by establishing intellectual GIT to promote critical thinking and practice evidence based medicine with the aspiration to improve clinical outcomes, population health and health care services delivery across the nation beyond traditional medical care

Objectives

- To develop the research competent behavior in our future seven star doctors.
- The aims & objectives of Integrated Undergraduate Research Curriculum (IUGRC) RMU can be further elaborated as under;
- Enhance the students' capability in performing quality research
- Develop the skill of data collection, analysis and interpret it scientifically.
- Inculcate lifelong self-directed independent learning.
- Develop the skills in critical evaluation and synthesis of new information.
- Inspire the habit of practicing evidence-based medicine.
- Explicit and measurable research related to curricular outcomes should be articulated.
- Promote innovation and research to improve overall health status of the community
- Align collaborative learning and research outcome-based objectives according to the needs of society .
- Develop interdisciplinary research projects to foster overall learning.

- Develop innovative community health needs based research projects to attract research grants.
- Collaboration with HEC, PSCIT, Health department, UNICEF, WHO and other potential agencies for research funding for community need centered proposals.
- Develop institutional culture & infrastructure for long term sustainability and acceptability for research
- Transform medical education with integrated research curricula, e-learning technologies, contemporary infrastructure and community based learning by Developing liaison with medical education, University Library, RSRS and IT Department for the arrangement of research methodology workshops, computer skills & on relevant software's hands on training.
- Collaboration with other departments to promote interdisciplinary research.
- Assess the impact pilot program by program evaluation and 360 degree feedback after five years.
- Regular seminars, conferences and talks on our population health issues & challenges by people from all walks of life and professions, to build communities of practice and interdisciplinary connections to enrich the students' experience.
- Active involvement of all stake holders of Health research ethics, the institutional Committee which should draw upon all disciplines, including the nursing staff, representation from the student body(RSRS), editors of scientific publications and city community representatives . Ethics circle should review proposed research work to develop recommendations from the Code of Ethics given by the PM&DC
- Setting the standard of excellence in research among under graduate medical students;
- Retain, support and attract the diverse pool of highly motivated faculty for mentorship
- Develop field based research projects to gain practical experience of research in communities.
- Involving students in completion of research supportive infrastructure of the institution like demographic, clinical, diagnostics data capturing & achieving project.
- Encouragement & facilitation of participation of medical students in research competitions, seminars, symposia and research outcomes publishing.
- Establish the facility of virtual learning environment including e-learning modalities
- Establish the reward system and annual appraisals
- Alliance with external faculties & institutions for participation and dissemination of scholarly work at national and international level

Schema & Contents of IUGRC at one glace



Year of MBBS course	Total Hrs allocated to Com-Med by PMDC	Hrs allocated to IUGRC [a] Visible within overall MBBS timetable	Actual Hrs invested in IUGRC teachings & class Pattern	Course title	Mode of Teaching
I	25	4hrs	4 x 4 = 16hrs (1/4th, 4 Parallel LGIS [b])	Health Research GIT Module	Formal [d]
II	25	6hrs	6 x 4 = 24hrs (1/4th, 4 Parallel LGIS)	Basics of Health Research Module-I	
III	50	8hr	8 x 4 = 32hrs (1/4th, 4 Parallel LGIS)	Basics of Health Research Module-II	
IV Formal Year of CM	150	20hrs 10 contact sessions [c] Each comprising 2hrs	[c] 14 x2 x 10 =280hrs (small group based teachings) **14 (7 sessions each day for 2days) parallel contact sessions, each extending over 2hrs (one contact)**	Experiential Health Research Module	
V	4 (added)	4 hrs	4 x 4 = 16hrs (1/4th, 4 Parallel LGIS)	Advance Health Research Module	
	250hrs total (254)	**42hrs (15% of total hrs allocated to CM by PMDC are devoted to research)**	**368hrs visible time effort** (part of student's regular time-table) **in addition to informal contact sessions & Web based**		

Component-II for 2nd year MBBS

Premise:

- Second year research teachings are based on principal of incorporating ACTIVE LEARNING. Research teaching begins with revising the instructional plan for the selected course. It includes;
- Reviewing the expected learning outcomes: This module of IUGRC aims to equip the 2nd year students with necessary knowledge and skills for applying quantitative research methods for generating new knowledge and evidence. After the students are educated in meanings & need of Biostatistics are expected to develop a clear understanding of data & variable, types, methods of summarization & presentation of data, principles of descriptive analysis including cross-tabulations, use of relevant computer programs, descriptive study designs and its applications to address a specific research question.
- Identifying potential pedagogical methods to achieve the learning outcomes. Course outlines for each contact session are notified one week before for prior readings & coming to class with prepared minds, under intimation that their level of prior preparedness on the session topics are judged by questioning at the start & during session and the results are reflected in log-books accordingly.
- Selecting the method (learning activity) which is feasible and appropriate for the students at this level, keeping in consideration their learning environment (context).
  Students in groups are guided on pre- & post contact sessions work through WBO and are provided with learning resources including books, journals and free web based lectures etc. Post session assignments / exercises are assigned for comprehending biostatistics.
- White-board & markers, Multimedia projections and other internet based teaching tools & computer based soft-wares are used as teaching aids.

Schedule of Assessment :

- 1 MCQs covering each session teachings is part of relevant block examinations and 06 MCQs in total. Results will contribute towards IA under total 06 marks in 1st Prof. MBBS evaluation.
- Subject will share 04 MCQs in 2nd Prof. MBBS Exam. Overall assessment is under 10 Mark in total.

2nd Year MBBS	Contact Session duration 60-90min		
Course title: Descriptive Statistic			
Session & Title	Session Course outlines	Learning outcomes	Teaching strategy	Assessment tool
(I) Information & precision in scientific work (Data & variable)	- Definition, uses and need of statistics in research & healthcare profession. - Concept of data & variable and sources of data - Concept of information & precision Types of data with explanation with examples. (nominal, ordinal, interval & ratio scale data) - Classification of variables (qualitative & quantitative, Discrete & Continuous) - Raw and Processed Data - Sources of health data - Descriptive & inferential statistics - Simple data entry and construction of a variable in computer software (SPSS etc)	By the end of the session students should be able to: - Define & enlist uses of statistics in research - Appreciate value of information & precision in scientific decision making - Differentiate b/w data & variable - Enlist data types with examples in medical background - Classify variable with examples - Differentiate descriptive statistics form inferential statistics - Enlist sources of data - Identify raw & processed data with example - Demonstrate constructing variable and data entry in computer (SPSS, ..)	- SGID (small group interactive discussions) - Prior & post teachings assignment-based model. - Session are conducted by Senior faculty - Attendance is monitored objectively	1 MCQs of level C1 to C3
(II) Data Organization & Data Presentation methods	Include - Frequencies (qualitative data) - Frequency distribution (quantitative data) - Tabulations - Data presentation methods inc: Bar & pie diagram, histograms & line diagrams, frequency polygons - Frequency distribution tables & curves - Shapes of frequency distributions (modality &skewness) - Use of computer soft ware (SPSS etc) for data entry, tabulation & graphing	By the end of the session students should be able to; - Construct simple & complex tables for quali-variable - Construct frequency distribution table for quanti-var showing class limits, class freq-, relative freq- & cumulative frequencies. - Interpret freq- tables - Indicate diff graphs & diagrams used for diff types of data - Construct bar & pie diagram, histogram and line graphs - Interpret graphs and forms of skewness - Demonstrate on computer above data presentations skills	- SGID (small group interactive discussions) - Prior & post teachings assignment based model. - Session are conducted by Senior faculty - Attendance are monitored objectively	1 MCQs of level C1 to C3

(III) **Data summarization : Measures of Central Tendency** **& Measures of Variations**	Interactive discussion covering following areas of descriptive statistics; - Measures of Central Tendency MCT (Mean, Median & mode), uses and advantages & disadvantages of each with illustrations - Measures of variations (range, mean deviation, standard deviation & Inter-quartile range) with illustrations form medical background Degree of freedom (DF) - Coefficient of variations - Data summary measures for a population & sample - Application of data summary measures for on health data. (descriptive analysis of data - Uses of computer software (SPSS) on data summarization techniques	By the end of session students should be able to: - Compute and explain uses of different measures of central tendency (mean, mode, median) form a given data file - Compute and explain with examples uses of measures of variations (range, IQ-range, variance & Standard deviation) form a given data file - Explain concept with example DF - Compute Coefficient of variation for give data file - Compare two data sets by computing & comparing their coefficient of variations - Explain diff b/w population &sample mean, SD. - Summarizes a given health related data set in term of measures of central tendency and variation (descriptive analysis) - Demonstrate above on computer	- SGID (small group interactive discussions) - Prior & post teachings assignment based model. - Session are conducted by Senior faculty - Attendance is monitored objectively	1 MCQs of level C1 to C3
(IV) **Probability , Probability distribution and Normal Distribution**	Interactive discussion covering following areas of descriptive statistics; - concept of probability in medical statistics calculation of probability (addition & multiplication rules) - Normal distribution and standard normal distributions - Importance of Normal Distribution curve and standard Normal Curve in medical statistics - Relative deviate	By the end of session , students should be able to: - State meanings of probability and its application in health data management & research - State & apply basic principles of probability in health situations - Explain importance of Normal distribution in health research decision making - Identify properties of normal dist. curves. - Explain & compute normal deviate	- SGID (small group interactive discussions) - Prior & post teachings assignment-WBO - Session are conducted by Senior faculty - Attendance is monitored objectively	1 MCQs of level C1 to C3
(V) **Descriptive analysis of data: Frequencies, 2x2 table & Cross-tabulations**	Interactive discussion covering following areas of descriptive statistics; - Descriptive analysis of data. - Frequencies & distributions Constructions of 2x2	By the end of session , students should be able to: - Perform descriptive data analysis techniques on given data set (descriptive study data) in term of frequencies, percentages, proportions, ratios, rates, variability measures	- SGID (small group interactive discussions) - Prior & post teachings assignments (WBO). - Session are conducted by Senior	1 MCQs of level C1 to C3

	(contingent)table - Descriptive Cross-tabulation - Analytical cross tabulation - Role of cross tabulation / 2x2 table in hypothesis generation & testing	- Perform descriptive and analytical cross tabulation for two binomial variables in the give distribution. - Interpret the results of cross-tabulations - Generate hypothesis based on analytical cross tabulations	faculty - Attendance is monitored objectively	
(VI) Sampling in Health research - I	include; - Concept of sampling in health research - Need of sampling in health research Sampling methods and limitations and indications for each method. - Effectiveness of a random sample in health research - Fundamentals of sample size calculation	By the end of session , students should be able to: - Explain concept of sampling in HR - Distinguish with example each sampling method - State merits and demerits of each method - Explain factors which determine sampling technique and size according to a research study need. - Explain importance of random sample in research.	- SGID (small group interactive discussions) - Prior & post teachings assignment based model. - Session are conducted by Senior faculty - Attendance is monitored objectively	1 MCQs of level C1 to C3
Session-VII				
(VII) Sampling in Health Research - II	Interactive discussion on; - Central limit theorem - Errors in sampling - Non sampling error / systematic errors - Sampling error and standard error - Generalize ability of results of research & sampling method - Confidence interval - Sample size calculation formulae - Web based sample size calculators	By the end of session , students should be able to: - Explain sampling and non-sampling errors - Explain central limit theorem - Explain ways to address non-sampling errors - Apply standard error in calculation of 95% confidence interval for point estimate in a given data set. - Interpret research results generalize ability in term of confidence interval - Calculate the sample size a given research study by manual fsormula - Calculate sample size from internet based WHO calculator	- SGID (small group interactive discussions) - Prior & post teachings assignment based model. - Session are conducted by Senior faculty - Attendance is monitored objectively	1 MCQs of level C1 to C3

Innovation & Entrepreneurship

Entrepreneurship is the process of designing, launching, and running a new business, which typically starts as a small enterprise offering a product, process, or service for sale or hire. It involves identifying a market opportunity, gathering resources, developing a business plan, and managing the business's operations, growth, and development. Entrepreneurship in medical universities represents a burgeoning field where the innovative spirit intersects with healthcare to forge advancements that can transform patient care, medical education, and healthcare delivery. This unique amalgamation of medical expertise and entrepreneurial acumen empowers students, faculty, and alumni to develop groundbreaking medical technologies, healthcare solutions, and startups that address critical challenges in the health sector. By integrating entrepreneurship into the curriculum, Rawalpindi Medical university is not only expanding the traditional scope of medical education but also fostering a culture of innovation and problem-solving. This enables future healthcare professionals to not only excel in clinical skills but also in business strategies, leadership, and innovation management.



RAWALPINDI MEDICAL UNIVERSITY
OFFICE OF RESEARCH INNOVATION & COMMERCIALIZATION (ORIC)
Ph: +92-51-9290853

No: ____/ORIC/RMU/24 — 30th Jan , 2024

Vice Chancellor
Rawalpindi Medical University
Rawalpindi

Subject: INNOVATION & ENTERPRENEURSHIP FOR UNDERGRADUATE CURRICULUM

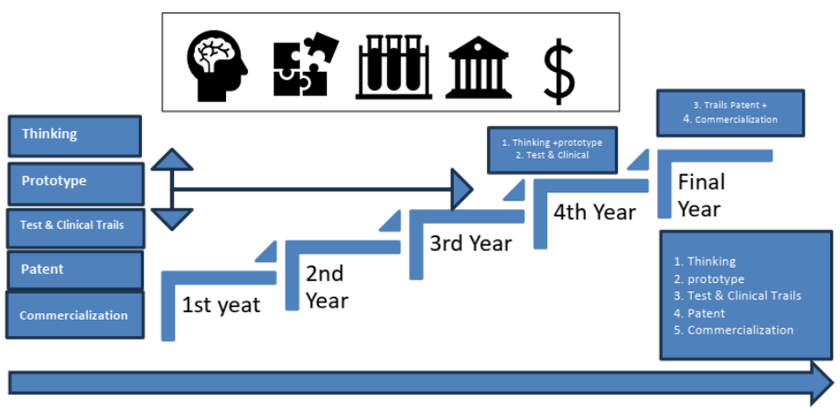
This initiative seeks to embed a dynamic Innovation and Entrepreneurship module within the undergraduate curriculum. Focused on nurturing a culture of creativity and strategic thinking, the program will empower students with essential skills for today's rapidly evolving business landscape. Emphasizing hands-on experiences, the module will guide students through ideation, prototyping, and business model development. By fostering an entrepreneurial mindset, we aim to equip undergraduates with the tools to identify opportunities, solve real-world problems, and instigate positive change. This transformative addition ensures graduates are not only job-ready but also capable of driving innovation and contributing meaningfully to the global entrepreneurial ecosystem.

I am thankful to Prof Iftikhar Hanif and all Seniors who are supporting this idea.

Dr Asif Maqsood Butt
Manager I&C
ORIC RMU

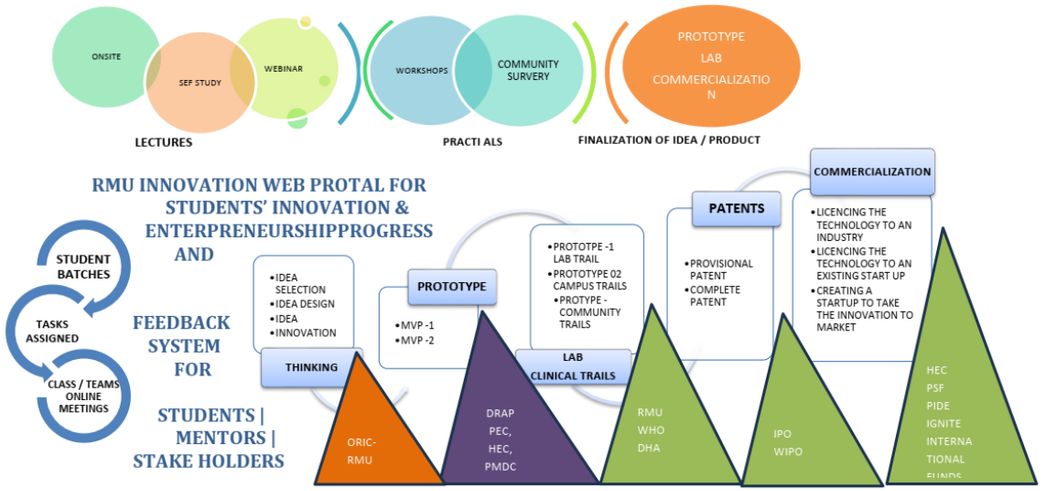
Such initiatives often lead to the creation of medical devices, digital health platforms, and therapeutic solutions that can significantly improve patient outcomes and make healthcare more accessible and efficient. Through incubators, accelerators, and partnerships with the industry, medical universities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

Undergraduate Medical Students Innovation & Entrepreneurship program frame work for year 2024-2027



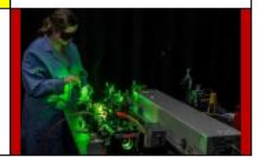
Class / Activity	Innovation / Physical Lecture Groups formation	Ideas Presentations Webinars	Protype Physical lecture Groups	Test & Clinical Trails	Patent	Commercialization
1st Year						
2nd Year						
3rd Year						
4th Year						
Final Year						

Fig:01 Innovation & Entrepreneurship; Year 2024-2027 plan of Undergraduate Medical Students of Rawalpindi Medical University, Rawalpindi





Year 01 to year 5th Sequence of academic Activities

		1st year	2nd Year	3rd year	4th Year	Final Year	
Physical	Feb	Innovation / Lecture	Thinking	Protype * 	Test & Clinical Trails Patent	Commercialization	Start UP With Start UP Industry
Webinar	Marh	Groups formation	Innovation Idea designing	- Introduction to basic medical equipment and devices. - Participating in simple prototyping exercises to understand design principles.			
SDL	April						
Webinar	May		Idea presentations				
Physical	June		Idea maturation Pitch Idea final approval				
Group Task	August		Final selection Idea for MVP - 1& II & Seed Grant			Grant Submission Applied in exhibitions	

Second Year:

1. **Ideas:**
   - Engaging in research projects to explore innovative solutions to medical challenges.
   - Collaborating with peers to generate ideas for improving patient care or healthcare delivery systems.

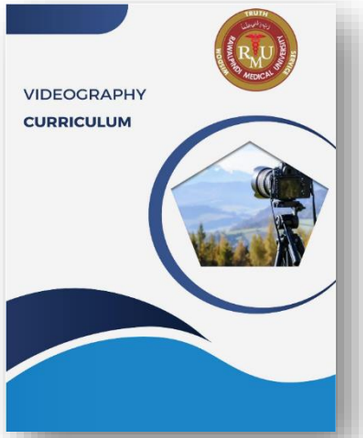
2. **Prototype:**
   - Developing prototypes for medical devices or apps as part of coursework or extracurricular projects.
   - Refining design concepts based on feedback and iterative testing.

3. **Test & Clinical Trials:**
   - Learning about clinical trial design and methodology.
   - Participating in observational studies or small-scale clinical trials under supervision.

4. **Patent:**
   - Identifying patentable ideas emerging from research projects or prototypes.
   - Working with faculty mentors to assess the novelty and feasibility of patenting ideas.

5. **Commercialization:**
   - Exploring potential market demand for innovative medical products or services.
   - Learning about business models and strategies for commercializing healthcare innovations.

Videography Curriculum



In an age where visual communication and digital media play pivotal roles in healthcare education, research dissemination, and public outreach, the importance of videography as a skill cannot be overstated. This comprehensive course at Rawalpindi Medical University is designed to equip students with the essential knowledge, technical proficiency, and creative acumen necessary to excel in utilizing video as a powerful tool in the medical field. Spanning four years and totaling 24 hours of instruction, this course integrates theoretical GITs with hands-on practical experience tailored to the unique needs of future healthcare professionals. Through interactive lectures, immersive workshops, and project-based assessments, students will embark on a transformative journey from mastering fundamental camera operations and lighting techniques to refining advanced video editing skills and project management capabilities.

Second Year MBBS
Advanced Camera Techniques and Lighting (6 hours)

Sr No.	Topic	Learning Objectives	Teaching Strategy	Assessment Tool
1.	Manual Camera Settings	Master manual exposure settings, including aperture, shutter speed, and ISO. Understand how to achieve desired depth of field and dynamic range.	LGIS	MCQs
2.	Advanced Camera Operations	Practice advanced camera techniques such as focusing techniques and motion capture. Experiment with different camera movements to enhance visual storytelling.	LGIS	MCQs
3.	Advanced Lighting Techniques	Explore advanced lighting setups for various indoor and outdoor shooting scenarios. Understand how to use lighting to create mood and atmosphere in videos.	LGIS	MCQs
4.	Lighting for Narrative Impact	Analyze case studies of how lighting enhances narrative in films and videos. Apply advanced lighting techniques to create specific visual effects and storytelling elements.	LGIS	MCQs
5.	Editing and Color Grading Basics	Introduce video editing software and its basic tools and interface. Understand the fundamentals of color correction and grading to enhance video quality.	LGIS	MCQs
6.	Lighting and Camera Techniques	Design and execute a video project emphasizing advanced camera techniques and lighting setups. Demonstrate proficiency in using advanced camera settings and lighting techniques effectively.	LGIS	MCQs

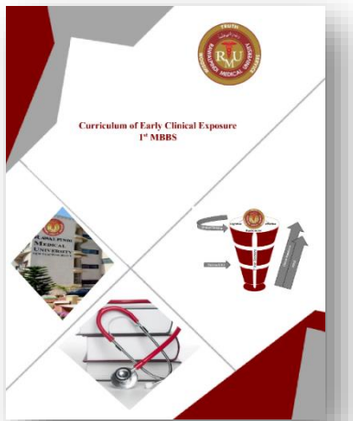
Section-X

Early Clinical Exposure (ECE)



Early Clinical Exposure (ECE)

Introduction



Early clinical exposure helps students understand the relevance of their preclinical studies by providing real-world contexts. This can enhance motivation and engagement by showing students the practical application of their theoretical knowledge. Early exposure allows students to begin developing essential clinical skills from the start of their education. This includes not only technical skills but also crucial soft skills such as communication, empathy, and professionalism. Direct interaction with patients early in their education helps students appreciate the complexities of patient care, including the psychological and social aspects of illness. Early exposure to various specialties can aid students in making informed decisions about their future career paths within medicine. Early clinical experiences contribute to the development of a professional identity, helping students see themselves as future physicians and understand the responsibilities and ethics associated with the profession. This can help reduce the anxiety associated with clinical work by familiarizing students with the clinical environment. It can build confidence in their abilities to interact with patients and healthcare professionals. Engaging with real-life clinical situations early on encourages the development of critical thinking and problem-solving skills, which are essential for medical practice. It helps bridge the gap between theoretical knowledge and practical application, leading to a more integrated and holistic approach to medical education. It allows students to observe and understand how healthcare systems operate, including the challenges and limitations faced in different settings.: Early patient interaction emphasizes the importance of patient-centered care from the outset, underscoring the importance of treating patients as individuals with unique needs and backgrounds. Practical experiences can enhance long-term retention of knowledge as students are able to connect theoretical learning with clinical experiences.: Early clinical experiences often involve working in multidisciplinary teams, which fosters a sense of collaboration and understanding of different roles within healthcare.

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

Vision

1. To create a seamless integration of theoretical knowledge and clinical skills, where students can apply classroom lessons in real-world healthcare settings from the start of their education. This approach aims to break down the traditional barriers between preclinical and clinical phases of medical training.
2. To shape well-rounded healthcare professionals who are not only clinically competent but also empathetic, ethical, and communicative. It emphasizes the development of soft skills, such as empathy, teamwork, and patient communication, alongside hard clinical skills.
3. To foster a culture of innovation and adaptability in future healthcare professionals. As medicine is a rapidly evolving field, students should be prepared to continually update their knowledge and adapt to new technologies and treatments.
4. To instill a strong GIT in patient-centered care, where students learn to put the needs and values of patients at the forefront of their clinical decision-making process.
5. Encouraging students to develop their professional identity from the outset of their training, helping them to understand and embody the roles, responsibilities, and ethical standards of the medical profession.
6. To promote understanding and collaboration among different healthcare disciplines, recognizing that modern healthcare is a team effort requiring coordinated multi-disciplinary approaches.
7. Encouraging an inclination towards scientific inquiry and research, integrating research skills early in the module to foster a mindset of evidence-based practice.
8. To equip students with a global perspective on health, understanding both local and international health challenges, and preparing them for a career in an increasingly interconnected world.

Mission



The mission of the early clinical module is to profoundly transform medical education by integrating clinical experiences from the very beginning. This approach aims to enrich the learning process, making it more relevant and engaging by immediately applying theoretical knowledge to real-world clinical settings. It focuses on developing essential clinical skills, fostering empathy, and ensuring patient-centered care.

The module is designed to nurture a strong professional identity and ethical grounding in students, preparing them for the realities of a career in medicine. It encourages adaptability, resilience, and a commitment to lifelong learning in the face of the ever-evolving field of healthcare. By exposing students to a variety of medical specialties and healthcare environments early on, it also aids them in making more informed career choices. Overall, this module seeks to produce well-rounded, competent, and compassionate healthcare professionals ready to meet the challenges of modern medicine.

Aim and Objectives

1. To provide students with the opportunity to start developing essential clinical skills, such as basic patient examination, history taking, and simple procedural skills.
2. To bridge the gap between theoretical knowledge and its practical application. This helps students understand how their preclinical learning is relevant to clinical settings.
3. To instill a sense of professionalism and an understanding of medical ethics from the very beginning of medical training. This includes aspects such as patient confidentiality, empathy, and communication skills.
4. To emphasize the importance of patient-centered care, helping students understand the patient's perspective, and the impact of illness on patients and their families.
5. To introduce students to the workings of the healthcare system, including the roles of various healthcare professionals and the challenges faced in delivering effective care.
6. To encourage students to engage in reflective practice and self-assessment, fostering a habit of lifelong learning and continuous improvement in their professional skills.
7. To expose students to the multidisciplinary nature of healthcare, teaching them the value of teamwork and collaboration with other healthcare professionals.
8. To provide exposure to a range of clinical environments, such as hospitals, primary care clinics, and community health centers, to give students a broader understanding of different aspects of healthcare.
9. To allow students to explore various medical specialties early in their education, aiding in informed career decision-making later on.
10. To help students build confidence in their clinical abilities and reduce the anxiety associated with transitioning from theoretical learning to clinical practice.
11. To cultivate empathy and compassion towards patients, which are key components of effective patient care.
12. To encourage the development of critical thinking and problem-solving skills essential for clinical practice.



Outcomes



1. Early clinical experiences can help students understand the clinical relevance of the basic sciences they are studying. This integration of theoretical knowledge with practical application can deepen their understanding and retention of key concepts.
2. Engaging with patients and healthcare professionals early in their training helps students develop effective communication skills, which are crucial for patient care and interprofessional collaboration.
3. Students get an opportunity to start developing essential clinical skills, such as history taking, physical examination, and clinical reasoning, from the beginning of their medical education.
4. Early clinical exposure can increase students' motivation and interest in their studies by providing a clear context for the relevance of their coursework to their future roles as doctors.
5. Interacting with patients and healthcare teams early in their training can aid students in forming their professional identity and understanding the roles and responsibilities of being a physician.
6. Exposure to real-world clinical scenarios can help students develop critical thinking and decision-making skills.
7. Students begin to encounter and learn to manage the emotional and ethical challenges inherent in medical practice earlier, which can prepare them for the realities of their profession.
8. Exposure to various medical specialties and settings can aid students in making informed decisions about their future career paths.
9. Long-term, students trained with early clinical exposure may develop into more competent and empathetic physicians, potentially leading to better patient outcomes.
10. Engaging in clinical settings early can spark an interest in clinical research, leading to contributions in medical science.

Early Clinical Exposure
Gastrointestinal Module
Rotation to Department of Medicine

Early Clinical Exposure Second Year MBBS		
Session	**Learning Objectives**	**Teaching Strategy**
I See patients of Epigastric Pain	At the end of the session students will be able to • Enlist causes of epigastric pain, • Gain insight into the various causes and presentations of this symptom.	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II Examination of Abdomen	By the end of the session, students will be able to • Demonstrate the four fundamental techniques of abdominal examination: inspection, palpation, percussion, and auscultation, on a simulated patient. • identify normal abdominal anatomy and recognizing the significance of common variations.	Bedside Teaching •Duration 1 hour •Conducted by senior faculty member of unit
III Observe cases of Jaundice and Cirrhosis	At the end of session, students will be able to • Understand the Pathophysiological basis of Jaundice and Cirrhosis: • Identify the key clinical manifestations of jaundice and cirrhosis in observed patients, including but not limited to yellowing of the skin and eyes and ascites	• Bedside teaching •Duration 1.5 hrs •Conducted by senior faculty member of unit

Rotation to Department of Surgery

Early Clinical Exposure Second Year MBBS		
Session	**Learning Objectives**	**Teaching Strategy**
I Acute Abdomen	At the end of the session students will be able to • define what constitutes an acute abdomen and list the common causes. • identify the key clinical features associated with an acute abdomen, such as severe abdominal pain, tenderness, guarding, and rebound tenderness, through observation	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II See cases of Intestinal Obstruction	By the end of the session, students will be able to • Explain the pathophysiology of intestinal obstruction. • differentiate between mechanical obstruction (such as due to adhesions, hernias, or tumors) and functional obstruction. • Identify the key clinical features of intestinal obstruction, including abdominal pain, vomiting, distension, constipation, and recognize potential complications such as strangulation and perforation.	Bedside Teaching Duration 1 hour Conducted by senior faculty member of unit
III Observe cases Peritonitis	At the end of session, students will be able to • Explain the pathophysiology of peritonitis • Identify common causes of peritonitis, such as perforation of the gastrointestinal tract,	Bedside Teaching Duration 1 hour Conducted by senior faculty member of unit

	pancreatitis, and pelvic inflammatory disease	
IV Henias • Incisional Hernia • Inguinal Hernia	At the end of session, students will be able to • Describe the anatomy of the abdominal wall and inguinal region, • Explain the pathophysiological mechanisms that lead to the development of incisional and inguinal hernias. • Identify the signs and symptoms associated with incisional and inguinal hernias	Bedside Teaching Duration 1 hour Conducted by senior faculty member of unit

Rotation to Department of Radiology

Early Clinical Exposure Second Year MBBS		
Session	**Learning Objectives**	**Teaching Strategy**
I Ultrasound of Liver/ Ascites	At the end of the session students will be able to • Acknowledge ultrasound technology, a non-invasive diagnostic tool widely used in medical practice. • Understanding how ultrasound works and what a healthy liver looks like on ultrasound is fundamental for recognizing abnormalities. • Understand the normal ultrasound appearance of the liver, including its size, texture, and vascular structures.	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II Plain X-Ray Abdomen/ Fluid level/ Air under diaphragm	At the end of the session students will be able to • Describe the indications for ordering a plain X-ray of the abdomen. • List the basic steps in interpreting these images.	SGD Duration 1 hrs Conducted by senior

	• Identify Fluid Levels and their clinical significance: • Recognize Air under the Diaphragm and its implications:	faculty member of unit
III Barium swallow/ Meal/Enema	By the end of the session, students will be able to • Explain the basic principles behind barium swallow, barium meal, and barium enema procedures. • Understand the indications for each study, including which conditions they are best suited to diagnose • Identify normal and abnormal findings in Barium Studies:	SGD Duration 1 hrs Conducted by senior faculty member of unit
IV CT Scan Abdomen	At the end of session, students will be able to • Understand the principles and indications of Abdominal CT Scanning: • Identify the normal anatomical structures of the abdomen on a CT scan • recognize common pathological findings, including tumors, cysts,	SGD Duration 1 hour Conducted by senior faculty member of unit

Renal Module

Rotation to Nephrology Department

Early Clinical Exposure Second Year MBBS		
Session	**Learning Objectives**	**Teaching Strategy**
I Cases of Renal failure	At the end of the session students will be able to • Discuss the kidneys functions and how renal failure disrupts these functions, using patient observations to identify differences between acute and chronic renal failure. • Recognize key symptoms and signs of renal failure, such as changes in urine output, edema, and hypertension. • Get an introductory understanding of the diagnostic tests for renal function and basic management strategies for renal failure, emphasizing the importance of lifestyle adjustments and medical interventions.	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II Dialysis	• Describe the fundamental principles of how dialysis works, including the difference between hemodialysis and peritoneal dialysis. • Explain how these methods help in removing waste products and excess fluids from the blood • Understand Indications and access for Dialysis • Recognize the impact of Dialysis on patient lifestyle and health	SGD Duration 1 hrs Conducted by senior faculty member of unit
III Renal Transplant	By the end of the session, students will be able to • Understand the basics and	

	significance of Kidney Transplantation • Familiarize with the Transplant Process • Appreciate the patient perspective and post-Transplant care.	SGD Duration 1 hrs Conducted by senior faculty member of unit

Rotation to Department of Radiology

Early Clinical Exposure Second Year MBBS		
Session	**Learning Objectives**	**Teaching Strategy**
I Ultrasound of Kidney	At the end of the session students will be able to • Acknowledge ultrasound technology, a non-invasive diagnostic tool widely used in medical practice. • Understanding how ultrasound works and what a healthy Kidney looks like on ultrasound is fundamental for recognizing abnormalities • Understand the normal ultrasound appearance of thekidney , including its size, texture, and vascular structures.	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II Plain X-Ray KUB	• Explain what KUB X-ray imaging is • List the key indications for its use, such as the detection of kidney stones, structural abnormalities in the urinary tract, and certain types of injuries. • Identify normal Anatomy and common pathological findings on KUB X-rays	SGD Duration 1 hrs Conducted by senior faculty member of unit

	• Distinguish between normal and abnormal findings, with an emphasis on recognizing common conditions that affect the urinary system.	
III CT scan (To see Renal abnormalities)	• List the key indications for using CT scans to investigate renal abnormalities, such as tumors, cysts, stones, and structural anomalies. • Identify normal renal Anatomy and common abnormalities on CT scans.	• SGD • Duration 1 hour • Conducted by senior faculty member of unit

Rotation to Department of Pediatrics

Early Clinical Exposure Second Year MBBS		
Session	**Learning Objectives**	**Teaching Strategy**
I Nephrotic Syndrome	At the end of the session students will be able to • Describe the underlying pathophysiological mechanisms of Nephrotic Syndrome, including the significance of proteinuria, hypoalbuminemia, hyperlipidemia, and edema • Understand how damage to the glomerular filtration barrier leads to the clinical features of this syndrome. • Recognize the clinical manifestations of Nephrotic Syndrome, including the symptoms and signs such as severe edema, proteinuria, and complications related to the syndrome. • Discuss management strategies for Nephrotic Syndrome, emphasizing the role of corticosteroids and other immunosuppressive agents, supportive care, and the management of complications such as infections and thromboembolism.	Bedside Teaching • Duration 2 hrs • Conducted by senior faculty member of unit

Reproduction Module

Rotation to Department of Gynecology

Early Clinical Exposure Second Year MBBS Reproduction Module		
Session	**Learning Objectives**	**Teaching Strategy**
I **Ovarian Tumors**	At the end of the session students will be able to • Define ovarian tumors and distinguish between benign and malignant types. • Describe the basic anatomy of the female reproductive system with emphasis on ovarian structure. • Identify common signs and symptoms associated with ovarian tumors. • Outline the roles of ultrasound and other imaging techniques in the diagnosis of ovarian tumors. • Understand basic blood tests, including tumor markers that may be elevated in ovarian cancer • Observe and, where appropriate, participate in the physical examination of a patient with an ovarian tumor under supervision. • Summarize the general treatment strategies for ovarian tumors, including surgical and non-surgical options. • Discuss the impact of early detection on treatment outcomes. • Recognize the emotional and psychological impacts of an ovarian tumor diagnosis on patients. • Develop skills in communicating	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

	effectively and empathetically with patients dealing with serious diagnoses.	
II **Uterine Tumors**	• Define uterine tumors and distinguish between benign and malignant types. • Describe the basic anatomy of the female reproductive system with emphasis on uterine structure. • Identify common signs and symptoms associated with uterine tumors. • Outline the roles of ultrasound and other imaging techniques in the diagnosis of uterine tumors. • Understand basic blood tests, including tumor markers that may be elevated in ovarian cancer • Observe and, where appropriate, participate in the physical examination of a patient with a uterine tumor under supervision. • Summarize the general treatment strategies for uterine tumors, including surgical and non-surgical options. • Discuss the impact of early detection on treatment outcomes. • Recognize the emotional and psychological impacts of uterine tumor diagnosis on patients. • Develop skills in communicating effectively and empathetically with patients dealing with serious diagnoses.	Bedside teaching Duration 1 hour Conducted by senior faculty member of unit

III **Polycystic Ovaries**	• Define polycystic ovarian syndrome and discuss its prevalence and etiology. • Describe the pathophysiology of PCOS, including the role of hormonal imbalances. • Identify Clinical Features and Diagnostic Criteria: • List the common clinical features of PCOS such as irregular menstruation, hirsutism, and obesity. • Explain the diagnostic criteria for PCOS, including the use of ultrasound and hormonal assays. • Observe and participate in the physical examination of a patient with PCOS, focusing on signs such as acne, hirsutism, and acanthosis nigricans. • Understand the use of ultrasound imaging in diagnosing ovarian morphology in PCOS. • Outline the lifestyle and medical treatment options available for managing PCOS, including dietary modifications, exercise, and pharmacotherapy.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
	• Identify various types of menstrual irregularities, including amenorrhea, oligomenorrhea, and menorrhagia. • Understand the underlying causes of menstrual irregularities, such as hormonal imbalances, structural abnormalities, and systemic diseases. • Learn how to take a comprehensive menstrual history, including onset, duration, frequency, and associated	

IV Menstrual Irregularities	symptoms. • Practice performing a focused physical examination to evaluate for signs of hormonal abnormalities, such as hirsutism or thyroid enlargement. • Describe the diagnostic workup for menstrual irregularities, including laboratory tests such as hormone assays and imaging studies like pelvic ultrasound. • Discuss the role of additional investigations, such as endometrial biopsy, in specific cases where underlying pathology is suspected. • Explore non-pharmacological management options for menstrual irregularities, including lifestyle modifications and dietary changes. • Understand pharmacological interventions, such as hormonal contraceptives or medications targeting specific underlying conditions like polycystic ovarian syndrome (PCOS). • Emphasize the importance of patient-centered care in managing menstrual irregularities, including discussing treatment options, addressing concerns, and providing support. • Develop communication skills for discussing sensitive topics related to menstrual health in a compassionate and nonjudgmental manner.	

Rotation to Department of Obstetrics

Early Clinical Exposure Second Year MBBS Reproduction Module		
Session	**Learning Objectives**	**Teaching Strategy**
I **Important points in History of pregnant lady**	At the end of the session students will be able to • Identify key components of the obstetric history, including gravidity (number of pregnancies), parity (number of live births), and abortion history (spontaneous or induced). • Recognize the significance of pre-existing medical conditions, past obstetric complications, and family history in pregnancy outcomes. • Discuss common symptoms and concerns during pregnancy, such as nausea and vomiting, urinary frequency, and fetal movements. • Describe the timeline and frequency of antenatal visits, including the content of routine antenatal care such as blood pressure monitoring, fetal growth assessment, and screening tests. • Discuss the significance of prenatal screening for conditions such as gestational diabetes and preeclampsia. • Understand the importance of prompt recognition and management of obstetric emergencies such as placental abruption, eclampsia, and fetal distress. • Develop effective communication skills for eliciting sensitive	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

	information from pregnant patients, including history of substance use, domestic violence, and mental health concerns. • Emphasize the importance of building rapport, maintaining confidentiality, and providing nonjudgmental support during history-taking.	
II **Obstetrics** **Trimesters**	• Define the three trimesters of pregnancy and their corresponding gestational periods Discuss the significance of trimester divisions in prenatal care and fetal development. • Identify key fetal development milestones during each trimester, including organogenesis, fetal viability, and fetal movements. • Understand the importance of timing in relation to specific developmental stages for prenatal screening and diagnostic tests. • Describe the physiological changes that occur in the maternal body during each trimester, including hormonal fluctuations, cardiovascular adaptations, and changes in uterine size. • Discuss common discomforts experienced by pregnant women during each trimester and their management strategies. • Understand the timing and rationale for various antenatal screening tests, such as ultrasound scans, maternal serum screening, and genetic testing. • Discuss routine interventions performed during specific trimesters, such as prenatal vitamins,	Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit

	immunizations, and glucose screening for gestational diabetes. • Identify common complications associated with each trimester, such as miscarriage and ectopic pregnancy in the Second trimester, gestational diabetes and preeclampsia in the second trimester, and preterm labor and placental abnormalities in the third trimester.	
III **Fetal heart sounds**	• Identify the characteristic components of normal fetal heart sounds. • Understand the normal range of fetal heart rate variations based on gestational age and developmental stage. • Differentiate between fetal heart sounds and maternal heart sounds, • Demonstrate the ability to locate and isolate fetal heart sounds from maternal sounds using appropriate positioning and equipment. • Understand the importance of fetal heart monitoring in assessing fetal well-being • Practice proper auscultation techniques for detecting fetal heart sounds, including the use of a fetoscope or Doppler ultrasound device. • Demonstrate proficiency in locating and listening to fetal heart sounds at different abdominal quadrants and depths • Identify abnormal fetal heart rate patterns • Understand the significance of abnormal fetal heart patterns	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

Rotation to Department of Surgery

Early Clinical Exposure Second Year MBBS Reproduction Module		
Session	**Learning Objectives**	**Teaching Strategy**
I **Testicular Tumors**	At the end of the session students will be able to • Describe the anatomy of the testes, including the structure of the seminiferous tubules and the role of Leydig cells in testosterone production. • Identify common signs and symptoms of testicular tumors, such as a painless mass or swelling in the testicle, scrotal heaviness, and scrotal pain. • Understand the significance of symptoms such as testicular pain or discomfort and their potential association with testicular pathology. • Discuss the diagnostic approach to evaluating testicular tumors, • Understand the role of testicular biopsy in confirming the diagnosis and determining tumor type. • Outline the treatment options for testicular tumors. • Discuss the importance of fertility preservation strategies and the potential impact of treatment on future fertility. • Describe the prognostic factors influencing the outcomes of testicular tumors. • Discuss the importance of long-term follow-up care.	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

II **Hydrocele**	• Explain the pathophysiology of hydrocele formation, • Identify the clinical features of hydrocele, including scrotal swelling • Differentiate between communicating and non-communicating hydroceles • Discuss the diagnostic approach to evaluating hydrocele. • Understand the importance of distinguishing hydrocele from other causes of scrotal swelling, such as hernia or testicular tumor. • Outline the management options for hydrocele, including observation, needle aspiration (as a temporary measure), and surgical intervention (hydrocelectomy). • Discuss the indications for surgical intervention and the potential risks and benefits of each treatment option. • Describe potential complications of untreated hydrocele. • Discuss the prognosis for hydrocele following appropriate management.	Bed side teaching • Duration 1 hour • Conducted by senior faculty member of unit
III **Undescended Testis**	• Describe the normal process of testicular descent during fetal development. • Explain the anatomical and physiological significance of testicular descent for normal testicular function and fertility. • Identify the clinical features of undescended testis • Understand the importance of distinguishing between retractile testis (physiological variant) and true undescended testis.	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

	• Discuss the diagnostic approach to evaluating undescended testis • Understand the significance of identifying associated conditions, such as inguinal hernia. • Outline the management options for undescended testis. • Discuss the timing and indications for surgical intervention. • Describe the potential long-term implications of untreated undescended testis, • Discuss the importance of early detection and intervention in optimizing outcomes.	
IV **Hypospadias/ Epispadias**	• Describe the normal anatomy of the male urethra and external genitalia. • Explain the embryological development of the male genitalia and the process of urethral formation: • Identify the clinical features of hypospadias and epispadias, • Understand associated features such as penile curvature, chordee (ventral penile tethering), and abnormalities of the foreskin. • Discuss the diagnostic approach to evaluating hypospadias/epispadias, • Understand the importance of assessing the severity and anatomical characteristics of the condition for treatment planning. • Outline the surgical options for correcting hypospadias/epispadias, including techniques • Describe the potential long-term outcomes and complications	Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

	associated with hypospadias/epispadias repair • Discuss the importance of long-term follow-up care.	

Central Nervous System (CNS) Module
Rotation to Department of Medicine

Early Clinical Exposure Second Year MBBS CNS Module		
Session	**Learning Objectives**	**Teaching Strategy**
I Cases of stroke	At the end of the session students will be able to • Observe and describe the different types of stroke, including ischemic and hemorrhagic strokes, and explain the pathophysiological changes that occur in the brain as a result of these conditions. • Discuss the major risk factors for stroke, such as hypertension, atrial fibrillation, and diabetes, and recognize the early clinical signs and symptoms using the FAST (Face drooping, Arm weakness, Speech difficulties, Time to call emergency services) mnemonic. • Describe the initial steps in the management of stroke, including the importance of rapid assessment and intervention, the role of imaging in diagnosis, and the basic treatment strategies for ischemic versus hemorrhagic stroke	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

II Paraplegia	• Outline the anatomical structures of the spinal cord and its functional relationship with the body, understanding how injuries or diseases affecting these areas can lead to paraplegia. • Discuss the various etiologies of paraplegia, including traumatic spinal cord injury, tumors, infectious diseases, and degenerative disorders, and explain the pathophysiological mechanisms that result in the loss of motor and sensory functions below the level of injury. • Describe the initial clinical assessment of a patient with suspected paraplegia, including the importance of a thorough neurological examination and the use of diagnostic imaging. They will also learn about the basic principles of acute management and the multidisciplinary approach needed for long-term rehabilitation.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
III Vegetative state	• Define a vegetative state and differentiate it from other conditions affecting consciousness, such as coma and minimally conscious states, based on clinical characteristics and brain activity. • Identify and explain the various causes that can lead to a vegetative state, including traumatic brain injury, severe brain hypoxia, and major neurological diseases, and discuss the underlying pathophysiological changes in the brain. • Describe assessment techniques used	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit

	to determine the extent of brain function, the typical medical care provided, and the ethical challenges involved in decisions about long-term care, including discussions on quality of life and end-of-life decisions.	

Rotation to Department of Surgery/ Neurosurgery

Early Clinical Exposure Second Year MBBS CNS Module		
Session	**Learning Objectives**	**Teaching Strategy**
I Head injury	At the end of the session students will be able to • Classify head injuries into major categories such as concussions, contusions, skull fractures, and intracranial hematomas, and understand the mechanisms that typically cause these injuries. • Recognize the immediate and delayed signs and symptoms of head injuries, including changes in consciousness, visible head trauma, cognitive impairments, and neurological deficits. • Describe the basic pathophysiological changes that occur in the brain following different types of head injuries, such as the cascading effects of brain swelling, the impact of blood-brain barrier disruptions, and neuronal damage. • Understand the initial steps in the assessment and management of a	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

	patient with a head injury, including maintaining airway, breathing, and circulation, the use of imaging modalities like CT scans to assess internal damage, and the criteria for when to escalate care to neurosurgical interventions.	
II Nerve injuries	• Describe the basic anatomy of peripheral nerves and be able to classify nerve injuries according to severity, using the Sunderland and Seddon classification systems, which categorize injuries based on the extent of damage to nerve fibers and surrounding structures. • List the common causes of nerve injuries, including traumatic injuries (such as lacerations and avulsions), compression (from tumors or entrapment syndromes), and iatrogenic injuries (resulting from medical or surgical procedures). • Understand how to recognize the clinical manifestations of nerve injuries, such as loss of sensation, motor function, or autonomic dysfunction in the affected area, and how these symptoms correlate with the specific nerve damaged. • Discuss the initial steps in the management of nerve injuries, including the importance of a thorough neurological examination, the use of diagnostic tools like electromyography (EMG) and nerve conduction studies, and the principles guiding acute treatment and referral for possible surgical intervention.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit

	• Define coma as a deep state of unconsciousness and distinguish it from other states such as vegetative state, minimally conscious state, and brain death by understanding the clinical and neurological criteria for each. • Explain the underlying pathophysiological mechanisms that can induce coma, including traumatic brain injuries, strokes, brain tumors, infections, and metabolic imbalances. They will also discuss the role of disruptions in the reticular activating system and cerebral cortex in the maintenance of consciousness. • Use the Glasgow Coma Scale (GCS) to assess the level of consciousness in a patient, interpreting scores to gauge the severity of the coma and potential outcomes. They will also identify other important clinical signs such as pupillary responses and motor reflexes that help differentiate the cause of coma. • Understand the initial diagnostic steps required when assessing a comatose patient, including neuroimaging, blood tests, and possibly lumbar puncture. They will also discuss the basic management principles aimed at preserving life and brain functions.	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit

Rotation to Department of Radiology

Early Clinical Exposure Second Year MBBS CNS Module		
Session	**Learning Objectives**	**Teaching Strategy**
I **CT scan** **Brain** • **Normal** • **Stroke** • **Hemorrhage** • **Infarction**	At the end of the session students will be able to • Recognize the normal anatomical structures visible on a CT scan of the brain, including the cerebral hemispheres, cerebellum, brainstem, ventricles, and major sulci and gyri. They will also understand the typical appearances of these structures in different slices (axial, coronal, and sagittal). • Identify the CT findings associated with ischemic and hemorrhagic strokes, including areas of hypodensity in ischemic stroke and hyper density in hemorrhagic stroke. They will understand the importance of timing in the imaging of stroke for optimal diagnosis and management. • Describe the key differences in appearance between brain hemorrhages and infarctions on CT scans. They will be able to describe the characteristics of hemorrhages (e.g., acute intracerebral hemorrhage appearing as a hyperdense area) and infarctions (e.g., loss of cortical definition and the appearance of infarcted areas as hypodense). • Interpret CT images in the context of clinical symptoms to make	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

	preliminary diagnoses and understand potential management strategies. This objective aims to integrate their radiographic findings with clinical reasoning to enhance their diagnostic acumen.	
II Hydrocephalus	• Define hydrocephalus as the abnormal accumulation of cerebrospinal fluid (CSF) within the ventricles of the brain. • Distinguish between the types of hydrocephalus, including communicating, non-communicating (obstructive), and ex-vacuo, and understand the mechanisms that lead to each type. • Identify the common causes of hydrocephalus, such as congenital malformations, infections, tumors, and traumatic injuries. • Discuss the pathophysiological changes that occur, focusing on the dynamics of CSF production, flow, and absorption. • Describe the clinical manifestations of hydrocephalus, which may vary by age and the rate of CSF accumulation. • Discuss the diagnostic tools used to identify hydrocephalus, primarily imaging techniques such as ultrasound in infants, CT scans, and MRIs. • Describe the treatment options available, including surgical interventions like ventriculoperitoneal shunt placement and endoscopic third ventriculostomy.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit

III **Brain atrophy**	• Define brain atrophy as the loss of neurons and the connections between them, resulting in decreased brain volume. They will differentiate between focal atrophy, which affects specific areas of the brain, and generalized atrophy, which involves a reduction in the size of multiple brain regions. • Identify the various causes of brain atrophy, including neurodegenerative diseases (such as Alzheimer's disease and Parkinson's disease), traumatic brain injuries, stroke, and infectious diseases. • Describe the signs and symptoms of brain atrophy, such as cognitive decline, memory impairment, changes in motor skills, and alterations in behavior or personality, depending on the areas of the brain that are affected. • Discuss the role of imaging studies, such as MRI and CT scans, in diagnosing brain atrophy, and how these images can be used to assess the extent and pattern of atrophy. • Discuss the management approaches aimed at slowing the progression of symptoms and improving quality of life, including pharmacological treatments and supportive therapies.	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit
	• Define brain edema • Distinguish between the two main types of brain edema: cytotoxic edema, which involves fluid	•Bedside teaching

IV **Brain Edema**	buildup within brain cells due to cellular injury, and vasogenic edema,. • Identify various causes of brain edema, including traumatic brain injury, ischemic stroke, infections, tumors, and toxic exposures. • Describe the clinical signs and symptoms of brain edema, which may include headache, nausea, vomiting, altered consciousness, and neurological deficits such as weakness or speech disturbances, depending on the severity and location of the edema. • Understand the diagnostic techniques used to identify brain edema, primarily imaging studies like CT and MRI scans • Discuss the management options available, including medical treatments to reduce swelling (such as corticosteroids and osmotic diuretics), surgical interventions to relieve pressure, and the importance of addressing the underlying cause of the edema.	•Duration 1 hrs •Conducted by senior faculty member of unit
V **Skull/ spine Fractures**	• Classify the types of skull fractures (such as linear, depressed, diastatic, and basilar) and spine fractures (including compression, burst, flexion-distraction, and fracture-dislocation). • Describe the Pathophysiology of Skull and Spine Fractures: Students will explore the pathophysiological implications of these fractures, including potential complications such as intracranial hemorrhage	• Bedside teaching • Duration 1 hrs • Conducted by

	from skull fractures and spinal cord injury from spine fractures. They will examine how the location and severity of the fracture impact neurological outcomes. • Identify the clinical manifestations associated with skull and spine fractures. For skull fractures, symptoms may include visible deformities, cerebrospinal fluid leakage from nose or ears, and neurological deficits. For spine fractures, symptoms can include pain, paralysis, loss of sensation, and autonomic dysregulation. • Understand the diagnostic procedures used to assess skull and spine fractures, primarily focusing on imaging techniques like X-rays, CT scans, and MRI. • Discuss initial management strategies, including stabilization, neurologic assessment, and when to refer for surgical intervention.	senior faculty member of unit
VI **MRI Brain/ Spine**	• Describe the fundamental principles of MRI technology, including how magnetic fields and radio waves are used to create detailed images of the brain and spinal structures. • Enlist the key indications for using MRI over other imaging modalities, such as its superior ability to differentiate between soft tissues and its usefulness in diagnosing conditions like tumors, inflammatory diseases, and vascular anomalies. • Recognize normal anatomical	• Bedside teaching • Duration 1 hrs Conducted by senior faculty member of unit

	structures of the brain and spine on MRI scans. • Identify common pathological findings, such as signs of herniated discs, spinal stenosis, brain tumors, multiple sclerosis plaques, and evidence of acute or chronic stroke. • Develop skills in interpreting MRI features that are specific to neurological conditions, • Describe the safety considerations associated with MRI, including the importance of screening for contraindications like implanted metallic devices.	

Special Senses and Endocrinology Module
Rotation to Department of Medicine

Early Clinical Exposure Second Year MBBS Special senses and Endocrinology Module		
Session	**Learning Objectives**	**Teaching Strategy**
I **Thyroid disorders**	At the end of the session students will be able to • Describe its structure, and explain its physiological roles in the body, including the synthesis and regulation of thyroid hormones. • Recognize the signs and symptoms associated with common thyroid disorders such as hypothyroidism, hyperthyroidism, goiter, and thyroid nodules. • Describe basic diagnostic tests	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

	and procedures used to evaluate thyroid function, including TSH levels, T3 and T4 tests, ultrasound, and fine-needle aspiration biopsy. • Discuss the general management strategies for thyroid disorders, focusing on pharmacological treatments such as synthetic thyroid hormones and anti-thyroid medications.	
II **Hyperthyroidism**	• Discuss underlying mechanisms that cause hyperthyroidism, including the excess production of thyroid hormones. • Identify the clinical manifestations of hyperthyroidism, such as weight loss, tachycardia, heat intolerance, and tremors.. • Enlist specific diagnostic tests used in the evaluation of hyperthyroidism, including blood tests for thyroid-stimulating hormone (TSH) and thyroxine (T4), thyroid scan, and radioactive iodine uptake test. • Describe the initial management strategies for hyperthyroidism, focusing on antithyroid medications.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
III	• Describe the various causes of hypothyroidism, including autoimmune thyroiditis (such as Hashimoto's thyroiditis), iatrogenic factors, and iodine deficiency.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty

Hypothyroidism	• Recognize the signs and symptoms characteristic of hypothyroidism, including fatigue, cold intolerance, weight gain, constipation, and dry skin.. • Discuss the diagnostic criteria for hypothyroidism, including the interpretation of serum thyroid-stimulating hormone (TSH) and thyroxine (T4) levels. • Discuss the treatment options available for hypothyroidism, primarily focusing on thyroid hormone replacement therapy.	member of unit
IV **Cushing Syndrome**	• Discuss the etiology of Cushing Syndrome, including endogenous overproduction of cortisol by the adrenal glands and exogenous sources of glucocorticoids. • Identify the key clinical features of Cushing Syndrome, such as central obesity, facial rounding, skin changes (e.g., purple striae, easy bruising), muscle weakness, and osteoporosis. • Understand the initial screening tests for suspected Cushing Syndrome, including the dexamethasone suppression test, 24-hour urinary free cortisol levels, and midnight salivary cortisol tests.. • Explore the treatment options for Cushing Syndrome depending on its etiology.	•Bedside teaching •Duration 1 hour •Conducted by senior faculty member of unit

Rotation to Department of Surgery

Early Clinical Exposure Second Year MBBS Special senses and Endocrinology Module		
Session	**Learning Objectives**	**Teaching Strategy**
I **Thyroid Nodule**	At the end of the session students will be able to • Describe the anatomical location and function of the thyroid gland, differentiate between benign and malignant thyroid nodules, and identify common signs and symptoms associated with thyroid nodules. • Interpret results of basic diagnostic tests for thyroid nodules, including ultrasound and thyroid function tests, and understand their roles in the evaluation of a thyroid nodule. • List the risk factors for developing thyroid nodules and discuss the epidemiology of thyroid nodules, including the prevalence and potential outcomes. • Apply clinical reasoning to case studies involving thyroid nodules, formulating potential diagnostic strategies and considering when referral to a specialist is appropriate.	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

II **Multi nodular Goiter**	• Define multinodular goiter and differentiate between non-toxic and toxic types. They will learn about the various causes and the pathophysiology underlying the development of these goiters. • Recognize the signs and symptoms of a multinodular goiter, including local effects on the trachea and esophagus, and systemic effects related to thyroid hormone imbalance. • Understand the roles of different diagnostic tools, such as thyroid function tests, ultrasound, and radioactive iodine scans, in assessing multinodular goiter and distinguishing it from other thyroid disorders. • Discuss the basic management strategies for multinodular goiter, including when medical therapy is appropriate versus when surgical intervention might be necessary, and they will consider the implications of these treatments on patient outcomes.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
III **CA Thyroid**	• Outline the main types of thyroid cancer, including papillary, follicular, medullary, and anaplastic, and explain the basic pathophysiological mechanisms • Identify the common clinical features associated with thyroid cancer, such as a palpable thyroid nodule, hoarseness, and lymphadenopathy. • Understand the steps involved in diagnosing thyroid cancer, including	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit

	the use of ultrasound-guided fine needle aspiration biopsy, and the roles of other imaging modalities and laboratory tests. • Describe of the treatment options available for thyroid cancer, focusing on the differences between surgical methods, radioactive iodine therapy, and when medical therapy might be used	
IV **Graves Diseases**	• Define Graves' disease as an autoimmune disorder and explain how the production of thyroid-stimulating immunoglobulins leads to the overproduction of thyroid hormones (hyperthyroidism). • Recognize the common signs and symptoms of Graves' disease. • Understand the diagnostic criteria for Graves' disease, including the role of blood tests for thyroid hormones and thyroid-stimulating hormone (TSH), TSH receptor antibody testing, and • Discuss the basic management strategies for Graves' disease, covering antithyroid medications, beta-blockers to manage symptoms, radioactive iodine treatment, and surgical options.	•Bedside teaching •Duration 1 hour •Conducted by senior faculty member of unit

Rotation to Department of Ophthalmology (Eye)

Early Clinical Exposure Second Year MBBS Special senses and Endocrinology Module		
Session	**Learning Objectives**	**Teaching Strategy**
I **Blindness**	At the end of the session students will be able to • Understand the differences between complete blindness and legal blindness, and the various categories of visual impairment. • Identify and describe the common causes of blindness, both globally and regionally, including preventable and non-preventable factors. • Recognize the signs and symptoms that may indicate visual impairment or blindness. This objective focuses on practical skills to perform basic vision assessments that could be part of a general physical examination. • Discuss the broader impacts of visual impairment and blindness on an individual's quality of life, including mental health, education, and employment.	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II **Visual field defect**	• describe what a visual field is and explain the importance of visual field testing in the • Identify and describe various types of visual field defects, such as homonymous hemianopia, bitemporal hemianopia, and central scotomas. • Understand the relationship between different visual field defects and the anatomical structures of the visual	

	pathway. • Correlate specific types of visual field defects with potential neurological causes, such as stroke, brain tumors, or glaucoma. • Discuss the methods and significance of visual field testing in clinical practice. • Describe how visual field tests are performed, such as through automated perimetry, and the role of these tests in diagnosing and monitoring conditions that affect the visual pathways.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
III **Cataract**	• Describe the basic pathophysiological changes that occur in the lens of the eye leading to cataract formation. This includes understanding the types of cataracts, such as nuclear, cortical, and posterior subcapsular, and their associated risk factors. • Recognize the common symptoms and signs of cataracts, including blurred vision, glare and halos around lights, and decreased color perception. They should learn how these symptoms impact daily activities and contribute to visual impairment. • Describe the key elements of diagnosing cataracts, including patient history, visual acuity testing, and slit-lamp examination. • Enlist indications for cataract surgery, the basic steps involved in procedures such as phacoemulsification, and the expected outcomes and potential complications of surgery.	•Bedside teaching •Duration 1 hour •Conducted by senior faculty member of unit

Rotation to Department of Otolaryngology

Early Clinical Exposure Second Year MBBS Special senses and Endocrinology Module		
Session	**Learning Objectives**	**Teaching Strategy**
I **Deafness**	At the end of the session students will be able to • Classify deafness into categories such as conductive, sensorineural, and mixed hearing loss. They should learn about the common etiologies contributing to each type, including genetic factors, infections, trauma, and exposure to ototoxic agents. • Recognize the signs and symptoms associated with different types of hearing loss. They should understand the diagnostic tests used in the assessment of hearing impairment, such as otoscopy, tuning fork tests, and audiometry, and how these tests help differentiate between types of deafness. • Discuss the broader impacts of hearing loss on communication, social interactions, education, and psychological well-being. • Describe the range of management strategies and rehabilitation options available for hearing loss, including medical treatments, surgical interventions like cochlear implants, and the use of hearing aids and other assistive listening devices..	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

II **Hearing tests**	• Differentiate between various types of hearing tests, including pure tone audiometry, speech audiometry, tympanometry, and otoacoustic emissions. They should learn how each test is performed and what specific aspects of hearing each test evaluates. • Interpret basic results from hearing tests. They should understand how to read audiograms, recognize patterns indicative of conductive vs. sensorineural hearing loss, and appreciate the implications of these findings for clinical management. • Describe the clinical indications for performing specific hearing tests. This includes knowing when to order each type of test based on the patient's symptoms and medical history, as well as understanding the utility of these tests in diagnosing and monitoring various auditory and vestibular disorders. • Discuss the importance of hearing tests in the overall assessment and management of patients with hearing concerns.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
III **Nasal Obstruction**	• Describe the anatomical structures of the nasal cavity and how these structures contribute to normal nasal function.. • Recognize common etiologies of nasal obstruction, such as nasal polyps, deviated nasal septum, allergic rhinitis, and infectious rhinitis. • Assess the symptoms of nasal obstruction and perform basic nasal examinations using tools like the	•Bedside teaching •Duration 1 hour •Conducted by senior

	otoscope for visualization of the nasal passages.. • Discuss the effects of nasal obstruction on patient quality of life, including sleep disturbances, difficulties in breathing, and changes in sense of smell. • Describe the basic treatment approaches, such as pharmacological therapies and when referral for surgical evaluation might be necessary.	faculty member of unit

ECE Log Book

Student's Profile

Paste Photograph
(2x2 Size)

Name:_____ Roll No._____

Batch:_____

Class:_____

Session:_____

Contact Detail: ----------

Phone:_____ Mobile:_____

Email:_____

Hostelite/Dayscholar:_____

Parents / Guardian Contact #(Mobile)_____ Landline_____

Postal Address:_____ Guardian Email:_____

_____

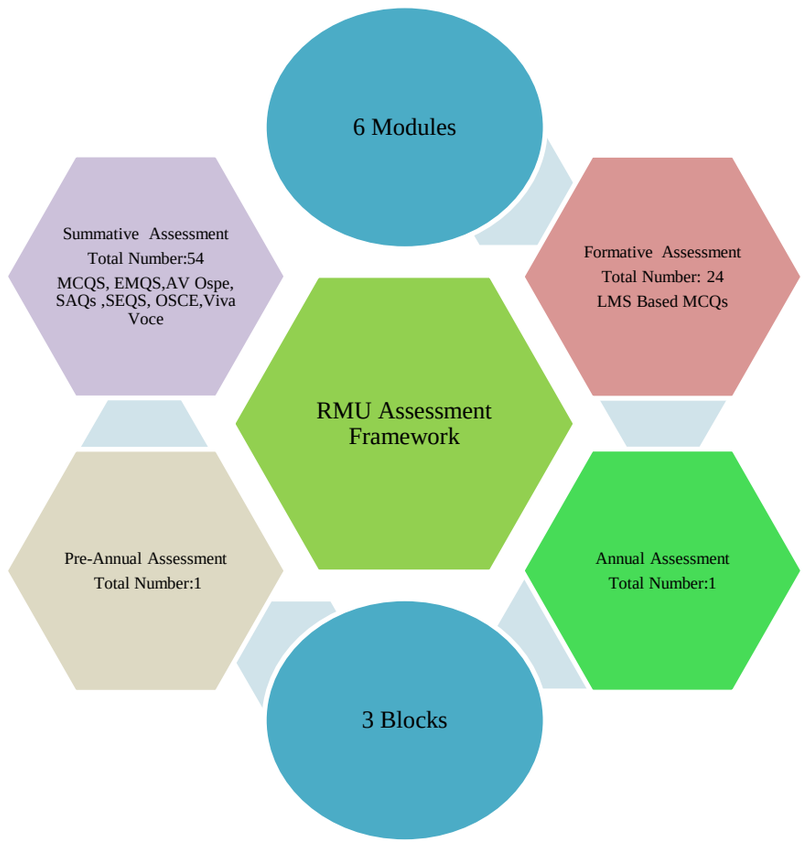
Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Section-XI

Assessment Policies



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

3.2 Summative Assessment

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

3.2.1 Components of Assessment

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

3.2.2 End of Module Assessment (EMA)

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

3.2.3 End of Block Assessment (EBA)

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

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

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

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

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

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

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

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

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

Marks per Item

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

OSPE Time=1 Round of 40 Students =80 min

3 Round of 40 Students =240 min

OSVE=Time per student=5mins

3.2.4 Continuous Internal Assessment (CIA)

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

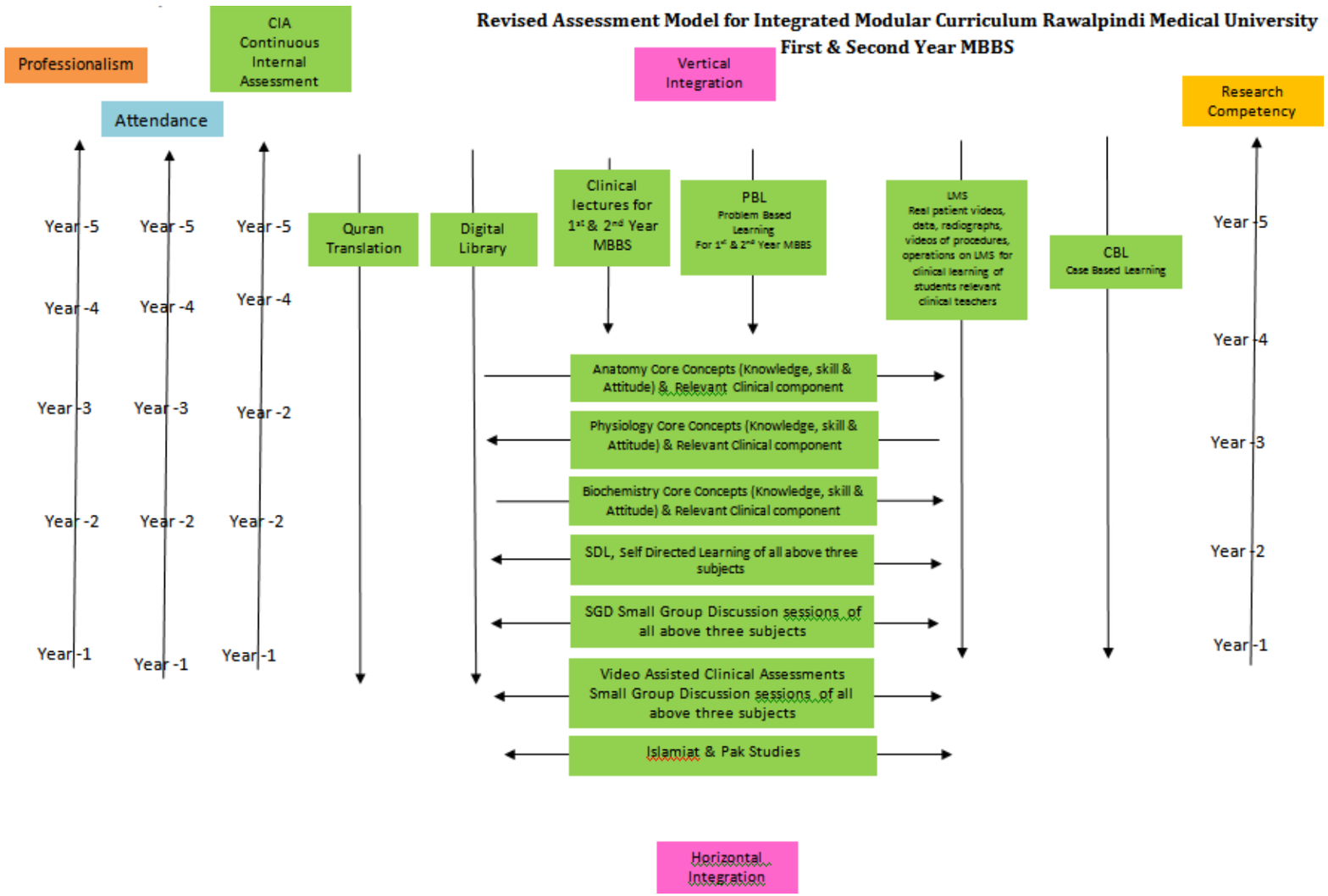
Break up of internal assessment is as follows:

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

Once internal assessment is compiled it CANNOT be altered under ANY circumstance unless a clerical/ human error is detected. He will repeat classes and skills

There will be no change in calculated internal assessment scores for supplementary University examination.

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



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

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

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

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

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

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

Block	Sr. #	Module – 5 Special Senses Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – III	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 6 Endocrinology Module Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs, SAQs, EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – 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 Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Renal Module	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -I	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Reproduction Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
CNS Module	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -II	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Special Senses Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Endocrinology Module	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
Second Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

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

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

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

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

Block	Sr. #	Module – 3 Reproduction 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)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 4 CNS 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)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – II Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

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

Block	Sr. #	Module – 5 Special Senses Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – III	1	End Module Examinations (SEQs,SAQs,EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 6 Endocrinology Module Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs,SAQs,EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – 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 Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Renal Module	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -I	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Reproduction Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
CNS Module	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -II	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Special Senses Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Endocrinology Module	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
Second Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

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

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

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

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

Block	Sr. #	Module – 3 Reproduction 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)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 4 CNS 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)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – II Assessment**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	Objectively Structured Practical Examination (OSPE)	Summative	5 Hours	5 Hours & 30 minutes			2 Summative
	2	LMS Based Block Assessment (MCQs based)	Summative	30 Minutes				
		Total		**5 Hours & 30 Minutes**			**2 Assessments**	

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

Block	Sr. #	Module – 5 Special Senses Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block – III	1	End Module Examinations (SEQs,SAQs,EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	30 Minutes	1 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	Weekly LMS based Assessment (MCQs based)	Formative	30 Minutes				
	Total			**3 Hours & 05 Minutes**			**3 Assessments**	
	Sr. #	**Module – 6 Endocrinology Module Components**	**Type of Assessments**	**Total Assessments Time**			**No. of Assessments**	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
	1	End Module Examinations (SEQs,SAQs,EMQs, MCQs AvOSPE Based)	Summative	2 Hours 25 minutes	2 Hours & 35 minutes	60 Minutes	2 Formative	2 Summative
	2	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	3	2 Weekly LMS based Assessment (MCQs based)	Formative	2 x 30 Minutes				
	Total			**3 Hours & 35 Minutes**			**4 Assessments**	
	Sr. #	**Block – 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 Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Renal Module	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -I	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Reproduction Module	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
CNS Module	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -II	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Special Senses Module	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Endocrinology Module	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
Second Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

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

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

Block	Sr. #	Module – 1 GIT Module 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 Renal 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 Second Year MBBS (Block- II):

Block	Sr. #	Module – 3 Reproduction 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 CNS 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 Second Year MBBS (Block- III):

Block	Sr. #	Module – 5 Special Senses Module 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 Endocrinology 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**

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

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

Total Teaching Hours vs Total Assessment Hours

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

3.2.4 Pre- Annual Assessment (PAA)

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

Proposed Table of Specifications for 2nd Pre-Annual Examination 2024

- Total Marks: 845

Total marks =800 Marks			
Subjects		% Weightage of subjects	Marks distribution as per weightage
	Anatomy	28%	240 Marks
	Physiology	28%	240 Marks
	Biochemistry	28%	240 Marks
	Integrated Subjects Community Medicine & Public Health/Research Behavioural Sciences Pathology Pharmacology Radiology Family Medicine Surgery Medicine Gynae & Obs Orthopedics Pediatrics Surgery Opthalmology 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 Second year MBBS - Block -I

Block	Subjects	Theory (Knowledge)	Practical (Skill/attitude)	Total marks	Total marks (Core subjects + Integrated Subjects)
Block I	Anatomy	50	30	80 marks	
	Physiology	50	30	80 marks	
	Biochemistry	50	30	80 marks	
	Total			240 marks	
(Core subjects + Integrated Subjects)	Integrated Subjects			45 Marks	240+ 45 = 285 marks
	Community Medicine /Research	6 Marks			
	Behavioural Sciences	3 Marks			
	Pathology	2 Marks			
	Pharmacology	3 Marks			
	Radiology	2 Marks			

285 Marks	Gynae & Obs	4 Marks			
	Medicine	2 Marks			
	Family Medicine	2 Marks			
	Paediatrics	4 Marks			
	Surgery	2 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
Total marks		240+ 45 = 285 marks			

D - Subject wise Break up of Marks for Second 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			
	Behavioural Sciences	4 Marks			
	Pathology	2 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
Total marks		240+ 45 = 285 marks			

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

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

F - Modular distribution of Marks for Module 1(GIT Module) & Module 2(Renal 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 (Reproduction Module) & Module 4(CNS module) - 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	LabOSPE			Iospe			OSCE			Total stations	Total marks
	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks		
Anatomy	02	01	15	-	01	5	01	01	10	6	30
Physiology	01	02	15		01	5	01	01	10	6	30
Biochemistry	01	02	15	01	-	5	01	01	10	6	30
ECE	-		-	-		-		01	5	1	5
ALPHA-Research	-		-	-		-		01	5	1	5
Total	9		45	3		15	8		40	20	100

H - Modular distribution of Marks for Module 5 (Special Senses Module) &Module 6 (Endocrinology Module) - Block -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	LabOSPE			I OSPE			OSCE			Total stations	Total marks
	Number of Stations of Module - 1	Number of Stations of Module - 2	Marks	Number of Stations of Module - 1	Number of Stations of Module - 2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks		
Anatomy	02	01	15	-	01	5	01	01	10	6	30
Physiology	02	01	15	01	-	5	01	01	10	6	30
Biochemistry	02	01	15	-	01	5	01	01	10	6	30
ECE	-		-	-		-		01	5	1	5
ALPHA-Research	-		-	-		-		01	5	1	5
Total	9		45	3		15	8		40	20	100

Calculation for Pre-Annual Assessment Implementation for Second Year MBBS 2024

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

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

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

3.2.5 Annual Professional Assessment (APA)

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

Regulations

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

- Examination applications must be submitted to the Controller of Examination via the College Principal, with the required fee and documentation.
- College must submit question papers, internal assessment marks, and attendance records for each block to the Examinations Department of Rawalpindi Medical University.
- Revised internal assessments are only permissible for detained students. Continuous assessment records must be maintained by college departments.
- Examination fees are to be paid through the Principal, using a bank draft, pay order, or crossed cheque made out to the Treasurer, Rawalpindi Medical University.
- One annual and one supplementary examination for Second and Second Final Annual Assessment MBBS are allowed per academic session. Under exceptional circumstances, such as national emergencies, a special examination may be arranged with the Syndicate and Board of Governors' approval.

Reference: UHS INTEGRATED CURRICULUM VERSION 2

Statutes:

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

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

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

  Behavioral Sciences, Pathology, Pharmacology, associated Clinical Subjects

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

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

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

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

i. Block I Assessment Total Marks = 300

ii. Block II Assessment Total Marks = 300

iii. Block III Assessment Total Marks = 300

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

i. Block I Assessment Total Marks = 300

ii. Block II Assessment Total Marks = 300

iii. Block III Assessment Total Marks = 300

iv. GEC Assessment (Islamic Studies C Pakistan Studies)Total Marks = 100

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

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

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

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

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

ii. **Section:2** will have Structured Essay Questions of 5 marks each and time allocated for 1 SEQ will be 10 minutes**.**

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

Block -II	75	6
Block -III	80	5

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

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

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

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

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

Second year MBBS	**Number of LabOSPE Stations**	**Number of iOSPE Stations**	**Number of OSCE Stations**	**Numbe r of table VIVA**
Block -I	5	3	4	3
Block -II	5	3	4	3
Block -III	4	3	5	3
Second Year MBBS	**Number of LabOSPE Stations**	**Number of iOSPE Stations**	**Number of OSCE Stations**	**Numbe r of table VIVA**
Block -I	4	3	5	3
Block -II	5	3	4	3
Block -III	5	3	4	3

- **Annual Examination Eligibility Criteria:** Eligibility to appear in Annual Professional will be as per RMU Assessment Policy approved by the Academic Council and Syndicate.
- **Passing Criteria:** A student will be declared pass in a block assessment if he/she scores 50% and above marks in each block assessment component (Theory and Practical) and

50% and above marks in each Core Subject(Anatomy, Physiology C Biochemistry).

- **Supplementary Examination Criteria:** The student who fails in any component of a block assessment will have to appear in the supplementary examination of the entire block.

Table of Abbreviation

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

Annual Assessment Plan of Second Year MBBS 2024 (Batch 51)

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

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

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

90 Marks	Biochemistry	30 marks	15 marks	15 marks	
				Total marks	**270 Marks**

B: Extrapolated marks to be calculated from Summative assessments throughout the Academic Year 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.
- The CIA should be submitted to Examination cell in round off values.
- Evidence of CIA Marks along with papers should be retained in the department that can be reproduced on request by examination cell if required.

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

Annual Second professional Examinations 2024

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

A: Second Professional Examination (70%)

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

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

B: Blockwise Distribution of Marks

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

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

C: Subject Wise Marks Breakup In Blocks

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

D: Subject Wise Distribution of Marks for Second Year MBBS

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

Block	Subjects	Theory	Practical	Total marks	Total marks Core Subject + Integrated Subjects
Block 2	Anatomy	38 marks	40 marks	78 marks	**181+29 = 210 marks**
	Physiology	34 marks	30 marks	64 marks	
	Biochemistry	14 marks	25 marks	39 marks	
	Total	86	95	**181 Marks**	
	Integrated Subjects			**29 Marks**	
	• Community Medicine /Research	4 Marks			
	• Family Medicine	1 Marks			
	• Orthopedics	2 Marks			

210 Marks	• Radiology	2 Marks			
	• Medicine	3 Marks			
	• Gynae C Obs	1 Marks			
	• Behavioural Sciences	4 Marks			
	• Pathology	2 Marks			
	• ECE		5 Marks		
	• ALPHA and GEC		5 Marks		
Total marks		**181+29 = 210 marks**			

Block	**Subjects**	**Theory**	**Practical**	**Total marks**	**Total marks Core Subject + Integrated Subjects**
Block 3 **210 Marks**	Anatomy	25 marks	30 marks	55 marks	**183+27 = 210 marks**
	Physiology	48 marks	35 marks	83 marks	
	Biochemistry	15 marks	30 marks	45 marks	
	Total	88	95	**183 marks**	
	Integrated Subjects			**27 Marks**	
	• Community Medicine	3 Marks			
	• Behavioural Sciences	2 Marks			
	• Medicine	2 Marks			
	• Family medicine	1 Marks			
	• Gynae C Obs	1 Marks			
	• Radiology	1 Marks			
	• Pediatrics	1 Marks			
	• Otorhinolaryngology	1 Marks			
	• Opthalmology	1 Marks			
	• Pathology	2 Marks			
	• Pharmacology	2 Marks			
	• ECE		5 Marks		
	• ALPHA and GEC		5 Marks		
Total marks		**183+27 = 210 marks**			
GRAND TOTAL MARKS		**630 Marks**			

E: Block Wise Distribution Of Marks For Second Year MBBS (Batch 51) (Annual Professional Marks + CIA)

Subject	Theory			Practical			Total Marks
	Component	**No of Items**	**Marks**	**Component**	**No of Items**	**Marks**	
Block 1 **(GIT s MSK-1)** **Total Annual marks=210**	Section I- MCQ Section II- SEQ 6	75	75 30	LabOSPE iOSPE OSCE OSVE	5 3 4 3	25 15 20 45	210
CIA = 90 Marks	Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks+ **CIA =210+90= 300**	**Total Marks**		**150**	**Total Marks**		**150**	**300**
Block 2 **(MSK-2 Blood and Immunity** **Total Annual** **marks=210**	Section I- MCQ Section II- SEQ	75 6	75 30	LabOSPE iOSPE OSCE OSVE	5 3 4 3	25 15 20 45	210
CIA = 90 Marks	Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks+ **CIA =210+90= 300**	**Total Marks**		**150**	**Total Marks**		**150**	**300**
Block 3 **(CVS Respiration)** **Total Annual** **marks=210**	Section I- MCQ Section II- SEQ	75 6	75 30	LabOSPE iOSPE OSCE OSVE	4 3 5 3	20 15 25 45	210
CIA = G0 Marks	Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks + **CIA =210+G0= 300**	**Total Marks**		**150**	**Total Marks**		**150**	300
						Grand Total Marks	**G00**

F: 1st Professional Examination 2024 (Batch 51)

Block 1 Assessment Breakup (GIT s MSK-1 Modules)

Themes	Discipline	Theory				Practical (OSPE)			OSVE	Marks	%	Total Marks per subject	
		No of MCQ s (1 marks each)	No of SEQs (5 marks each)	Marks	%	No of Stations of LabOSPE (5 marks each)	No of Stations of iOSP E (5 marks each)	No of Stations of OSCE (5 marks each)	OSVE (15 Marks)			Marks	%
Core s Horizontally Integrated Subjects	Anatomy C Applied /Clinical	30	3	45	30	3	1	1	1	40	32	85	40
	Physiology C Applied/Clinical	10	2	20	26	1	1	-	1	25	29	45	21
	Biochemistry C Applied/clinical	18	1	23	26	1	1	1	1	30	29	53	25
Vertically Integrated Subjects	Communit y Medicine C Public Health/Research	4	-	3	4	-	-	-	-	-	-	4	14
	Behavioural Sciences	2	-	1	2	-	-	-	-	-	-	2	
	Pathology	2	-	2	2	-	-	-	-	-	-	2	
	Radiology	1		1								1	
	Gynae C Obs	1		1								1	
	Medicine	1		1								1	
	Family Medicine	1		1								1	
	Paediatrics	1		1								1	
	Surgery	1		1								1	
	Pharmacology	3	-	3	3	-	-		-	-	-	3	
Spirally Integrated Subjects	ECE	-	-	-		-	-	1	-	5	5	5	
	ALPHA and GEC	-	-	-		-	-	1	-	5	5	5	
Total		**75**	**6x5=30**	**105**	**100**	**5x5=25**	**3x5=15**	**4x5=20**	**3x15=45**	**105**	**100**	**210**	**100**
Total		**105**				**105**					**105+105=210**		

G: 1st Professional Examination 2024 (Batch 51)
Block 2 Assessment
MSK-2 s Blood/Immunity Modules

Theme	Subject	Theory			Practical			OSVE		Total Marks per subject	
		No of MCQs (1 marks each)	No of SEQs (5 marks each)	Marks	No of Stations of LabOSPE (5 marks each)	No of Stations of iOSPE (5 marks each)	No of Stations of OSCE (5 marks each)	OSVE (15 Marks)	Marks	Total Marks	%
Cores Horizontally Integrated Subjects	Anatomy C Applied /Clinical	23	3	38	3	1	1	1	40	78	37
	Physiology C Applied/Clinical	24	2	29	1	1	1	1	30	64	30
	Biochemistry C Applied/clinical	9	1	14	1	1	-	1	25	39	18
Vertically Integrated Subjects	Community Medicine C Public Health	4	-	4	-	-	-	-	-	4	15
	Behavioural Sciences	4	-	4	-	-	-	-	-	4	
	Pathology	2	-	2	-	-	-	-	-	2	
	Family Medicine	1								1	
	Orthopedics	2								2	
	Radiology	2								2	
	Medicine	3								3	
	Gynae C Obs	1								1	
Spirally Integrated Subjects	ECE	-	-	-	-	-	1	-	5	5	
	ALPHA and GEC	-	-	-	-	-	1	-	5	5	
Total		**75**	**6x5=30**	**105**	**5x5=25**	**3x5=15**	**4x5=20**	**3x15=45**	**105**	**210**	**100**
Total		**105**			**105**					**105+105=210**	

H: 1st Professional Examination 2024 (Batch 51)
Block 3 Assessment
CVS Respiratory Modules

Themes	Discipline	Theory			Practical			OSVE		Total Marks per subject	
		No of MCQs (1 marks each)	No of SEQs (5 marks each)	Marks	No of Stations of LabOSPE (5 marks each)	No of Stations of iOSPE (5 marks each)	No of Stations of OSCE (5 marks each)	OSVE (15 Marks)	Marks	Marks	%
Cores Horizontally Integrated Subjects	Anatomy C Applied /Clinical	15	2	25	1	1	1	1	30	55	26
	Physiology C Applied/Clinical	33	3	48	2	1	1	1	35	83	40
	Biochemistry C Applied/clinical	10	1	15	1	1	1	1	30	45	21
Vertically Integrated Subjects	Community Medicine C Public Health	2	-	2	-	-	-	-	-	2	13
	Behavioural Sciences	2	-	2	-	-	-	-	-	2	
	Pathology	2	-	2	-	-	-	-	-	2	
	Medicine	2		2						2	
	Family medicine	1		1						1	
	Gynae C Obs	1		1						1	
	Radiology	1		1						1	
	Pediatrics	1		1						1	
	Otorhinolaryngology	1		1						1	
	Opthalmology	1		1						1	
	Pathology	2		2						2	
	Pharmacology	1	-	1	-	-	-	-		1	
Spirally Integrated Subjects	ECE	-	-	-	-	-	1	-	5	5	
	ALPHA and GEC	-	-	-	-	-	1	-	5	5	
Total		**75**	**6x5=30**	**105**	**4x5=20**	**3x5=15**	**5x5=25**	**3x15=45**	**105**	**210**	**100**
Total		**105**			**105**					**105+105=210**	

Section-XII

Digital Literacy & Learning Resources

Digital Services and Resources

A Data Center is the main central hub of digital services and resources of Rawalpindi Medical University.

Following are the digital resources to enhance the educational and research capabilities of students, researchers, and faculty.

1. Pakistan Education and Research Network (PERN)

Pakistan education and research network initiated by the Government of Pakistan under the administration of HEC. The main objective of PERN is to support and enhance the research and educational capabilities of public sector universities. PERN provides the following research and educational facilities.

- High-speed internet bandwidth.
- Intranet Bandwidth.
- Research Bandwidth Connectivity to the following research networks.

1. National Research and Education Network (NREN) Global research network.
2. Trans Eurasia Information Network (TEIN),
3. China Education and Research Network (CERNET)
4. GEANT is the pan-European data network for research
5. Canadian Network for the Advancement of Research, Industry, and Education CANARIE (Canada)

Users and Bandwidth Details	
Internet Bandwidth	**230 Mbps**
Main Campus	160 Mbps
New Teaching Block	70 Mbps
PERN Bandwidth	**120 Mbps**
Main Campus	100 Mbps
New Teaching Block	20 Mbps
PERN Users	**1938**
Students	1385
Faculty Members (RMU & Allied Hospitals)	360
Management & Staff	78
Technical	47
Smart Classroom Users (Main Campus and NTB)	68

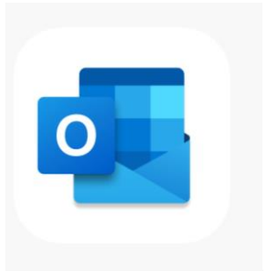
Leveraging the strides in technological innovation, The Department of Information Technology has successfully rolled out a comprehensive Wi-Fi mesh network across its campus. This transformative step ensures seamless wireless connectivity both indoors and outdoors, significantly enhancing the digital experience for students, faculty, researchers, and staff members.

Embracing the cutting-edge wireless protocol 802.11n, this network empowers each Access Point to deliver an impressive bandwidth of up to 1000 Mbps to users.

In terms of infrastructure, the campus has been equipped with a total of 81 Access Points, strategically positioned across various locations including academic buildings, open spaces, and hostels. This comprehensive coverage ensures that users can seamlessly access the network regardless of their location on campus.

2. Official / Institutional E-mail System

- Migration of unlicensed mailboxes to licensed mailboxes without any loss of data.
- Enhance the capacity of data storage in mailboxes 1 GB to 1 TB cloud storage per user.
- Increase the number of email accounts from 200 to 5500 licensed accounts with the facility of OneDrive and Microsoft Teams.
- 5000 Microsoft A3 activated license for faculty students and researchers.





Features:

Outlook (Email)

Teams (Meeting, Research Collaboration, Research Group)

Forms (Survey, Quiz, Polls, Reviews)

Office Applications (Word, Excel, PowerPoint)





3. Software Licensing

Rawalpindi Medical University has an engagement with Microsoft through HEC for volume licensing for their faculty students and researchers which includes Turnitin, Windows Server, One Drive, MS Office 365, and MS Teams.

Turnitin:

Turnitin (stylized as Turnitin) is an Internet-based plagiarism detection service.



- Unlimited license for faculty
- 300 licenses for students
- Faculty and students should have RMU's official e-mail address.
- Instructor can create a class and add students to a class for research purposes.
- Uphold academic integrity.
- Superpower your assessment
- Foster original thinking

Link: https://turnitin.com/

•

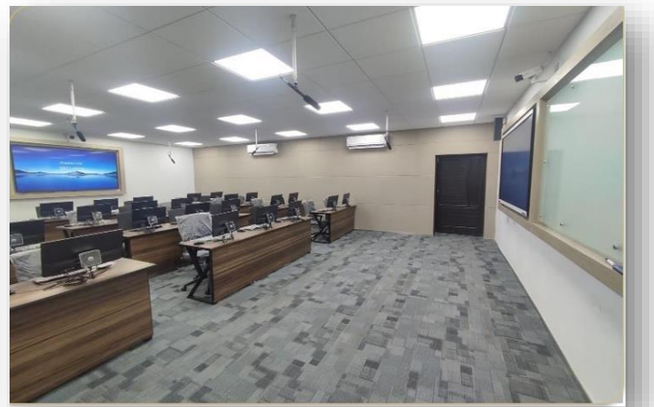
•

4. Smart Classroom (Main Campus and NTB)

The establishment of Smart Classroom setup can play a pivotal role to enhance students teachers interaction through interactive online & distance learning, bridge the gap of good faculty, meet the shortage of faculty members at the universities/ campuses located at far-flung areas and ultimately uplifting the standard of education across the board.

Rawalpindi Medical University established smart classrooms at the main campus and its branch site at NTB.

Smart Classroom Main Campus RMU



Smart Classroom New Teaching Block (NTB) RMU



5. Campus Management System (CMS)

A Campus Management System (CMS) is in the implementation stage in the RMU. It will automate the different key processes of the university, from admission to examination.

Student Profiling and Registration

It includes student personal and educational information.

Sub Modules:

a) Digital Admission Form with supporting documents.
b) Verification by Student Section
c) Registration & Issuance of Registration Cards.
d) Timetable and Calendar View.
e) E-card printing

Faculty Profiling

It includes faculty personnel, educational, research, and all relevant information.

Sub Modules:

a) HR Section Verification
b) Dashboard
    i. My Profile View
    ii. My Academic Sessions View
c) Teacher's Attendance
d) Student's Attendance

Academic Module

It includes all academic activities of an integrated modular system.

The Department of Medical Education (DME) creates and manages the modules/Sessions/Batches etc.
Faculty and Students are directly engaged with their profiles, Sessions, Timetables, and Academic Calander.

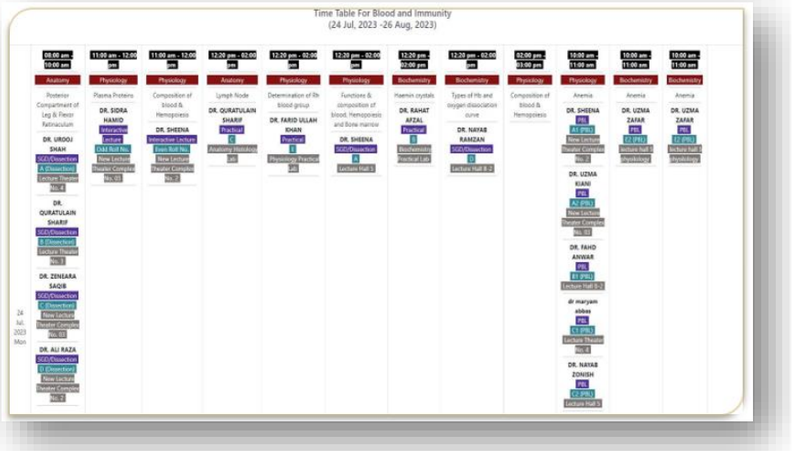
Sub Modules:

a) Configuration
- Campuses/ Hospital
- Departments
- Venues
- Batches
- Programs

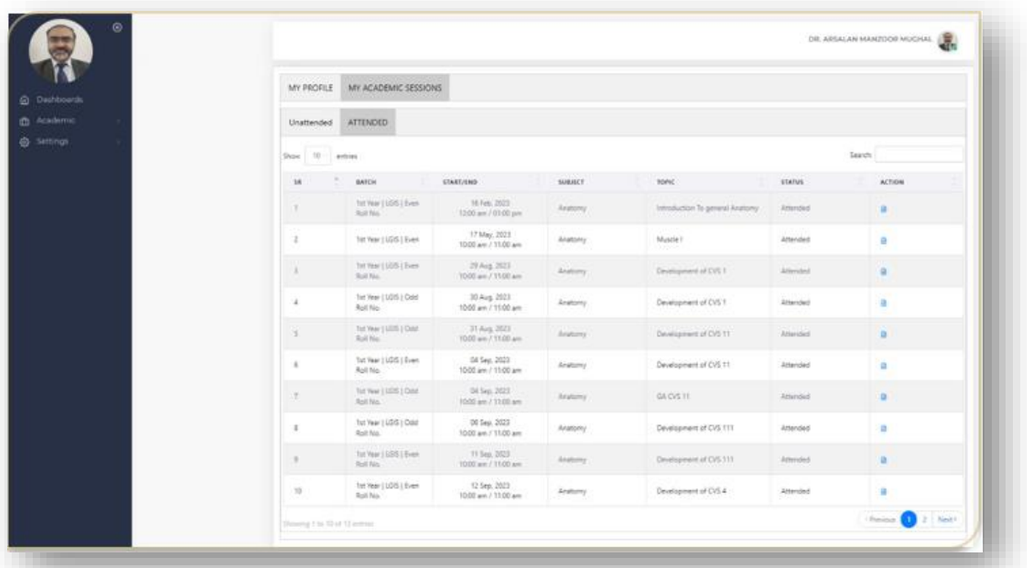
b) Academic
- Module
- Attendance
- Schedules
- Event

Calendar A few screenshots are attached below as a reference.

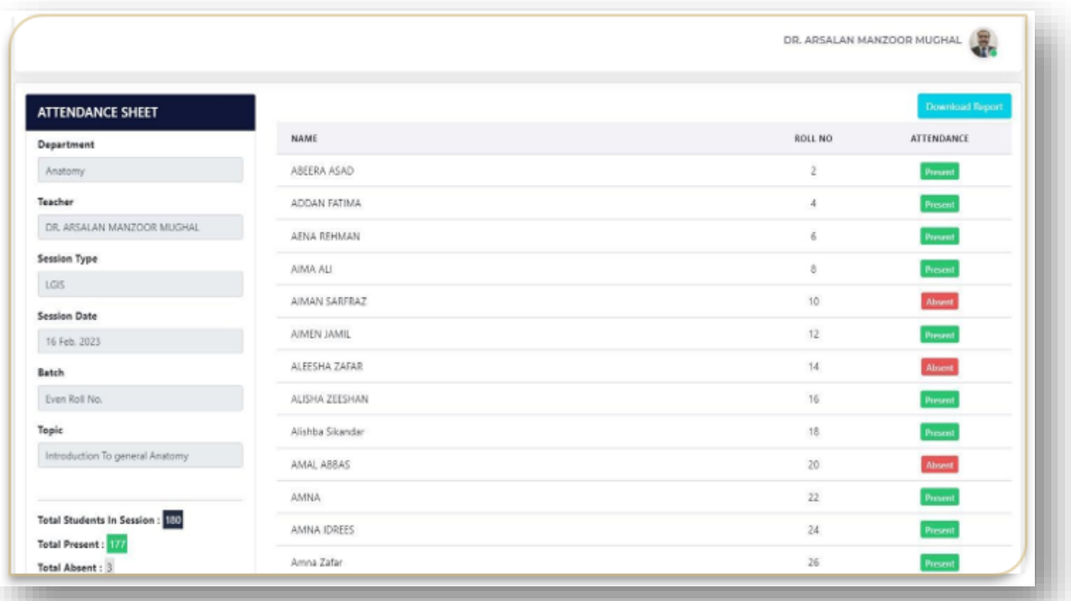
CMS Time Table



Teacher Attendance



Student Attendance



6. E-Log System for Postgraduate Residency Program

PGT Portal will provide users with faster and easier access to Logbook features while offering value-added content to increase session duration and reduce bounce rate. From here, the system's detailed objectives could include the following:

7. Digital Library

Provide access to online international scholarly literature for research purposes. It also provides access to high quality general articles and e-books through PERN.

RMU is now offering the HEC Digital Library facility to the faculty and students, as an on-campus facility.

The Digital Library is a collection of electronic resources that provides direct/indirect access to a systematically organized collection of digital objects.

HEC National Digital Library (DL) is a program to provide access to international scholarly e-literature.

Providing access to high-quality, peer-reviewed journals, databases, articles, and ebooks across a wide variety of disciplines to researchers within public and private universities in Pakistan and non-profit research and development organizations.

It provides 50,000 online full-text e-books in addition to more than 23,000 journals.

Institute For Operations Research And The Management Sciences (Informs)

Springerlink

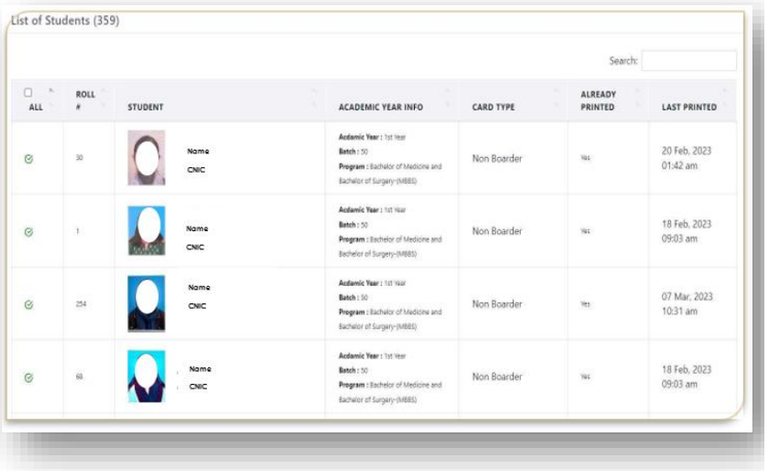
Taylor & Francis Journals

Wiley-Blackwell Journals

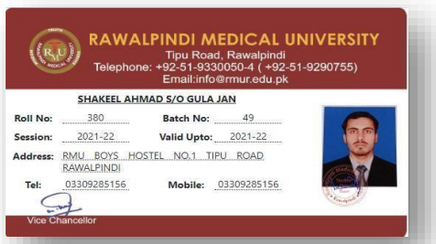
Wolters Kluwer Ovid Sp

Link: http://www.digitallibrary.edu.pk/rmc.html

Student Details



E-card Printing



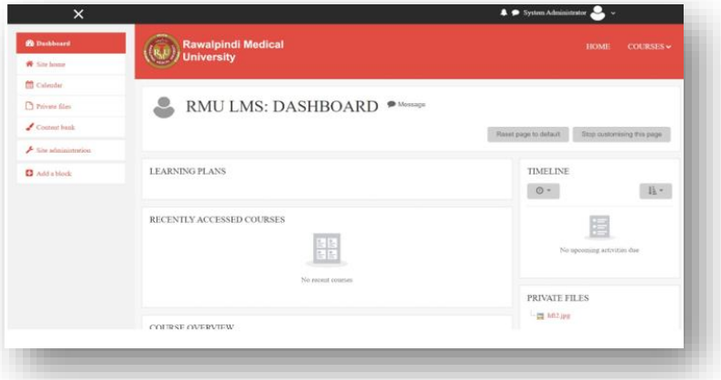
Digital Library

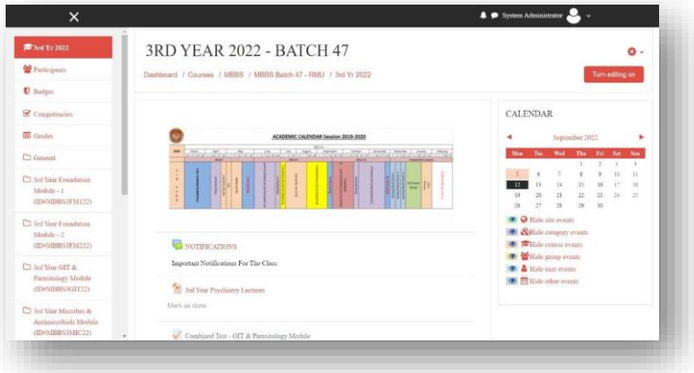


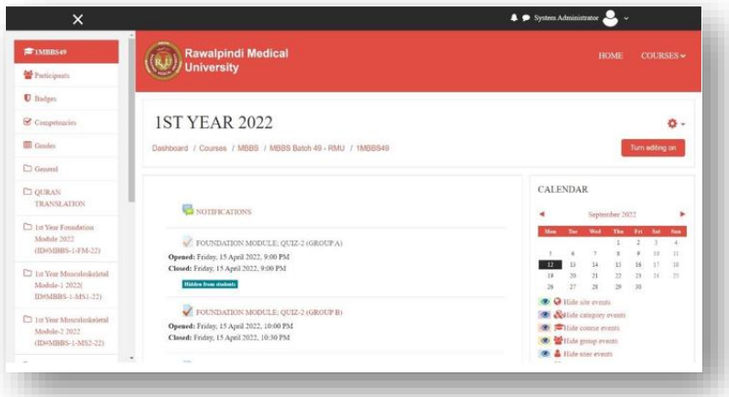
8. Content and Learning Management System (CLMS)

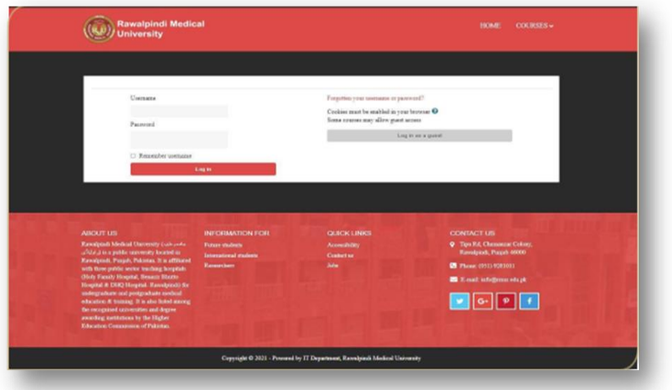
An online integrated software used for creating, delivering, tracking, scheduling, assessments, content uploading and reporting of educational courses. Link: https://clms.rmur.edu.pk/login/index.php

Users:	3830
Courses:	(Active 12)
Questions:	19542
Content Folders:	370
Books:	5
Attempted Quizzes and Results:	478
Files / Notes:	70
External Links:	25
Assignments:	35









Learning Resources

Subjects	Resources
Core Subjects & Horizontal Integration Subjects	
Anatomy	**Gross Anatomy** Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. Clinically Oriented Anatomy by Keith Moore 9th edition. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III http://www.anatomyzone.com 3D anatomy https://teachmeanatomy.info/ **Histology** B. Young J. W. Health Wheather's Functional Histology 6th edition. Medical Histology by Prof. Laiq Hussain 7th edition. https://www.udemy.com/course/histology/ **Embryology** Keith L. Moore. The Developing Human 11th edition. Langman's Medical Embryology 14th edition.
Physiology	**Textbooks** Textbook Of Medical Physiology by Guyton And Hall 14th edition. Ganong ' S Review of Medical Physiology 26th edition. **Reference Books** Human Physiology by Lauralee Sherwood 10th edition. Berne & Levy Physiology 7th edition. Best & Taylor Physiological Basis of Medical Practice 13th edition. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	**Textbooks** Lippincott IIIustrated Reviews: Biochemistry – Wolters Kluwer Harper's Illustrated Biochemistry 32th edition. Lehninger Principle of Biochemistry 8th edition. Biochemistry by Devlin 7th edition.
Community Medicine	**Textbooks** Community Medicine by Parikh 25th edition. Community Medicine by M Illyas 8th edition. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	**Textbooks** Robbins & Cotran, Pathologic Basis of Disease, 10th edition. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. http://library.med.utah.edu/WebPath/webpath.html

Pharmacology	**Textbooks** 1. Lippincot Illustrated Pharmacology 9th edition.
Spiral Integration Subjects & General Education Cluster Courses	
Bioethics	**Textbooks** 1. Textbook of Medical Ethics by Erich H. Loewy (Author)
Videography	The Five Cs of Cinematography by Joseph V. Mascelli Digital Video Production: A Comprehensive Guide by Anirban Das
Leadership	Leadership and the New Science by Margaret J. Wheatley A Treatise on Good Works by Martin Luther
Family Medicine	**Textbooks** Textbook of Family Medicine" by Robert E. Rakel and David P. Rakel Essentials of Family Medicine" by Philip D. Sloane, Lisa M. Slatt, and others Textbook of Family Medicine" by Ian R. McWhinney Family Medicine: Principles and Practice" by Robert B. Taylor
Islamiat & Pak Studies	Islamiyat Lazmi by Muhammad Khalil
Vertical Integration Subjects	
Medicine	**Textbooks** Harrison's Principles of Internal Medicine by J. Larry Jameson, Anthony S. Fauci, and others Davidson's Principles and Practice of Medicine by Stuart H. Ralston, Ian D. Penman, and others Kumar and Clark's Clinical Medicine by Parveen Kumar and Michael Clark Oxford Handbook of Clinical Medicine by Ian B. Wilkinson, Tim Raine, and others
Surgery	**Textbooks** 1. Bailey & Love's Short Practice of Surgery by Norman S. Williams, P. Ronan O'Connell, and Andrew W. McCaskie
Obsteterics & Gynecology	**Textbooks** Obstetrics by Ten Teachers Gynaecology by Ten Teachers
Peadiatrics	**Textbooks** 1. Nelson Textbook of Pediatrics" by Robert M. Kliegman, Joseph St. Geme, and others **2.** "Textbook of Pediatrics" by A. Parthasarathy
Digital Resources	
Up To Date	https://www.uptodate.com/contents/search
RMU Digital library	http://www.digitallibrary.edu.pk/rmc.html
International Resources	
USMLE	https://www.usmle.org/
Plab	https://www.gmc-uk.org/registration-and-licensing/join-the-register/plab
U World	https://www.uworld.com/
Kaplan	https://mykaplan.co.uk/

Section-XIII

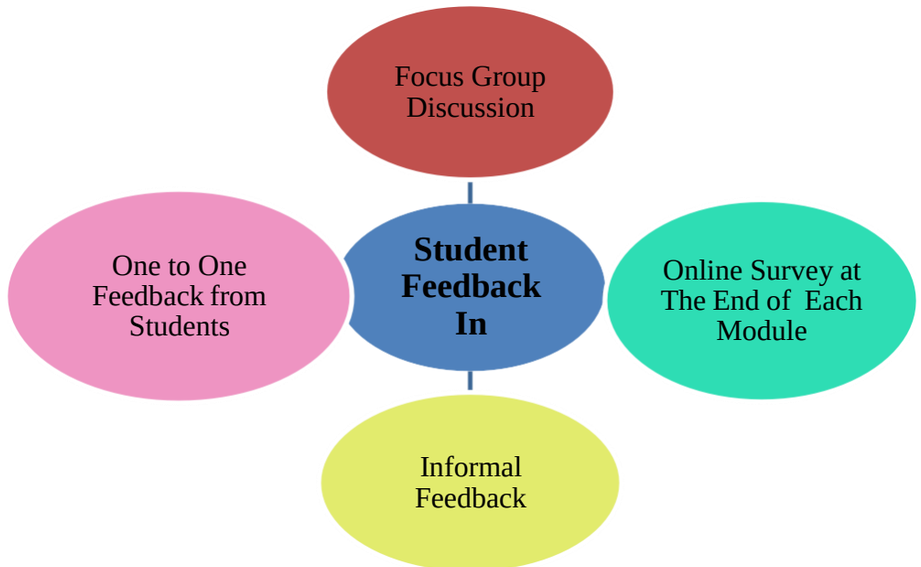
Quality Assurance & Quality Enhancement

- **Student Feedback Proforma**
- **Student Report**
- **Faculty Report**
- **Swot Analysis**
- **Quality Enhancement Cell (QEC) Report**

Feedback and Evaluation

Rawalpindi Medical University is dedicated to advancing equality, diversity, and inclusion across all its activities, processes, and cultural practices, in line with its Public Sector Equality Duties. This commitment encompasses promoting equality and diversity for everyone, regardless of any protected characteristic, working pattern, family circumstance, socio-economic background, political belief, or any other irrelevant distinction. Where pertinent to the policy, decision-making panels will ensure a reasonable gender balance (with at least one man and one woman) and will actively consider the representation of other protected groups.

Principles Feedback from students is essential to inform the development of the University's programmes and to help shape all aspects of their current and future learning and broader experience. The University actively seeks and encourages students to share their views. Our approach aims to create openness, responsiveness and a sense of partnership.



How feedback is received

- **Informal Feedback**

Informal feedback is received by day-to-day dialogue between students and staff,

- **Formal Feedback**

Feedback is received from students in more formal settings. These include:

- **Central survey campaign**

The University regularly invites students to participate in anonymous surveys (Appendix 1).

The central surveys take place after every module, after every Block and at the end of the academic year. This schedule enables the University to work in conjunction with the students and help to improve the teaching, learning and assessment methodologies.

- **Focus Group Discussion**
- **One To One Feedback from Students**

Student Feedback Proforma for 2024

(to be conducted after every module completion)

Module Content & Organization

Questionnaire	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
The module objectives were informed.					
At the beginning of module study guide wasavailable.					
The module workload was manageable.					
The pace of the module was manageable.					
The module was well organized.					
Module started and ended on time.					
End of block feedback was taken					

Learning Environment and Teaching Methods

Questionnaire	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Lectures were delivered appropriately.					
Labs were conducted appropriately.					
Small group discussions were conducted appropriately					
Teaching sessions were as per schedule.					
CBLs were conducted appropriately					
Faculty was cooperative.					
Learning resources were communicated clearly					
SGDs were standardized between different batches					

Quality of Delivery

Questionnaire	Strongly Agree	Agree	Uncertain	Disagree	StronglyDisagree
The module stimulated my interest.					
Ideas were presented clearly.					

Learning Resources

Questionnaire	Strongly Agree	Agree	Uncertain	Disagree	StronglyDisagree
Learning Material was provided /recommended.					
Learning Resources were available in the library.					
Digital / Web Based resources wereavailable.					
Power points of lectures were available					

Student Contribution

Questionnaire	Strongly Agree	Agree	Uncertain	Disagree	StronglyDisagree
I participated actively in the module.					
I believe I have made progress in thismodule.					

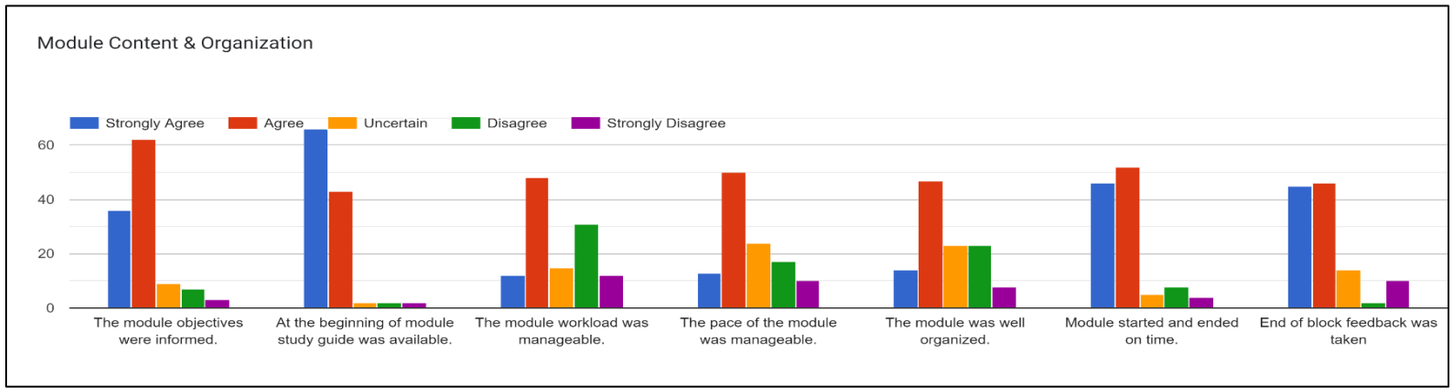
Assessments

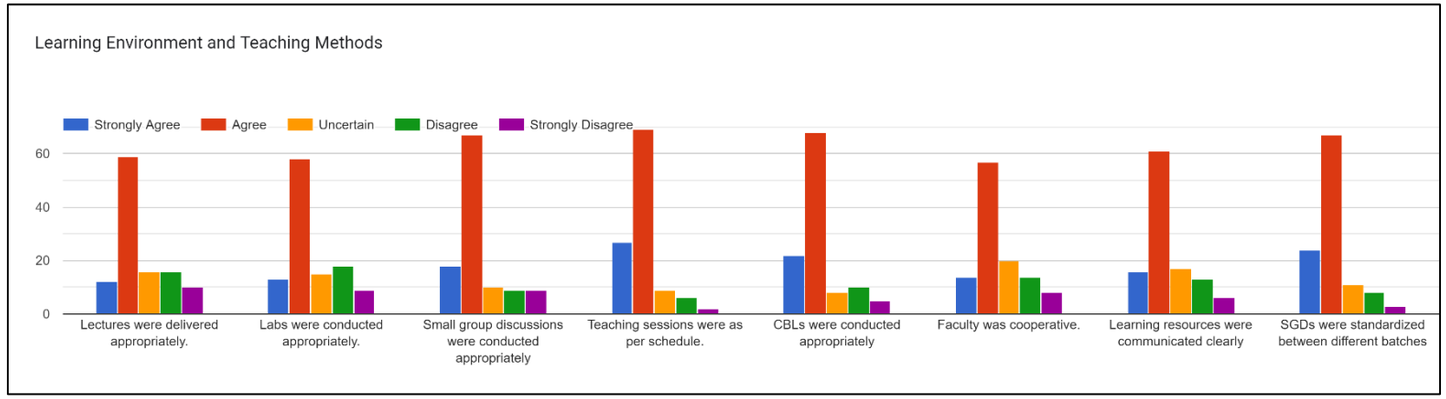
Questionnaire	Strongly Agree	Agree	Uncertain	Disagree	StronglyDisagree
Class tests were conducted regularly.					
Class tests were helpful					
Test difficulty was appropriate.					
Written Assessment was as per Table ofSpecifications.					
OSPE Exam was as per Table ofSpecification					
Table of Specification was shared					

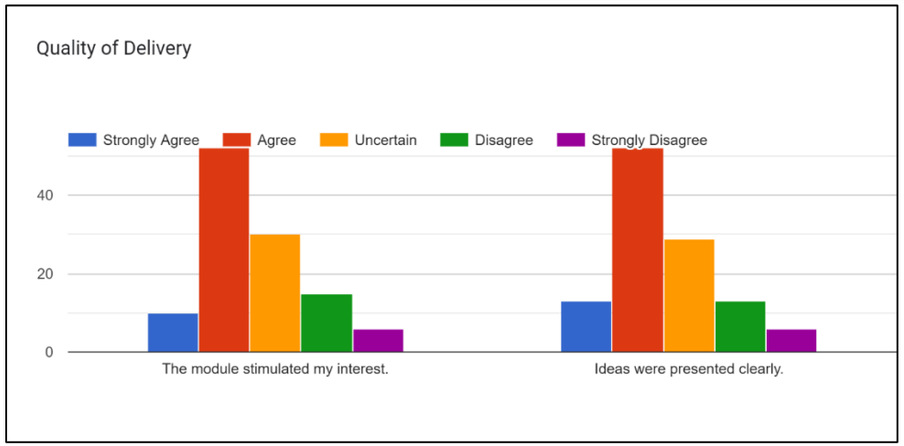
LMS and its working

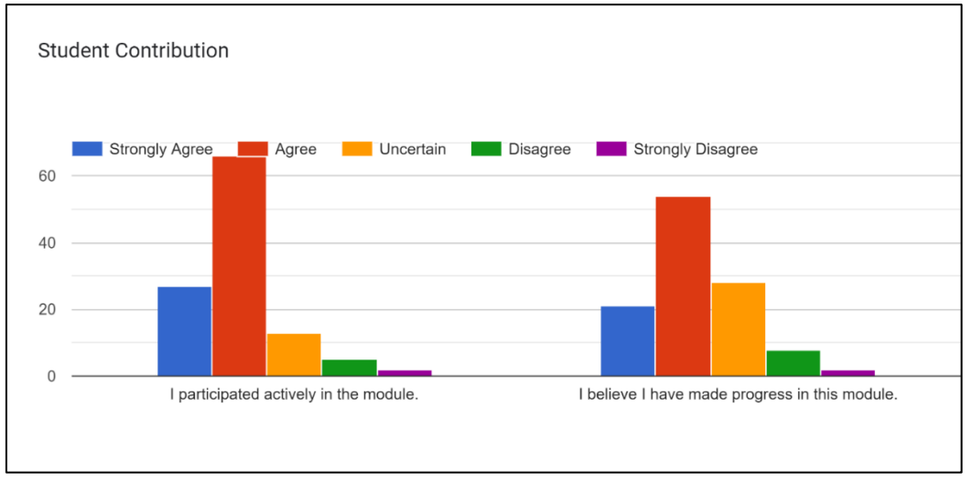
Questionnaire	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Easy Access to LMS					
Module Content was Available					

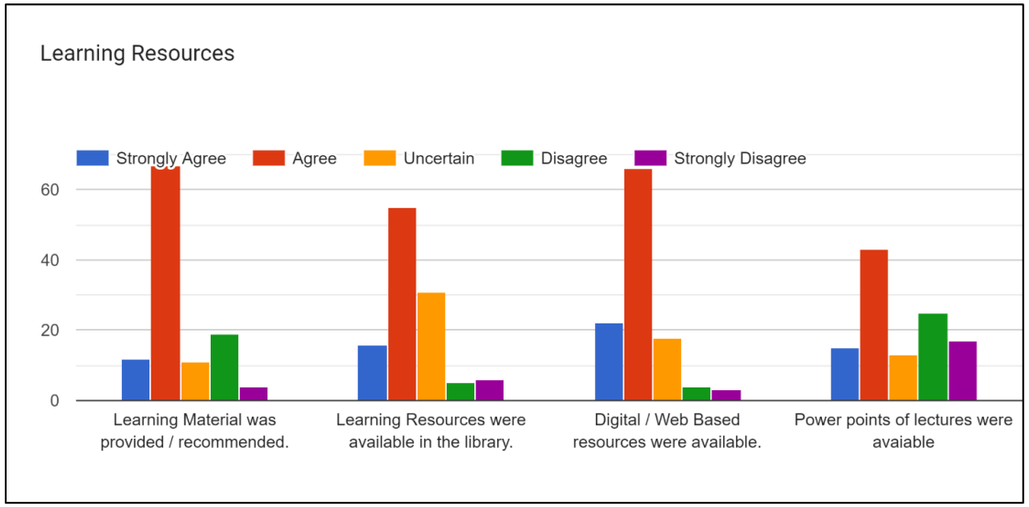
Student Feedback Report

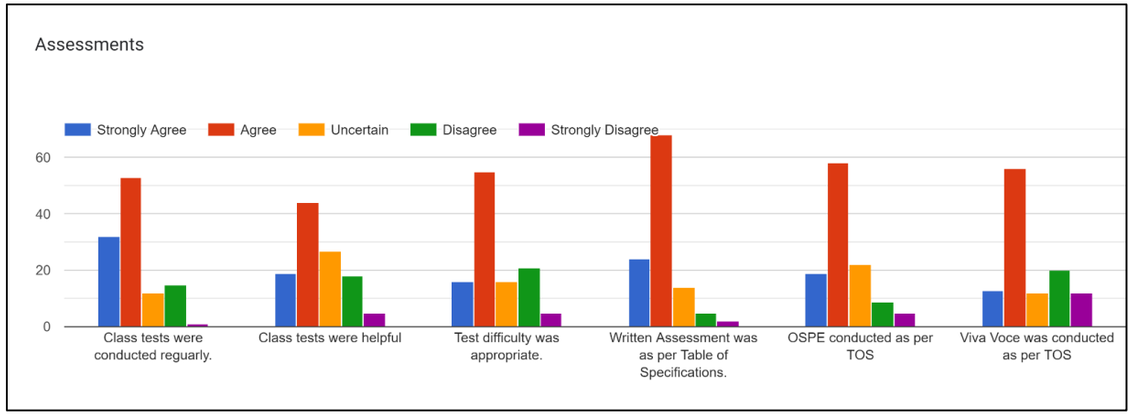


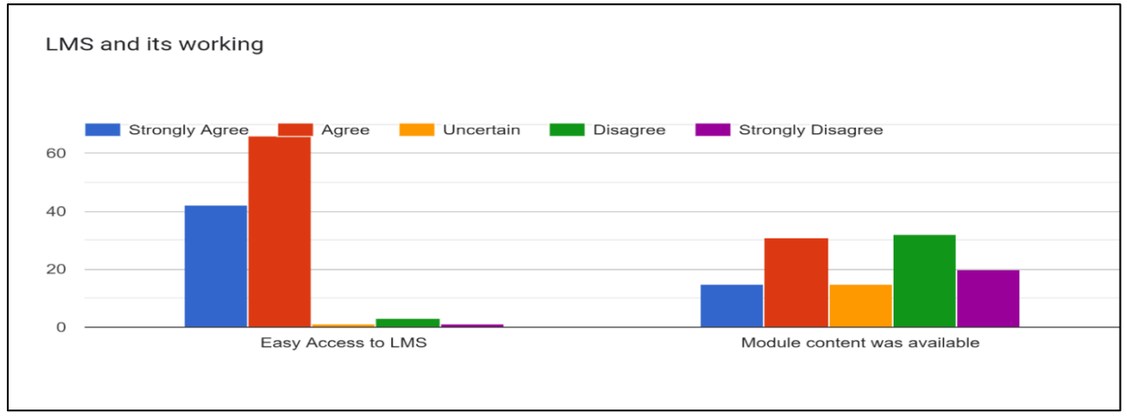







Learning Resources
Strongly Agree
Agree
Uncertain
Disagree
Strongly Disagree
60
40
20
0
Learning Material was provided / recommended.
Learning Resources were available in the library.
Digital / Web Based resources were available.
Power points of lectures were avaiable

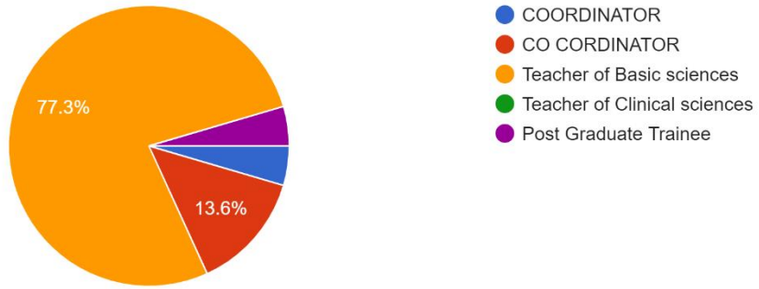

Assessments
Strongly Agree
Agree
Uncertain
Disagree
Strongly Disagree
60
40
20
0
Class tests were conducted reguarly.
Class tests were helpful
Test difficulty was appropriate.
Written Assessment was as per Table of Specifications.
OSPE conducted as per TOS
Viva Voce was conducted as per TOS


LMS and its working
Strongly Agree
Agree
Uncertain
Disagree
Strongly Disagree
60
40
20
0
Easy Access to LMS
Module content was available

Faculty Feedback Report

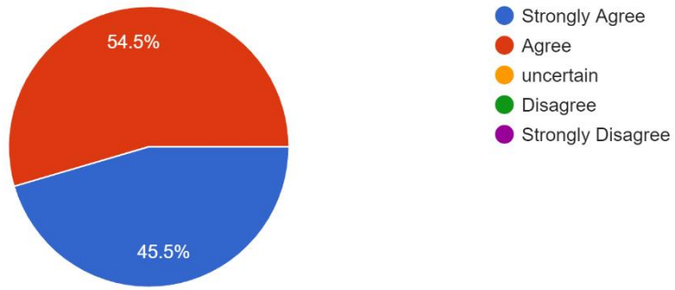
Role In Module

22 responses



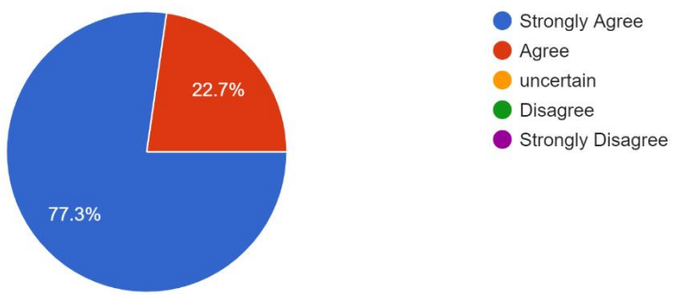
Timetable was timely conveyed to faculty

22 responses



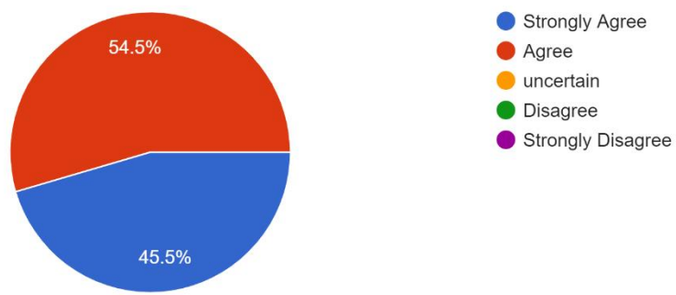
Study Guide was available

22 responses



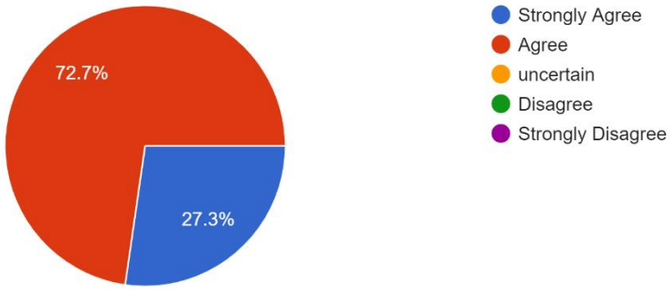
All the module objectives were covered

22 responses



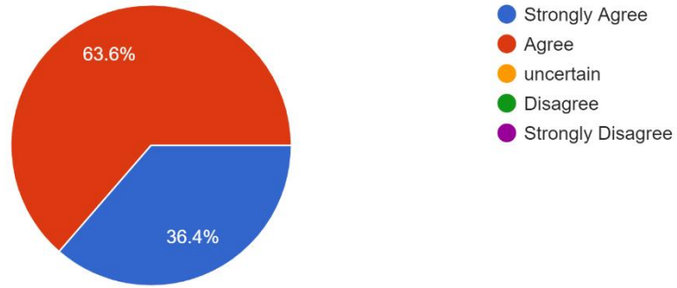
The module duration was appropriate

22 responses



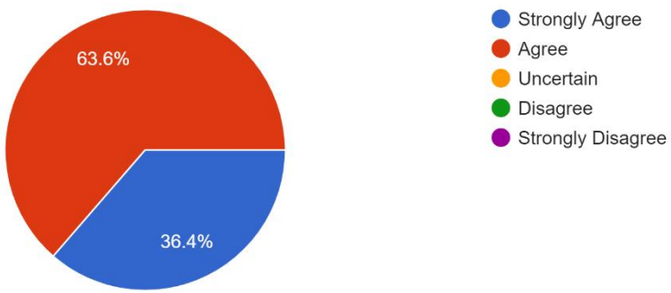
The module started and ended on time

22 responses



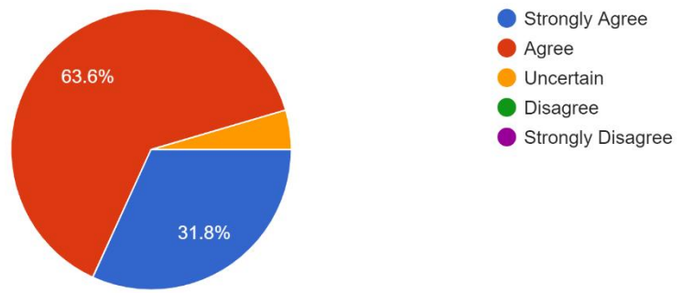
Teaching sessions were as per schedule

22 responses



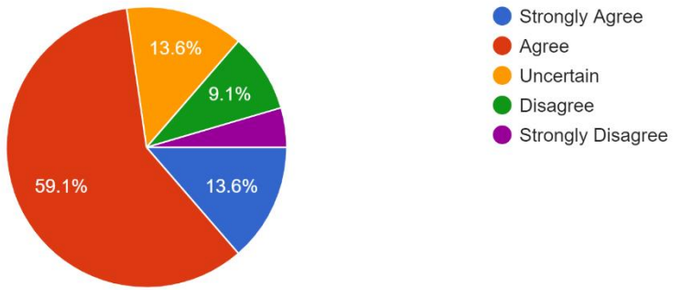
Faculty was cooperative

22 responses



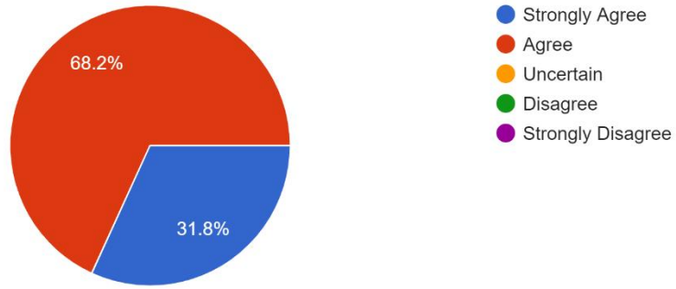
Workload was manageable

22 responses



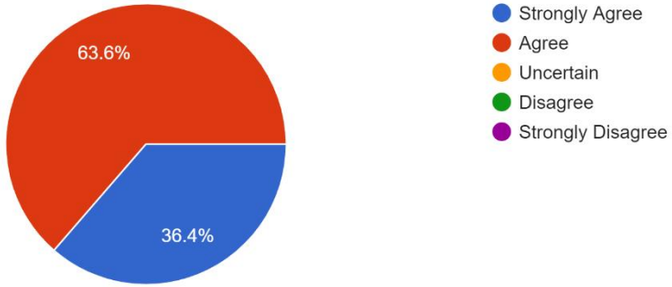
Lectures were conducted appropriately

22 responses



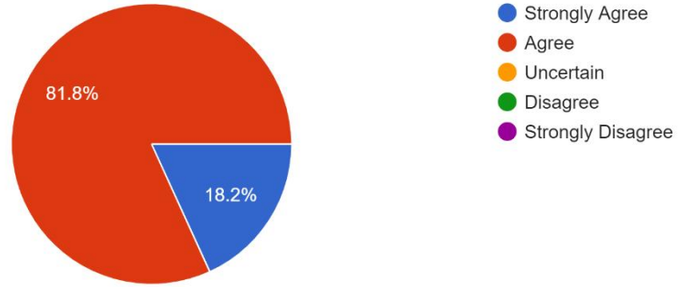
Practicals were conducted appropriately

22 responses



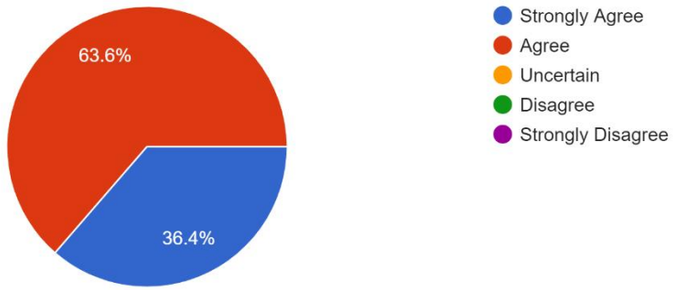
Small Group Discussion (including PBLs) were conducted appropriately

22 responses



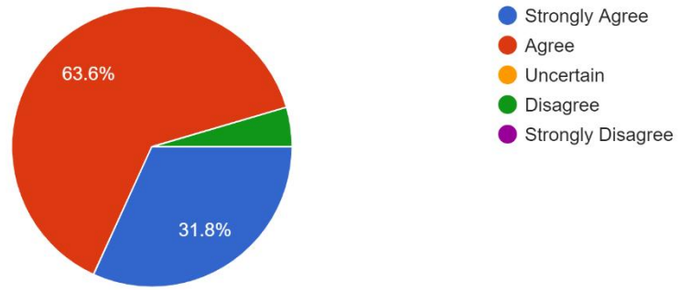
LMS & clinical evaluation were conducted regularly

22 responses



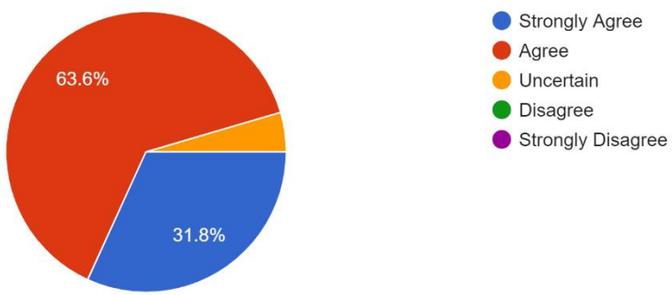
Module / Block exam was conducted as per schedule

22 responses



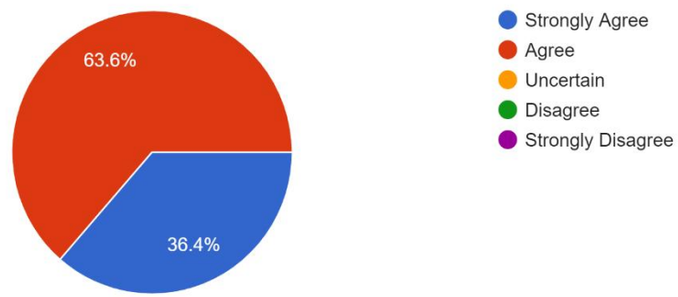
Written assessment was as per Table of Specifications

22 responses



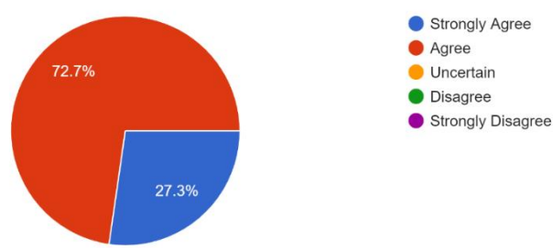
Practical assessment was as per Table of Specifications

22 responses



The TOS was well understood and conveyed to all faculty timely

22 responses



Swot Analysis of Curriculum

SOWT Analysis of Implementation of IMC

- **Strength**
  - We are leading all public sector medical colleges in implementation of integrated modular curriculum
  - We are fulfilling the requirement of World Federation for Medical Education
  - Our future doctor will be able to correlate and integrate basic and clinical knowledge in a better way with the competencies of 7 Star Doctor-acting as leader, manager, decision make, and communicator and care provider, decision maker, researcher and lifelong learner.
- **Opportunities**
  - We have completed the phase –I of implementation for 1st ,2nd and 3rd year and we are now able to implement it in 4th and final year
  - We can further refine our integrated curriculum of 1st and 2nd year MBBS in coming years and can better tackle its flaws.
  - Proper committees for feedback and evaluation are developed with collaboration from QEC& DME.
- **Weaknesses**
  - A change in system is always difficult to be accepted by stakeholders
  - Inflexible as compared to Conventional System.
  - The content of different subjects is sometimes jumbled up in various modules according to the requirement of that specific module which is difficult to be absorbed by the students.
- **Threats**
  - The Modular System can totally collapse back to Conventional System if not vigilantly and expertly handled.

Summary of Implementation Challenges of IMC

Deficiencies	Corrective Action/Solution
Integration is a difficult task (how & when to integrate)	Frequent meetings with faculty and students
100% Integration is NOT possible	Frequent meetings with faculty and students and do integration wherever possible, at present RMU is running the curriculum at 5th level of integration of Harden's Ladder.
Lack of consensus among teachers while preparing curriculum	Faculty development workshops & CHPE to change the mind set of whole faculty.
Dissatisfaction among subject specialists about time & information allotted to them in the module(s)	Content taken from subject specialist with their consensus & approval
Lack of adequate weightage given to subjects in evaluation	Subject based assessments added in the modules.
Fragmented learning of subjects with fragmented assessment (subject is taught in parts in different years of the MBBS course.	Frequent subject specialists meetings
Too many modules may result in complex timetables among the classes (each class of MBBS running their own modules)	

Recommendations

Mode of information transfer	
Increasing the human resources.	As per PMC criteria
Student centered teaching	Training of teachers
Use of flipped classroom technique to overcome	As per PMC criteria Training of teachers the issue of anatomy excessive course.
CBL & PBL	36 CBLs & 3 PBLs have been added
Learning And Teaching Environment	
Providing the resources conducive to learning & teaching.	
Spiral curriculum(anatomy to be incorporated in pathology and radiology lectures)	
Taking effective feedback from stake holders to improve & implement the changes.	Feedback taken at the end of each module from students
Assessment strategy:	
It is mandatory to pass in the individually rather than collectively.	subjects

- **Future Horizon**

- We plan on taking the curriculum to excellence and improving the ladder of curriculum according to Harden's ladder of curriculum

Quality Enhancement Cell (QEC) Report
Integrated Modular Curriculum MBBS &
Department of Medical Education

Quality Enhancement Cell- RMU since its inception has been active in promoting its core function of bringing standardization to university's academic programs in line with the guidelines enunciated by the Higher Education Commission. In this regard, Second thing on which QEC team focused was QEC guidelines. Team achieved that milestone in record time. Approved QEC guidelines of RMU were implemented in 2018.

Quality Enhancement Cells serve as focal points for quality assurance in the institutions in order to improve and uphold the quality of higher education. Capacity building of academia in quality assurance is one of the key functions of Quality Assurance Agency (QAA), HEC and subsequently of QEC. Thus, QAA and QECs of the Universities work hand in hand to move in this direction of capacity building arrangements that include awareness campaigns, development of quality assurance policy instruments, training to learn the processes and procedures of quality assurance in higher education institutions and development of Manual to equip the practitioners of quality assurance.

In recent years it has become an obligation that institutions of higher education demonstrate the effectiveness of their academic programs in providing high quality education that positively impacts students. Furthermore, most accrediting bodies and others concerned with quality assurance are requesting that institutions assess students learning outcomes as a means of improving academic programs. This has led the accrediting bodies to develop methods for assessing the quality of academic programs. So, whole conventional system was needed to be revamped. Rawalpindi Medical University has the honor of being the Second public sector Medical University of Punjab which has introduced the modern modular system of medical education for the MBBS course.

It was a big challenge for Department of Medical Education (DME) and Quality Enhancement Cell to maintain the quality and standards of all the teaching and training practices. Quality enhancement cell, RMU appreciate the untiring efforts of DME in this regard. DME team has worked day and night for the implementation of the integrated modular curriculum.

Following are the compliments and recommendations by the Quality Enhancement Cell, RMU:

Commendations:

1. Proper, well managed integrated modular curriculum is in place under the vibrant and energetic leadership of Vice Chancellor, Prof. Muhammad Umar and Department of Medical Education. This thing has also been acknowledged by different visits by accreditation bodies like Higher Education Commission (HEC) and Pakistan Medical & Dental Commission.
2. Proper curriculum committee is in place with appropriate representation of the students as members.
3. All stakeholders are on board and are on one page regarding implementation of the integrated modular curriculum.
4. Regular meetings have been done by the curriculum committee.
5. Feedback has been taken regularly with appropriate gap interval in between.
6. Proper record keeping has been done by the Department of Medical Education both in soft and hard form.
7. As far as the assessment is concerned, newly established Examination Department is doing commendable and admirable job.
8. Final results are indicating that both students and faculty has adapted well to integrated modular system and they are satisfied with the system.
9. Campus management system is working efficiently.
10. Standardized format of all teaching strategies has improved the quality of the deliverance of the subject matter.

Recommendations:

1. Communication and coordination among the departments can be made better. This will help in normalizing the pressure on the Department of Medical Education.
2. Department of Medical Education should be equipped with more human resource.
3. Faculty members should be provided with more opportunities for updating themselves with modern teaching methodologies. They should be encouraged to have certification or masters in medical education.
4. Departments and DME should ensure equal distribution of responsibilities among faculty members.
5. Steps should be taken in account for improving the ladder of the curriculum according to the Harden's ladder of curriculum.
6. Faculty should be encoouraged to participate actively in the Faculty Development Program of the university which is already working on a very good pace.
7. Subjects specialists are advised to have more frequent meetings with the aim of improving the quality of the content delivered to the students.
8. Student centered teaching should be encouraged more.
9. Any motivational lecture should be included in the time table for every class as it is very important for the students for personal growth and development.
10. The weightage of all clinical lectures should be increased in Second and second year MBBS, as the attandance is on the lower side in clinical lectures of the above said years.



Dr. Rabbia Khalid
Assistant Director
Quality Enhancement Cell
Rawalpindi Medical University
Rawalpindi
Dated: 04-05-23

Rawalpindi Medical University
Department of Medical Education (DME)

Study Guide
Gastrointestinal Tract Module 2024



Procedure For Control Of Documented Information

In-Compliance with

ISO 9001:2015

Clause 7.5

Copyright

The copyright of this procedure, together with all confidential information contained herein is the sole property of Rawalpindi Medical University

It may be copied in full or in parts only by the Management/personnel and only for Company-related activities. Disclosure of any information contained within this procedure to any person (s) outside the employee of the institute without written permission of the Vice Chancellor or Principal or ISO Committee Head is strictly prohibited.

Document Information

Category	**GIT Module Study Guide**
Document	Procedure for Control of Documented Information
Issue	1
Rev	00
Identifier	RMU-MR-SOP-56
Status	Final Document
Author(s)	Director Medical Education, Asst. Director Medical Education,
Reviewer(s)	Curriculum Committee.
Approver(s)	Vice Chancellor
Creation Date	10-01-2024
Effective Date	10-01-2024
Control Status	**Controlled**
Distribution	VC, Principal, ISO Committee
Disclaimer	This document contains confidential information. Do not distribute this document without prior approval from higher management of **Rawalpindi Medical University.**

Document Approval

Prepared By	Reviewed By	Approved By
Director Medical Education, Asst. Director Medical Education,	Curriculum Committee	Vice Chancellor

Document Revision History

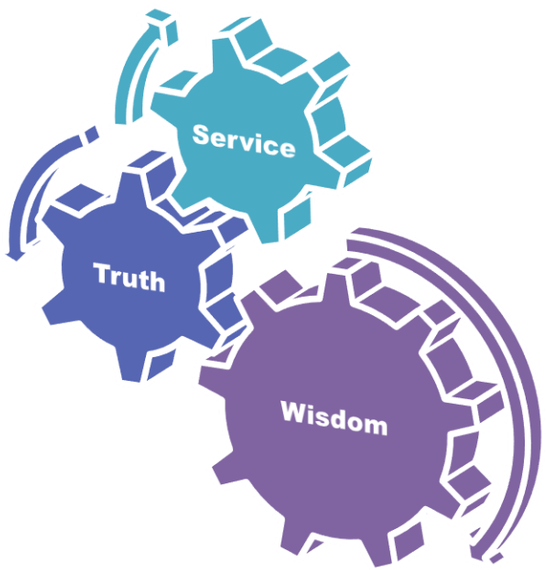
Author(s)	Date	Version	Description
Prof Naeem Akhtar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Sidra Hamid, Dr Tehmina Qamar	2017-2018	1st	Developed for Second Year MBBS. Composed of Horizontally and vertically Integrated GIT Module.
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2019-2020	2nd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated
Dr Tehzeeb, Dr Samia Sarwar, , Dr Ifra Saeed, Dr Ayesha Yousaf , Dr Tehmina Qamar, Dr Sidra Hamid	2021-2022	3rd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum incorporated
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2022-2023	4th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research, Bioethics, Family Medicine curriculum incorporated along with Professionalism
Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr Aneela Jamil, Dr Sidra Hamid	2023-2024	5th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum revamped Bioethics, Family Medicine curriculum incorporated along with Professionalism. Entrepreneurship curriculum incorporated

List of Copy Holders

Document Code	Issue # /Rev.#	Copy #	Copy Holders	Distribution Mode	Signature
RMU-MR-SOP-56	01/00	01	V.C	Email	
RMU-MR-SOP-56	01/00	02	HODs	Email	
RMU-MR-SOP-56	01/00	03	IC	Hard Copy	

University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

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

Vision and Values

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

Goals of the Undergraduate Integrated Modular Curriculum

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

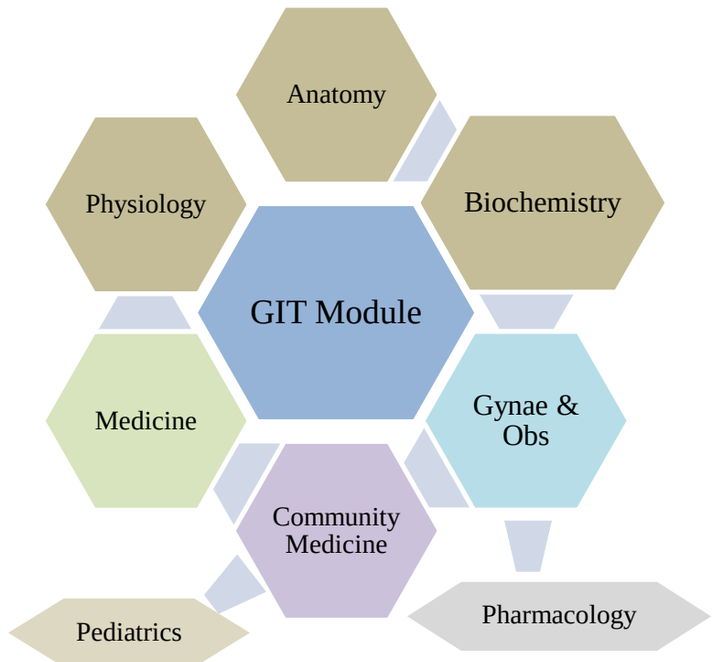
- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional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

Second Year MBBS 2024

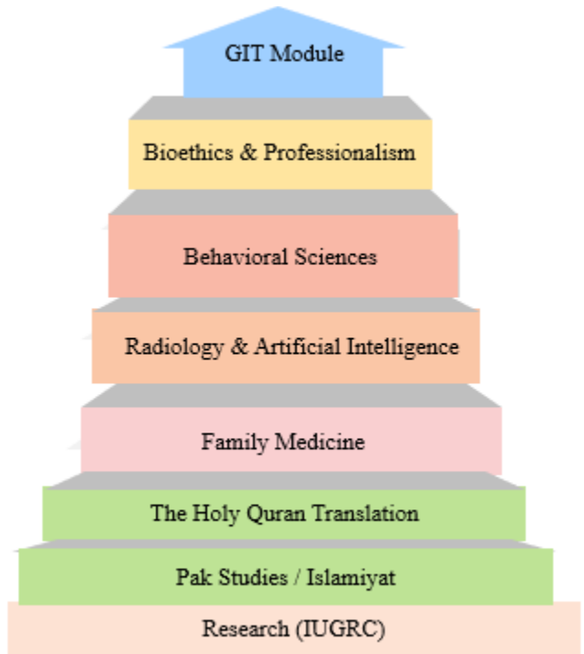
Study Guide

GIT Module

Integration of Disciplines in GIT Module



Spiral / General Education Cluster Courses



Discipline wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
1	Anatomy	-	Tongue, Body Cavities, Gastrointestinal System	Digestive Tract & associated organs (Junqueira)	Oral Cavity, Abdomen and associated visceras
	Biochemistry	Carbohydrate metabolism, GIT digestive juices, Digestion and absorption, GIT Hormones LFTs, Jundice & Nutrition,			
	Physiology	General Principles of Gastrointestinal Function—Motility, Nervous Control, and Blood Circulation Propulsion and Mixing of Food in the Alimentary Tract Secretory Functions of the Alimentary Tract, Digestion and Absorption in the Gastrointestinal Tract Physiology of Gastrointestinal Disorders			
	Orientation Session				
	Department of Medical Education (DME)	• Orientation Session on Curricular Reform RMU & Feedback of Year 2023 • Student Session on Standardization of Teaching Strategies			
	Spiral Courses				
	The Holy Quran Translation	The Holy Quran Translation Component • Imaniat I • Ibadat I • Ibadaat-II • Imaniyaat-II • Ibadaat-III • Imaniat-III			
	Pak Studies/Islamiyat	• Tehreek-E-Pakistan Islaahi Tehreekain • Akhirat-I • Toheed • Qayam e Pakistan, Aghraaz o Maqasid • Tehreek-e-Aligarh, Sir Syed Ahmad Khan • Akhirat -II			
	Bioethics & Professionalism	• Pakistan Medical & dental council Code of Ethics			
	Research (IUGRC)	• Introduction to descriptive statistics (Research-I) • Classification of different types of Data (Research-II) • Scales of Data measurement (Research-III) • Measures of central Tendency (Research-IV)			

		• Compute & Interpret measures of central tendency (Research-V) • Measure of dispersion/ Secondary data Analysis (Research-VI)
	Radiology & Artificial Intelligence	• Medical imaging of abdomen- I • Medical imaging of abdomen-II
	Family Medicine	• Common Abdominal diseases
	Behavioral Sciences	• Eating Disorders
	Vertical Integration	
	Clinically content relevant to GIT module • Concept of health & disease (Community medicine) • Epidemiology of infectious diseases & Basic Concepts (Community medicine) • Peptic ulcer (Medicine) • Jaundice (Medicine) • Irritable Bowel Syndrome (Medicine) • Antidiarrheal drugs & drugs for Peptic Ulcer Disease (Pharmacology) • Acute & Chronic Diarrhea (Pediatrics) • Common GIT problems in pregnancy (Hyperemesis gravidarum, GERD, Constipation, hemorrhoids) (Gynae and OBS)	

Table of Content

University Moto, Vision, Values & Goals 7

Discipline wise Details of Modular Content 10

GIT Module Team 16

Module I -GIT Module 17

Module Outcomes 17

Knowledge 17

Skills 18

Attitude 18

SECTION - I 19

Terms & Abbreviations 19

Teaching and Learning Methodologies / Strategies ..... **Error! Bookmark not defined.**

Large Group Interactive Session (LGIS) ..... **Error! Bookmark not defined.**

Small Group Discussion (SGD) 22

Self-Directed Learning (SDL) 24

Case Based Learning (CBL) 24

Problem Based Learning (PBL) 24

Practical Sessions/Skill Lab (SKL) 25

SECTION – II 26

Learning Objectives, Teaching Strategies & Assessments 26

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry) 27

Anatomy Large Group Interactive Session (LGIS) 27

Physiology Large Group Interactive Session (LGIS) 34

Biochemistry Large Group Interactive Session (LGIS) 38

Anatomy Small Group Discussion (SGDs) 40

Physiology Small Group Discussion (SGDs) 48

Biochemistry Small Group Discussion (SGDs) 50
Anatomy Self Directed Learning (SDL) 51
Physiology Self Directed Learning (SDL) 53
Biochemistry Self Directed Learning (SDL) 55
Histology Practicals Skill Laboratory (SKL) 57
Physiology Practicals Skill Laboratory (SKL) 58
Biochemistry Practicals Skill Laboratory (SKL) 59
SECTION - III 60
Orientation Sessions of Medical Education 60
Department of Medical Education 61
SECTION - IV 62
Basic and Clinical Sciences (Vertical Integration) 62
Basic and Clinical Sciences (Vertical Integration) 63
Case Based Learning (CBL) 63
Large Group Interactive Sessions (LGIS) 63
Community Medicine 63
Medicine 64
List of GIT Module Basic and Clinical Sciences Vertical Integration Lectures 65
SECTION - V 68
Spiral Courses 68
Introduction to Spiral Courses 69
The Holy Quran Translation lecture 73
Pak Studies/Islamiyat 73
Biomedical Ethics & Professionalism 74
Behavioral Sciences 74
Family Medicine 74

Radiology & Artificial Intelligence 75
Integrated Undergraduate Research Curriculum (IUGRC) 75
Enterpreneurship 77
Digital Literacy Module 77
List of Foundation Module Spiral Courses Lectures 78
SECTION - VI 80
Assessment Policies 80
Assessment plan 81
Types of Assessment: 82
Modular Assessment 82
Block Assessment 82
Table 4-Assessment Frequency & Time in GIT Module 83
No. of Assessments of Anatomy for Second Year MBBS 84
No. of Assessments of Physiology for Second Year MBBS 85
No. of Assessments of Biochemistry for Second Year MBBS 86
Learning Resources 87
SECTION - VII 89
Time Table 89
GIT Module Team 91
Discipline wise Details of Modular Content 92
Categorization of Modular Content 94
Anatomy: 94
Physiology: 96
Biochemistry: 98
SECTION VIII 111
Table of Specification (TOS) For GIT Module Examination for Second Year MBBS 111

Annexure I 112
- Model Templates for MCQ & SEQ Paper, ... 112
- MCQ & SEQ Sample 112

Annexure II 118
- Structured Viva 118

GIT Module Team

Module Name : GIT Module
Duration of module : 06 Weeks
Coordinator : Dr. Uzma Kiyani
Co-coordinator : Dr. Minahil Haq
Reviewed by : Module Committee

Module Committee	
Vice Chancellor RMU	Prof. Dr. Muhammad Umar
Director DME	Prof. Dr. Rai Muhammad Asghar
Convener Curriculum	Prof. Dr. Naeem Akhter
Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
Additional Director DME	Prof. Dr. Ifra Saeed
Chairperson Physiology	Prof. Dr. Samia Sarwar
Chairperson Biochemistry	Dr. Aneela Jamil
Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
Focal Person Physiology	Dr. Sidra Hamid
Focal Person Biochemistry	Dr. Aneela Jamil
Focal Person Pharmacology	Dr. Zunera Hakim
Focal Person Pathology	Dr. Asiya Niazi
Focal Person Behavioral Sciences	Dr. Saadia Yasir
Focal Person Community Medicine	Dr. Afifa kalsoom
Focal Person Quran Translation Lectures	Dr. Uzma Zafar
Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team	
Coordinator	Dr. Uzma Kiyani (Senior Demonstrator of Physiology)
DME Focal Person	Dr. Sidra Hamid (DHPE)
Co-coordinator	Dr. Shazia Nosheen (Senior Demonstrator of Physiology)
Co-Coordinator	Dr. Minahil Haq (Senior Demostrator of Anatomy)
Co-coordinator	Dr. Uzma Zafar (APWMO of Biochemistry)

DME Implementation Team	
Director DME	Prof. Dr. Rai Muhammad Asghar
Implementation Incharge 1st & 2nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
Module planner & Implementation Coordinator	Dr. Sidra Hamid
Editor	Muhammad Arslan Aslam

Module I -GIT Module

Rationale: GIT module has been designed to unravel the basic structure function of the alimentary system along with its embryological development and anomalies. The composition of the food is complex and little of it is water soluble. Therefore, it cannot enter body fluids. Hence it needs to be broken down into its chemical components before it can be absorbed. Four activities of the GIT tract can be identified for this process to occur. These are:

Motility: The term is used to describe the movements of the GIT tract. These movements are responsible for breaking down and pushing the food along the alimentary tract and to its destination as feces.

Secretion: Different secretion of the GIT are concerned with breakdown of food into its digestive particles

Digestion: Break down of food into small pieces. It is produced by the mechanical activity of the alimentary tract. The surface of the food is exposed to enzymatic activity.

Absorption: The transfer of nutrients or the digestive products from the lumen to blood or the lymph.

Disruption of any of its activities can lead to disease states such as pain, peptic ulceration, diarrhea & constipation.

Coordination of all these functions is brought about hormones of GIT and exocrine pancreas.

Module Outcomes

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

Knowledge

- Explain the structural & developmental organization of GIT.
- Explain the composition, functions, mechanism & control of following gastrointestinal secretions: salivary, gastric, pancreatic, biliary, small & large intestines.
- Explain the swallowing and motility patterns in the GIT & its role in mixing, propulsion & evacuation of feces.
- Describe the mechanism of absorption of various nutrients and their role in malabsorption syndrome.
- Explain the physiological anatomy, biochemistry functions and dysfunctions of Liver.
- Explain the formation, function & control of secretion of bile.
- Explain the GIT hormones (structure, function) & their role in secretion and motility.
- Apply the knowledge of the basic sciences to understand pathophysiology of common GIT diseases.
- Appreciate concepts & importance of

- **Family Medicine**
- **Biomedical Ethics**
- **Artificial Intelligence**
- **Research**

Skills

- Dissect various parts of GIT, and related structures including peritoneum, to demonstrate their gross Anatomy and relationship to each other.
- Identify different organs of GIT under microscope and on model.

Attitude

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

This module will run in 6 weeks duration. The content will be covered through introduction of topics. 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!

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning Methodologies/Strategies
    - 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

Table1. Domains of Learning According to Blooms Taxonomy

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

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

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

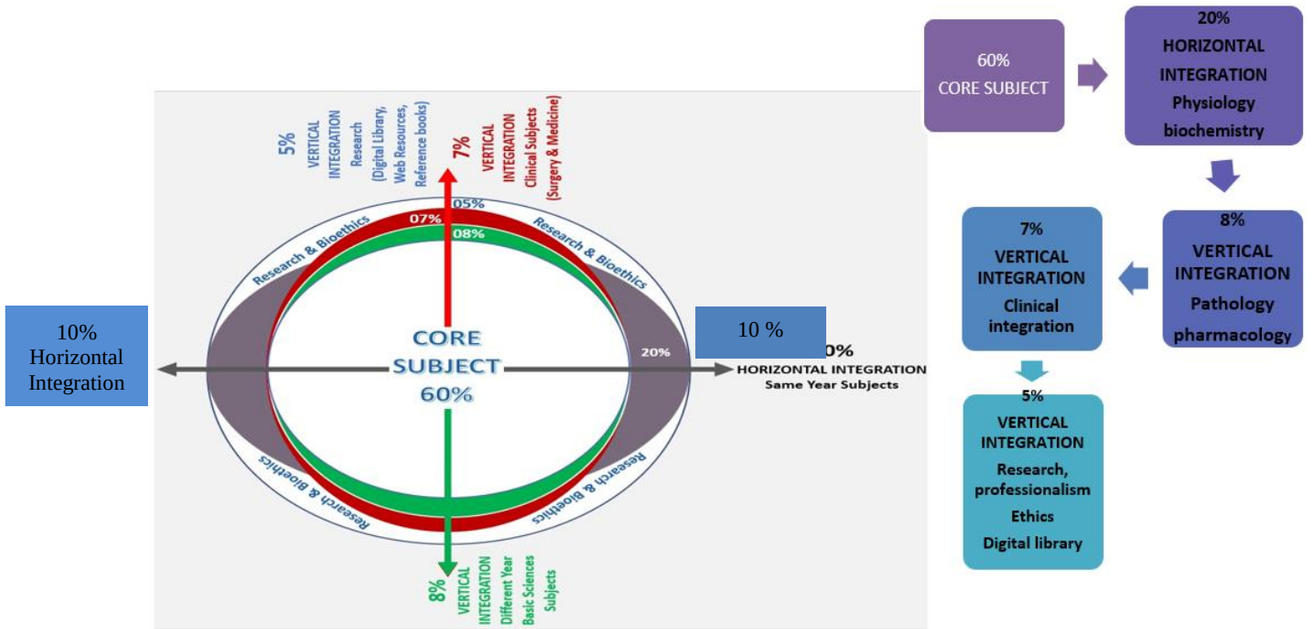


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementation of Small Group Discussions

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

Self-Directed Learning (SDL)

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

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

  ii.OSPE station

Case Based Learning (CBL)

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

Problem Based Learning (PBL)

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

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

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

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

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- **Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)**
- **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

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
	Embryology			
EMBRYOLOGY Development of Tongue	• Describe the development of pharyngeal apparatus	C2	LGIS	SAQ MCQ VIVA OSPE
	• Enlist the sources for development of different parts of tongue.	C1		
	• Explain the development of tongue along with its nerve supply.	C2		
	• Describe the congenital anomalies associated with tongue	C2		
	• Describe the developmental basis of physiological and biochemical mechanisms involved in perception and transmission of taste sensation	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• Practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care • Read relevant research articles • Use HEC digital library	C3 C3 C3		
EMBRYOLOGY Development of Body cavities I & II	• Enumerate different body cavities	C1	LGIS	SAQ MCQ VIVA OSPE
	• Describe division of embryonic body cavity	C2		
	• Discuss formation and significance of pleuropericardial membranesand pleuroperitoneal membranes	C2		
	• Describe muscular ingrowth from Lateral body walls	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
EMBRYOLOGY Development of Salivary glands	• Explain different stages of development of salivary glands	C2		SAQ
	• Enlist the sourse for development of different type of salivary gland	C1		
	• Explain development of its nerve supply	C2		

	• Describe the congenital anomalies associated with salivary glands	C2	LGIS	MCQ VIVA OSPE
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
EMBRYOLOGY Development of Esophagus	• Discuss the formation of tracheoesophageal septum and its importance	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe salient features of esophageal development	C2		
	• Describe congenital anomalies of esophagus	C2		
	• Describe the developmental basis for the physiological and biochemical mechanisms involved in the process of swallowing	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
EMBRYOLOGY Development of Stomach	• Explain the development of stomach	C2	LGIS	SAQ MCQ VIVA OSPE
	• Discuss rotations and positional shifts of stomach & their effect on nerve supply and peritoneal attachments	C2		
	• Explain formation of omental bursa.	C2		
	• Describe congenital anomalies of stomach	C2		
	• Describe the developmental basis for the physiological and biochemical mechanisms involved in the process of digestion in the stomach	C2		
	• Discuss pernicious anemia	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		

EMBRYOLOGY Liver	• Describe formation of hepatic diverticulum	C1	LGIS	SAQ MCQ VIVA OSPE
	• Describe histogenesis of liver during intrauterine life	C1		
	• Describe formation of various ligaments of liver.	C1		
	• Discuss congenital abnormalities of liver	C3		
	• Describe the developmental basis for the physiological and biochemical mechanisms involved in the process of detoxification in the liver	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
EMBRYOLOGY Gall bladder, pancreas and Biliary apparatus	• Discuss development of Gall bladder	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe /congenital anomalies of gall bladder	C2		
	• Discuss development and congenital anomalies of pancreas	C2		
	• Describe development of extrahepatic biliary apparatus and its parts with abnormalities	C2		
	• Describe the developmental basis for the physiological and biochemical mechanisms involved in the process of production of bile and pancreatic vsecretions	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
EMBRYOLOGY Development of small intestine	• Describe development of mid gut, midgut loop and rotation of midgut loop.	C2	LGIS	SAQ MCQ VIVA OSPE
	• Explain physiological umbilical hernia and return of mid gut to abdomen.	C2		
	• Describe fixation of intestines and transformations in peritoneal dispositions after mid gut loop return.	C2		
	• Describe congenital anomalies and clinical correlation of mid gut development.	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		

	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
EMBRYOLOGY Development of large intestine	• Enlist parts of large intestine.	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe partitioning of cloaca and cloacal membrane.	C2		
	• Describe development of anal canal.	C2		
	• Describe congenital anomalies of large intestine.	C3		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
Histology				
HISTOLOGY: Tongue	• Discuss surfaces of tongue with their histological features	C1	LGIS	SAQ MCQ VIVA OSPE
	• Describe different papillae of tongue with their location & features	C2		
	• Explain histological features of taste buds	C2		
	• Discuss leukoplakia and oral thrush	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
HISTOLOGY Salivary glands	• Enlist major salivary glands	C2	LGIS	SAQ MCQ VIVA OSPE
	• Explain histological structure of salivary glands	C2		
	• Discuss different cells forming parenchyma of salivary glands	C2		
	• Discuss histology of duct system	C2		
	• Differentiate between major salivary glands on histological basis	C2		
	• Discuss effects of viral infections on salivary glands	C3		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		

	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
HISTOLOGY General organization of GIT	• Describe the developmental basis of physiological and biochemical mechanisms involved in perception and transmission of taste sensation	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe the histological characteristics of each layer with functional significance	C2		
	• Discuss associated clinicals (megacolon, chagas disease)	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
HISTOLOGY Esophagus	• Describe the histological layers of esophagus.	C2	LGIS	SAQ MCQ VIVA OSPE
	• Compare between various portions of esophagus histologically.	C2		
	• Discuss GERD	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
HISTOLOGY Stomach	• Describe the histological layers of different parts of stomach	C2	LGIS	SAQ MCQ VIVA OSPE
	• Describe histological differences of different parts of the gastric glands	C2		
	• Describe the structure and function of different cells of gastric glands	C2		
	• Explain clinical conditions associated with stomach histologically	C2		
	• Discuss pernicious anemia	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		

	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
HISTOLOGY Liver	• Discuss in detail the histological organization of liver	C2	LGIS	SAQ MCQ VIVA OSPE
	• Explain the structure of liver lobule, portal triads& hepatic acinus and its functional importance	C2		
	• Discuss histological features of hepatocytes.	C2		
	• Explain Hepatic cords, central vein, portal triad, hepatic venules, hepatic arterioles, bile duct & liver sinusoids.	C2		
	• Discuss the blood supply of the liver.	C2		
	• Explain different cells of the liver tissue	C2		
	• Describe clinical aspects of liver on histological grounds	C2		
	• Discuss cirrhosis, fatty liver	C2		
	• Discuss jaundice	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
	• Correlate with the clinical conditions	C3		
HISTOLOGY Pancreas & Gall Bladder	• Differentiate between exocrine and endocrine pancreas.	C2	LGIS	SAQ MCQ VIVA OSPE
	• Discuss the cellular structure and function of exocrine pancreatic acinus and ducts.	C2		
	• Discuss acute & chronic pancreatitis and pancreatic cancer	C2		
	• Explain the histological features of the gallbladder.	C2		
	• Discuss cholelithiasis	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		

HISTOLOGY Small Intestine	• Differentiate the histological features of duodenum, jejunum and ileum	C2		
	• Discuss the location and function of villi, crypts of liberkuhn and	C2		
	• microvilli in different parts of small intestine	C2		
	• Discuss different cells lining the epithelium of small intestine	C2		
	• Discuss histological aspects of celiac disease and crohn disease	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
HISTOLOGY Large Intestine I (General Histological Features)	• Describe histological features of parts of large intestine.	C2		
	• Discuss cells lining the epithelium	C2		
	• Explain concept of tenaei coli.	C2		
	• Differentiate histological structure of the large intestine from the small intestine.	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		
	• Correlate with the clinical conditions	C3		
HISTOLOGY Large Intestine II (Histological Features of different parts)	• Describe histological features of appendix, caecum, rectum and anal canal			
	• Discuss clinical conditions (Colorectal cancer)			
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive heath care measures	C3		
	• To practice the principles of bioethetics	C3		
	• Apply strategic use of A.I in health care	C3		
	• Read relevant research articles	C3		
	• Use of HEC digital library	C3		

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tools
Introduction to GIT, Electrical activity in GIT Movements of GIT	• Explain the physiologic anatomy of GIT	C2	LGIS	SEQ MCQ VIVA
	• Summarize the functions of GIT	C1		
	• Explain the electrical activity of GIT smooth muscle	C2		
	• Describe the concept of slow waves and spike potentials	C1		
	• Explain resting membrane potential and factors affecting RMP	C2		
	• Explain role of calcium ions in muscle contraction	C2		
	• Describe tonic contraction in GIT smooth muscles	C1		
	• Enumerate different types of movements in GIT	C1		
	• Define propulsive movements	C1		
	• Define mixing movements	C1		
	• Describe sites of peristaltic movement in GIT	C1		
	• Describe stimulus, mechanism and direction of peristaltic movement	C1		
	• Discuss role of Myenteric plexus in peristaltic movement	C2		
	• Explain peristaltic reflex and Law of gut	C2		
	• Describe mechanism and function performed by mixing movements	C1		
Enteric nervous system and GIT reflexes	• Describe physiological anatomy of enteric nervous system	C1	LGIS	SEQ MCQ VIVA
	• Enlist functions of enteric nervous system	C1		
	• Compare and contrast Myenteric and Meissner‘s plexus	C2		
	• Enumerate neurotransmitters of enteric nervous system	C1		
	• Describe the autonomic regulation of enteric nervous system	C1		
	• Enumerate afferent sensory connections of enteric nervous system	C1		
	• Discuss the physiology of GIT reflexes	C2		
	• Explain GIT reflexes integrated at the level of gut wall, prevertebral sympathetic ganglia and spinal cord/brain stem	C2		
Control of GIT motility and factors affecting GIT blood flow	• Enumerate hormones of GIT	C2	LGIS	SEQ MCQ VIVA
	• Describe the hormonal control of GIT motility	C1		
	• Explain site of secretion, stimuli for secretion and actions of Gastrin, Cholecystokinin, Secretin, Gastric inhibitory peptide and Motilin	C2		
	• Discuss the factors affecting GIT blood flow	C2		

	• Recall anatomy of GIT blood supply	C1		
	• Explain splanchnic circulation and hepatic portal circulation	C2		
	• Describe the significance of blood flow to liver through portal vein	C1		
	• Describe special organization of blood flow through intestinal villus	C1		
	• Explain factors affecting gastrointestinal blood flow	C2		
	• Describe counter current blood flow in villi.	C1		
	• Explain nervous control of GIT blood supply	C2		
	• Discuss physiological importance of sympathetic vasoconstriction in GIT under special conditions	C2		
Swallowing1 and (Mastication and Saliva)	• Describe the secretion and composition of saliva and its physiologic roles	C1	LGIS	SEQ MCQ VIVA
	• Describe the nervous regulation of saliva	C1		
	• Describe mastication	C1		
	• Enumerate functions of mastication	C1		
	• Explain role of teeth and muscles of mastication	C2		
	• Describe the steps and nervous control center of chewing reflex	C1		
	• Introduce swallowing	C1		
	• Enumerate stages of swallowing (voluntary/involuntary)	C1		
	• Explain in detail each stage of swallowing ○ Voluntary stage Mechanism ○ Pharyngeal stage (reflex act) ▪ Stimulus, receptors, afferents, center, efferent, effectors, response ▪ Relate pharyngeal stage with process of respiration ▪ Esophageal stage	C2		
	• Primary peristalsis Secondary peristalsis (stimulus, afferent, center, efferent, response)	C2		
Swallowing -II	• Describe physiological anatomy and function of Lower esophageal sphincter	C1	LGIS	SEQ MCQ VIVA
	• Explain receptive relaxation of stomach with nervous pathway	C2		
	• Describe physiological anatomy and function of distal end of esophagus	C1		
	• Define Achalasia cardia	C1		

Clinical disorders of swallowing (Achalasia cardia, vomiting & nausea)	• Describe causes, effects and treatment of achalasia cardia	C1	LGIS	SEQ MCQ VIVA
	• Define vomiting	C1		
	• Describe stimuli & nervous pathway of vomiting	C1		
	• Discuss act of vomiting	C2		
	• Describe chemoreceptor trigger zone	C1		
	• Define nausea	C1		
	• Enlist causes of nausea	C2		
Regulation of Stomach emptying	• Discuss in detail gastric factors that promote emptying and duodenal factors that inhibit emptying	C2	LGIS	SEQ MCQ VIVA
	• Explain the role of enterogastric nervous reflexes and hormonal feedback	C2		
Motor functions of stomach	• Recall physiological anatomy of stomach	C1	LGIS	SEQ MCQ VIVA
	• Describe motor functions of stomach in detail 1. Storage 2. Mixing and propulsion of food chyme and Hunger contractions 3. Stomach emptying 4. Role of pyloric pump	C1		
	• Discuss role of pyloric sphincter	C2		
Gastric juice-I and Digestion in stomach Physiological barrier protecting development of peptic ulcer	• Describe the secretion of gastric juice. a. Describe the basic mechanism of HCl secretion. b. Describe the secretion and activation of pepsinogen c. Describe the secretion of intrinsic factor d. Describe the secretion of mucous and gastrin e. Describe the regulation of gastric acid and pepsinogen secretion	C1	LGIS	SEQ MCQ VIVA
	• Summarize the digestive process occurring in stomach	C1		
	• Discuss the role of gastric juice, hormones and enzymes acting in stomach	C2		
	• Discuss sites, causes and physiological factors preventing peptic ulcer	C2		
Liver & gall bladder, liver and biliary secretions	• Recall physiological anatomy of liver & portal circulation	C1	LGIS	SEQ MCQ VIVA
	• Describe in detail metabolic and non metabolic functions of liver	C1		
	• Explain the mechanism of secretion of bile.	C2		
	• Explain the functions of biliary tree.	C2		
	• Describe the composition of bile.	C1		

	• Explain the role of bile in fat digestion.	C2		
	• Explain the formation of gall stones.	C2		
LFTs and jaundice	• Enlist liver functions test	C1	LGIS	SEQ MCQ VIVA
	• Describe liver function tests	C1		
	• Discuss in detail pathophysiology of jaundice	C2		
Cirrhosis & portal hypertension	• Describe causes and effects of cirrhosis	C1	LGIS	SEQ MCQ VIVA
	• Describe causes and effects of portal hypertension	C1		
Physiology of pancreas Pancreatic secretions	• Discuss composition of pancreatic secretions	C2	LGIS	SEQ MCQ VIVA
	• Describe mechanism of secretion of bicarbonate ions	C1		
	• Describe the regulation and phases of pancreatic secretion.	C1		

Digestion and Absorption –I (digestion and absorption of carbohydrates and proteins)	• Enumerate dietary sources of carbohydrates	C1	LGIS	SEQ MCQ VIVA
	• Describe the structure of villi.	C1		
	• Enumerate the features of small intestine which increase its surface area	C1		
	• Explain in detail mechanism of absorption of fluids, ions & carbohydrates	C2		
	• Enumerate dietary sources of proteins.	C1		
	• Describe the role of hydrolysis in digestion of food.	C1		
	• Explain in detail the digestion of proteins with emphasis on enzymes at relevant steps.	C2		
	• Describe the sites of absorption	C1		
Digestion and absorption-II (digestion and absorption of lipids)	• Enumerate dietary sources of fats	C1	LGIS	SEQ MCQ VIVA
	• Explain in detail the digestion of lipids in relation to bile	C2		
Movements & functions of large intestine (motor functions of large gut and defecation)	• Recall functions of large intestine	C1	LGIS	SEQ MCQ VIVA
	• Discuss in detail mixing and propulsive movements	C2		
	• Explain the role of Gastrocolic & Duodenocolic reflex in	C2		
	• large intestine motility	C2		
	• Enumerate causes of empty rectum	C1		
	• Explain defecation reflex, its importance and nervous control	C2		

Flatus & constipation	• Discuss composition of feces	C2		
	• Enlist causes of flatus	C1		
	• Discuss causes and effects of constipation	C2		
Hormones of GIT	• Explain the general principles of alimentary tract secretion	C2	LGIS	SEQ MCQ VIVA
	• Enlist the stimuli for alimentary tract secretion	C1		
	• Describe the basic mechanism of secretion by glandular cells	C1		
	• Elaborate the role of autonomic stimulation on glandular secretion	C2		
Small intestine motility, Diarrhea, malabsorption & sprue, ulcerative colitis and paralytic ilius	• Enlist types of movements of small intestine	C1	LGIS	SEQ MCQ VIVA
	• Discuss in detail mixing contractions and propulsive movements	C2		
	• Describe peristaltic rush	C1		
	• Explain functions of ileocecal valve and feedback control of ileocecal sphincter	C2		
	• Discuss causes, types and effects of diarrhea, malabsorption and sprue	C2		
	• Discuss causes and effects of Ulcerative colitis & paralytic ilius	C2		

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to Carbohydrate metabolism	• Understand metabolic pathways • Discuss glucose entry into the cells	C2 C2	LGIS	MCQs, SAQs Viva
Glycolysis and Fates of Pyruvate	• Explain types, reactions and regulation of Glycolysis • Describe fates of Pyruvate • Explain related clinical disorders	C2 C2 C3	LGIS	MCQs, SAQs Viva
Gluconeogenesis	• Discuss substrates, reactions and regulation of Gluconeogenesis	C2	LGIS	MCQs, SAQs Viva
Glycogen metabolism	• Explain the steps and regulation of glycogenesis and glycogenolysis	C2	LGIS	MCQs, SAQs Viva

Metabolism of Individual Sugars	Describe the metabolism of individual sugars Explain related clinical disorders	C2 C3	LGIS	MCQs, SAQs Viva
HMP Shunt and G6PD deficiency	Explain the pathway of HMP shunt Discuss uses of NADPH Describe G6PD deficiency	C2 C2 C3	LGIS	MCQs, SAQs Viva
GIT Digestive juices and Hormones	Describe the composition and role of digestive juices Explain role of gastrointestinal hormones Understand related clinical disorders	C2 C2 C3	LGIS	MCQs, SAQs Viva
Nutrition	Understand BMI and BMR Explain the role of different dietary constituents Understand related clinical disorders	C2 C2 C3	LGIS	MCQs, SAQs Viva
LFTs and Jaundice	Discuss Liver function tests and Jaundice	C3	LGIS	MCQs, SAQs Viva
Digestion and Absorption	Explain the digestion and absorption of carbohydrates, lipids and proteins Discuss the role of different digestive enzymes Describe related clinical disorders	C2 C2 C3	LGIS	MCQs, SAQs Viva

Anatomy Small Group Discussion (SGDs)

Topic	Learning Objectives Students Should Be Able To	C/P/A	Teaching Strategy	Assessment Tool
Topographical organization of Gastrointestinal tract	• Enlist components of gastrointestinal tract	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Mark the planes dividing the abdomen into nine quadrants	P		
	• Enumerate the parts of GIT lying in the various quadrants • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C1 C3 C3 C3 C3 C3 C3		
Oral Cavity, tongue and salivary glands,	• Define the boundaries of oral cavity	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Tabulate the Extrinsic and Intrinsic muscles of the tongue, anatomical location and clinical importance of tongue	C2		
	• Brief Introduction of salivary glands with their anatomical location • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C1 C3 C3 C3 C3 C3 C3		
Anterolateral abdominal wall	• Explain the layers of abdominal wall.	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Explain the fascia and muscles of abdominal wall.	C2		
	• Describe nerve supply of anterior and lateral abdominal wall.	C2		
	• Explain the segmental sympathetic supplies	C2		
	• Abdominal Hernias • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles	C1 C3 C3 C3 C3 C3		

	• Use of HEC digital library	C3		
Rectus sheath,	• Describe Formation of rectus sheath	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enlist contents of rectus sheath	C2		
	• Discuss associated clinical anatomy • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3 C3		
Inguinal Region & Inguinal Hernias	• Describe Walls of Inguinal Canal	C2		
	• Explain Deep & Superficial Inguinal Ring	C2		
	• Enumerate Structures passing through the inguinal canal	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Enlist Coverings of spermatic cord	C1		
	• Explain Mechanics of the inguinal Canal	C2		
	• Describe boundaries of Hassalbachs triangle	C2		
	• Define hernia	C1		
	• Differentiate indirect from direct inguinal hernia • Map outline of inguinal canal on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 P+A C3 C3 C3 C3 C3 C3		
Testes, scrotum	• Define Anatomy of Testes and Scrotum	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Differentiate between Protective Coverings of Testes & scrotum	C2		
	• Enumerate Nerve & blood supply of these Structures	C1		
	• Discuss the parts of epididymis	C2		
	• Discuss Spermatocoele, Varicocoele, Hematocoele, hydrocoele, Testicular torsion • Correlate with the clinical conditions • Understand curative and preventive heath care measures.	C2 C3 C3		

	• Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 C3 C3 C3 C3		
Peritoneum & Peritoneal Cavity	• Define peritoneum	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Explain the different folds of peritoneum.	C2		
	• Describe greater and lesser sacs	C2		
	• Enlist the intra and retroperitoneal viscera	C1		
	• Discuss vertical tracings of peritoneum • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3		
Subdivisons of Peritoneal Cavity	• Describe arrangement of peritoneum in transverse & Longitudinal section of abdomen	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Describe arrangement of peritoneum in transverse section of male pelvis	C2		
	• Explain arrangement of peritoneum in transverse section of female pelvis	C2		
	• Explain the layers, folds, recesses and compartments of peritoneum with their clinical importance	C2		
	• Describe peritonitis	C2		
	• Enumerate the signs and symptoms of peritonitis	C3		
	• Treat peritonitis by antibiotics and peritoneal dialysis • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 C3 C3 C3 C3 C3 C3		
Esophagus	• Discuss gross features of abdominal part of esophagus	C2		

	• Enumerate their peritoneal & visceral relations.	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Explain blood supply, lymphatic drainage & nerve supply of esophagus	C2		
	• Discuss Esophageal varices • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3		
Stomach	• Explain gross features of stomach.	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Discuss blood supply, lymphatic drainage & nerve supply of stomach	C2		
	• Explain peritoneal & visceral relations of stomach	C2		
	• Discuss greater and lesser omentum	C2		
	• Describe formation and boundaries of epiploic foramen • Map outline of stomach on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3		
Small Intestine (Duodenum)	• Describe the different parts ofduodenum with their anatomical differences	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enumerate the relations of different parts of duodenum	C1		
	• Discuss its clinical importance • Map outline of duodenum on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3		

Small Intestine (Jejunum and Ileum)	• Describe jejunum and ileum with their anatomical features	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Discuss mesentery and its attachment	C2		
	• Discuss its clinical importance • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3		
Large Intestine & Appendix	• Enlist various parts of large intestine	C1	Skill lab	SAQ MCQ VIVA OSPE
	• Demonstrate gross anatomical features of different parts of large intestine	C2		
	• Enlist intra and retroperitoneal parts of large intestine	C1		
	• Discuss gross features of caecum	C2		
	• Describe gross anatomy of appendix	C2		
	• Enlist different anatomical positions of vermiform appendix.	C1		
	• Mark McBurney's point	P		
	• Demonstrate McBurney's incision	P		
	• Discuss common features, differential diagnosis of acute appendicitis and appendicectomy • Map outline of Transverse and descending colon on simulatrs patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use HEC digital library	C3 P+A C3 C3 C3 C3 C3 C3		
Liver, Portal	• Describe the anatomical structure of liver.	C2	Skill lab	SAQ MCQ VIVA
	• Describe the lobes, surfaces and segments of liver	C2		
	• Describe peritoneal reflections, ligaments and bare area of liver.	C2		
	• Enumerate visceral relations of liver.	C1		
	• Enlist the structures in porta hepatis.	C1		

hypertension, Portosystemic Anastomosis	• Discuss Sub hepatic abscess & Live Biopsy	C2		OSPE
	• Discuss formation, course and parts of portal vein	C2		
	• Enumerate relations and tributaries of portal vein	C1		
	• Define portal hypertension	C1		
	• Describe sites of the portocaval anastomosis and their clinical significance	C2		
	• Explain role of portocaval shunts • Map outline of liver on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3 C3		
Gallbladder and Biliary apparatus	• Describe location & size of gall bladder	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enumerate relations of gallbladder.	C1		
	• Describe clinical conditions related to gallbladder	C2		
	• Enlist different components of Extra-hepatic biliary System	C1		
	• Discuss the right & left hepatic ducts, common hepatic duct, cystic ducts, bile duct	C2		
	• Explain differences between Intra & Extra Hepatic Biliary Systems.	C2		
	• Discuss clinicals related with biliary apparatus	C2		
	• Discuss accessory hepatic ducts • Map outline of gallbladder & Bile duct on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use HEC digital library	C2 P+A C3 C3 C3 C3 C3		

Spleen	• Discuss anatomical location and features of spleen with its blood supply, and lymphatic drainage	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Explain Rupture of spleen & its effects • Map outline of spleen on simulated patient /model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3 C3		
Pancreas	• Recall location, shape, dimensions and extent of pancreas	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Discuss parts, ducts and relations of pancreas	C2		
	• Describe arterial supply of pancreas	C2		
	• Explain applied aspects of pancreas • Map outline of pancrease on simulated patient/ model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3 C3		
Vasculature of GIT	• Describe the position and the vertebral levels of aorta in the abdomen.	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enlist the main branches of the aorta and its territories.	C1		
	• Explain the applied anatomy of the aorta	C1		
	• Explain origin, course, branches and distribution of celiac trunk • Map outline of abdominal aorta, coeliac trunk, superior &inferior mesenteric artery on simulated patient/ model • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 P+A C3 C3 C3 C3 C3 C3 C3		

Nerve supply and Lymphatic drainage of GIT	• Discus enteric nervous system with formation of plexuses and its parasympathetic role	C2	Skill lab	SAQ MCQ VIVA OSPE
	• Enlist the types of lymph nodes draining the abdomen	C1		
	• Describe lymphatic drainage of GIT with special reference to lymphatic trunks, cisterna chyli & the thoracic duct • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C2 C3 C3 C3 C3 C3 C3		
Cross Sectional Anatomy	• Identify different visceras located at different levels of vertebral coloumn; T10,T11,T12,L1,L2 • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C1 C3 C3 C3 C3 C3 C3	Skill lab	SAQ MCQ VIVA OSPE
Rectum	• Discuss the location and extent of rectum	C2	Skill lab	SCQ MCQ VIVA OSPE
	• Describe the internal and external features of rectum	C2		
	• Discuss peritoneal reflections rectouterine, rectovesical fossae and their clinical significance	C2		
	• Enumerate relations of rectum	C1		
	• Discuss blood supply, nerve supply, venous and lymphatic drainage	C1		
	• Describe the basis and features of rectal prolapsed • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 C3 C3 C3 C3 C3 C3		
Anal canal	• Discuss location and extent of anal canal	C2	Skill lab	SAQ

	• Describe external and internal features of Anal Canal	C2		MCQ VIVA OSPE
	• Discuss features of anal sphincters	C2		
	• Tabulate relations of the anal canal with the surrounding structures	C2		
	• Describe the Blood supply, venous and lymphatic drainage & innervations of anal canal	C2		
	• Discuss anal continence	C2		
	• Differentiate between internal and external haemorrhoids • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethetics • Apply strategic use of A.I in health care • Read relevant research articles • Use of HEC digital library	C3 C3 C3 C3 C3 C3 C3		
Radiological Anatomy	• Identify structures on a normal X-ray abdomen • Appreciate Air fluid shadows. • Mark anatomical landmarks. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C3 C3 C3 C3 C3 C3	Skill lab	OSPE

Physiology Small Group Discussion (SGDs)

Topic	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tools
Introduction to GIT	• Enlist general four functions performed by GIT	C1	SGD	SEQ MCQ VIVA
	• Recall physiological anatomy and blood flow through GIT	C1		
	• Briefly discuss electrical activity of GIT smooth muscle	C1		
	• Discuss in detail the three stages of swallowing	C2		SEQ

Swallowing	• Briefly discuss physiological anatomy of lower esophageal sphincter and distal end of esophagus and state their functional importance	C2	SGD	MCQ VIVA
Functions of stomach	• Recall physiological anatomy of stomach	C1	SGD	SEQ MCQ VIVA
	• Describe motor functions of stomach including storage, mixing, propulsion and stomach emptying.	C1		
	• Discuss in detail gastric factors that promote emptying	C2		
	• Explain the role of enterogastric nervous reflexes and hormonal feedback.	C2		
Liver functions	• Recall physiological anatomy of liver	C1	SGD	SEQ MCQ VIVA
	• Discuss formation and storage of bile	C2		
	• Enlist and describe all functions performed by liver	C1		
Digestion and absorption	• Describe in detail the process of digestion of carbohydrates, proteins and fats with special emphasis on enzymes involved at each step	C1	SGD	SEQ MCQ VIVA
	• Discuss special features of small and large intestine to promote absorptive process and mechanism of absorption in detail	C2		
Large intestine	• Recall movements and functions of large intestine	C1	SGD	SEQ MCQ VIVA
	• Enumerate causes of empty rectum	C1		
	• Explain defecation reflex, its importance and nervous control	C2		
	• Explain GIT reflexes integrated at the level of gut wall, prevertebral sympathetic ganglia and spinal cord/brain stem.	C2		

Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Saliva	• Explain formation, composition & biochemical functions	C2	SGD	MCQs SAQs Viva
Gluconeogenesis & its regulation	• Discuss substrates, reactions and regulation of Gluconeogenesis	C2	SGD	MCQs SAQs Viva
LFT's Jaundice	• Discuss Liver function tests and Jaundice	C3	SGD	MCQs SAQs Viva

Anatomy Self Directed Learning (SDL)

Topics of SDL	Learning Objectives Students Should Be Able To	Learning Resources
Antero lateral abdominal wall,	• Explain the layers of abdominal wall. • Explain the fascia and muscles of abdominal wall. • Describe nerve supply of anterior and lateral abdominal wall. • Explain the segmental sympathetic supplies	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 183,184-216). ❖ https://3d4medical.com/
Rectus sheath	• Describe Formation of rectus sheath • Enlist contents of rectus sheath	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 188-201). ❖ https://teachmeanatomy.info/
Inguinal region & Hernias	• Describe Walls & detailed anatomy of Inguinal Canal • Explain Deep & Superficial Inguinal Ring • Associated Clinicals	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 197, 202-203, 212-213). ❖ https://3d4medical.com/
Peritoneum & Peritoneal Cavity.	• Define peritoneum • Explain the different folds of peritoneum. • Describe greater and lesser sacs • Enlist the intra and retroperitoneal viscera • Discuss vertical tracings of peritoneum • Describe arrangement of peritoneum in transverse & Longitudinal section of abdomen • Describe arrangement of peritoneum in transverse section of male pelvis • Explain arrangement of peritoneum in transverse section of female pelvis • Explain the layers, folds, recesses and compartments of peritoneum with their clinical importance • Describe peritonitis • Enumerate the signs and symptoms of peritonitis • Treat peritonitis by antibiotics and peritoneal dialysis	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 219-221,). ❖ https://teachmeanatomy.info/
	• Describe the different parts of duodenum with their anatomical differences	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 239, 241,

Small Intestine	• Enumerate the relations of different parts of duodenum • Discuss its clinical importance • Anatomy of Jejunum & Ileum	244, 245, 325, 436). ❖ https://www.kenhub.com/en/library/anatomy/the-digestive-system
Large Intestine	• Enlist various parts of large intestine	
	• Demonstrate gross anatomical features of different parts of large intestine • Enlist intra and retroperitoneal parts of large intestine	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 227,246,248, 325). ❖ https://www.kenhub.com/en/library/anatomy/the-digestive-system
Liver and pancreas	• Describe formation of hepatic diverticulum • Describe histogenesis of liver during intrauterine life • Describe formation of various ligaments of liver. • Discuss congenital abnormalities of liver • Differentiate between exocrine and endocrine pancreas. • Discuss the cellular structure and function of exocrine pancreatic acinus and ducts.	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 267-268, 272-278, 282,323, 395). ❖ https://www.kenhub.com/en/library/anatomy/the-digestive-system
Vasculature of GIT (Blood Supply, Venous drainage, Lymphatic drainage)	• Explain the applied anatomy of the aorta • Explain origin, course, branches and distribution of celiac trunk • Discuss formation, course and parts of portal vein • Enumerate relations and tributaries of portal vein • Define portal hypertension • Discuss Major Lymphatic Channels	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 228-233, 249-250, 263-285). ❖ http://www.anatomyzone.com 3D **anatomy**
Rectum & Anal Canal	• Discuss the location and extent of rectum • Describe the internal and external features of rectum • Discuss peritoneal reflections rectouterine, rectovesical fossae and their clinical significance • Enumerate relations of rectum • Discuss blood supply, nerve supply, venous and lymphatic drainage • Describe the basis and features of rectal prolapsed • Discuss location and extent of anal canal • Describe external and internal features of Anal Canal • Discuss features of anal sphincters	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 239, 248,253 368-371,436,438). ❖ http://www.anatomyzone.com 3D **anatomy**

	• Tabulate relations of the anal canal with the surrounding structures	
	• Describe the Blood supply, venous and lymphatic drainage & innervations of anal canal	
	• Discuss anal continence	
	• Differentiate between internal and external hemorrhoids	
Innervation of Abdominal Viscera's	• Discuss cutaneous & Somatic innervation of GIT	❖ Clinical Oriented Anatomy by Keith L. Moore.7TH Edition. (Chapter 2, Page 301-305).
	• Describe Autonomic innervation of GIT	❖ http://www.anatomyzone.com 3D **anatomy**

Physiology Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives Students Should Be Able To	Learning Resources
Introduction to GIT, electrical activity in GIT, Enteric Nervous System and GIT reflexes	• Introduction • Role of GIT in control system • Concept of Enteric nervous system • GIT reflexes and its clinical correlation	❖ Ganong's Review of Medical Physiology.25TH Edition. Overview of gastrointestinal function andregulation (Chapter 25, Page 453,467,472). ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21Page 691,700) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page 339) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 43, Page 681) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology. Section 12. (Chapter 63, Page 787)
Gastric secretion, digestion in stomach, peptic ulcer and gastritis	• Gastric secretion and role in digestion • Peptic ulcer disease • Type of gastritis and clinical importanceof gastritis • Investigations to diagnose gastritis	❖ Ganong's Review of Medical Physiology. Overview of gastrointestinal function and regulation(Chapter 25, Page 455). ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page356,360) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 44, Page 706) (Chapter 45, Page 720,726) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology. Section 12. (Chapter 65, Page 809,811)

Small intestine motility and malabsorption (sprue, paralytic ileusand Crohn's disease)	❖ Factors affecting motility of smallintestine ❖ Concept of absorption of nutrients ❖ Importance of history in diagnosis ofvarious malabsorption diseases ❖ Inflammatory bowel disease	❖ Ganong's Review of Medical Physiology.25TH Edition, Gastrointestinal motility. (Chapter 27,Page 495) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21,Page 697) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page 348) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 44,Page 690,710) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 64, Page 797,802)
Intestinal secretion and its functions, pancreatic juice, its composition and functions	• Intestinal secretions and action • Anatomy of pancreas and its blood supply • Composition of pancreatic juice and itsrole in absorption • Function of pancreas	❖ Ganong's Review of Medical Physiology.25TH Edition.Overview of gastrointestinal function andregulation (Chapter 25,Page 460). ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21,Page 709) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page366,371) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 45,Page 738,739) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 65,Page 814,820)
Pancreatitis, overall mechanism of digestion and absorption of intestine (amino acids, fatty acids and glucose)	• Pancreatitis • Conclusion of digestion and absorption ofnutrients. • Clinical correlation with pancreaticenzymes. • Hormones secreted by pancreas	❖ Ganong's Review of Medical Physiology.25TH Edition. Digestion, Absorption and NutritionalPrinciples. (Chapter 2, Page 475) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21,Page 703-710,715) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page 374) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 47,Page 770)(Chapter 48,Page 785) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 66, Page 823)

Motor function of large gut,defecation reflex	• Motor function of large gut • Inflammatory bowel disease • Defecation reflex • Concept of Hemorrhoids	❖ Ganong's Review of Medical Physiology.25TH Edition, Gastrointestinal motility. (Chapter 27,Page 495) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Digestive System (Chapter 21,Page 720) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 6.Gastrointestinal System. (Chapter 44,Page 713) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 64,Page 804)
Pathophysiology (vomiting, diarrhea, constipation, ulcerative colitis, megacolon and carcinoma of colon)	• Symptomsrelated to GIT • Clinical role of various symptoms • Overview of Carcinoma of stomach, smalland large intestine	❖ Ganong's Review of Medical Physiology.25TH Edition, Gastrointestinal motility. (Chapter 27,Page495) ❖ Physiology by Linda S. Costanzo 6th Edition. Gastrointestinal Physiology (Chapter 8. Page 385) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Gastrointestinal Physiology.Section 12. (Chapter 67, Page 833)

Biochemistry Self Directed Learning (SDL)

Topics of SDL	Learning Objectives Students Should Be Able To	References
Carbohydrate Metabolism & Glycolysis	• Understand stages of metabolism • Explain transport of glucose across cell memebrane • Describe steps of glycolysis • Discuss regulation of committed steps • Explain energy calculation in anaerobic and aerobic conditions • Understand pyruvate kinase deficiency	❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#8, Page 100.
TCA Cycle & Gluconeogenesis	• Describe steps of TCA cycle • Discuss substrates, steps and regulation of gluconeogenesis	❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#9, Page 120. ❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#10, Page 128.
Glycogen metabolism	• Explain synthesis and breakdown of glycogen • Discuss glycogen storage diseases	❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#11, Page 137.
Individual Sugars	• Descibe the metabolism of individual sugar • Explain related clinal disorder	❖ Essentials of Medical Biochemistry Book by Mushtaq Ahmed Edition 9th Volume#1, Chapter#7, Page 186

	•	❖ Reference Book: Lippincott's Illustrated reviews of Biochemistry 8th Edition Chapter#19, Page 276, 77.
Digestion of Lipids by Pancreatic Enzymes	• Explain the digestion and absorption of lipids • Discuss the role of pancreatic enzymes in lipid digestion	❖

Histology Practicals Skill Laboratory (SKL)

Topic	At the end of practical students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Tongue & salivary glands	• Identify slidesof tongue & glands under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of tongue & salivary glands	C2		
	• Write two points of identification	C1		
Esophagus	• Identify slide of Esophagus under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of Esophagus	C2		
	• Write two points of identification	C1		
Stomach	• Identify slide of Stomach under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of Stomach	C2		
	• Write two points of identification	C1		
	• Differentiate mucosa of cardiac, fundus, body and pyloric end of stomach	C2		
Liver, Gall bladder & Pancreas	• Identify slides of Liver, Gall bladder &Pancreas under microscope	P	Skill labs	OSPE
	• Illustrate histological structures of Liver, Gallbladder & Pancreas	C2		
	• Write two points of identification	C1		
Small Intestine	• Identify slide of small intestine under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of small intestine	C2		
	• Write two points of identification	C1		
Large Intestine	• Identify slide of Large Intestine under microscope	P	Skill lab	OSPE
	• Illustrate histological structure of large intestine	C2		
	• Write two points of identification	C1		

Physiology Practicals Skill Laboratory (SKL)

Topic	At the end of this skill lab, student should be able to illustrate:	Learning Domain	Teaching Strategy	Assessment Tool
Sense of taste	• Apparatus identification	P	Skill lab	OSPE
	• Principle	C1		
	• Procedure	P		
	• Precautions	C1		
	• Recall taste modalities, taste pathway & abnormalities of taste	C1		
Examination of sense of smell	• Apparatus identification	P	Skill lab	OSPE
	• Principle	C1		
	• Procedure	P		
	• Precautions	C1		
	• Recall Olfactory pathways and abnormalities of olfaction	C1		
Examination of superficial reflexes	• Apparatus identification	C1	Skill lab	OSPE
	• Principle	C1		
	• Procedure	A,P		
	• Precautions	P		
	• Recall reflex arc	C1		
	• Recall effects of UMNL & LMNL on reflexes	C1		
Examination of deep reflexes	• Apparatus identification	C1	Skill lab	OSPE
	• Principle	C1		
	• Procedure	A,P		
	• Precautions	P		
	• Recall reflex arc	C1		
	• Recall effects of UMNL & LMNL on reflexes	C1		

Biochemistry Practicals Skill Laboratory (SKL)

Topic	At the End of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Saliva-I	• Understand Normal constituents of saliva Discuss effects of saliva on digestion of starch	P	Skill Lab	OSPE
Silva-II	• Discus the role of silva in digestion of carbohydrates	P	Skill Lab	OSPE
Bile	• Descirbe the composition and role of bile in disgestion • Understand related disorder	P	Skill Lab	OSPE
Estimation of ALT & ALP	• Perform estimation of ALT • Perform estimation of ALP	P	Skill Lab	OSPE
Analysis of Food Component (Wheat)	• Perform to analyse the different constituents of wheat •	P	Skill Lab	OSPE

SECTION - III

Orientation Sessions of Medical Education

Content

- Orientation Session on Curricular Reform RMU & Feedback of Year 2023
- Student Session on Standardization of Teaching Strategies

Department of Medical Education

Topic	Learning Objectives At the end of the lecture the student should be able to	Teaching Strategy	Assessment Tool
Orientation of Integrated Modular system, Intoduction to study guides and RMU Policies	• Understand the concept of integration • Understand the orientation of integrated modular curriculum of RMU • How to use Study Guides • Introduction to different policies of RMU	LGIS	MCQs
Standardization of Teaching Strategies	• Discuss Standardization of Different Teaching Strategies used in Integrated Model of RMU.	LGIS	MCQs

SECTION - IV

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**

Basic and Clinical Sciences (Vertical Integration)

Case Based Learning (CBL)

Subject	Topic	At the End Of Lecture Students Should Be Able To	Learning Domain
Anatomy	• Acute Appendicitis	Apply basic knowledge of subject to study clinical case.	C3
	• Liver Cirrhosis	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Peptic Ulcer	Apply basic knowledge of subject to study clinical case.	C3
	• Food Poisoning	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Glucose 6 Phosphate Dehydrogenase Deficiency	Apply basic knowledge of subject to study clinical case.	C3
	• Lactose Intolerance	Apply basic knowledge of subject to study clinical case.	C3

Large Group Interactive Sessions (LGIS)

Community Medicine

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Concept of Health and Disease	By the end of the session students will be able to; • Define Health	C1	LGIS	MCQs
	• Identify different phases of Health	C1		
	• Elaborate concepts of Health	C2		
	• Acknowledge Dimensions of Health	C2		
	• Elucidate Dimensions of health	C2		
	• Appreciate Determinants of Health	C2		
	• Describe the types of determinants	C2		
Infectious Disease Epidemiology				
Definitions	• Define important terms related to infectious disease epidemiology.	C1	LGIS	MCQs
Epidemic, endemic and	• Differentiate between epidemic, endemic and pandemic	C2		

pandemic				
Dynamics of disease transmission	• Describe the dynamics of transmission of disease	C2		
Incubation period	• Explain the concept of incubation period and its importance.	C2		

Medicine

Topic	At the end of the lecture, students should be able to	Learning Domain	Learning Strategy	Assessment Tools
Dysphagia	• Define and discuss pathophysiology	C1	LGIS	MCQs
	• Discuss the causes	C2		
	• Describe clinical features	C2		
	• Describe the management	C2		
Peptic ulcer	• Describe Mechanism of digestion in stomach	C1	LGIS	MCQs
	• Describe Mechanism of APD and GERD	C2		
	• Discuss Peptic ulcer formation	C2		
	• Enlist Clinical features	C2		
	• Enlist Investigations	C1		
	• Describe management	C2		
Jaundice	• Enlist types of Jaundice	C1	LGIS	MCQs
	• Discuss changes in Liver	C2		
	• Describe clinical features	C2		
	• Enlist investigations	C1		
	• Discuss management	C2		
Inflammatory bowel disease	• Describe features of IBD	C2	LGIS	MCQs
	• Classify IBD	C2		
	• Describe pathogenesis of IBD	C2		
	• Describe histological diagnosis of IBD	C1		
	• Enlist complication of IBD	C1		

List of GIT Module Basic and Clinical Sciences Vertical Integration Lectures

Sr. #	Date/Day	Week	Time	Department	Topic of Lectures	Teacher's Name & Contact #
1.	29-02-2024 Thursday	1st Week	09:20am-10:10am	Community Medicine	Concept of health & disease (Even)	Dr. Rizwana Shahid 0320-5511684
					Epidemiology of infectious diseases & Basic Concepts (Odd)	Dr. Afifa kalsoom 0333-5506597
2.	01-03-2024 Friday	1st Week	10:00am-11:00am	Quran Translation	Imaniat I (Even)	Mufti Naeem Sherazi 03005580299
					Ibadat I (Odd)	Dr Fahd 03005156800
3.	01-03-2024 Friday	1st Week	11:00am-12:00pm	Community Medicine	Epidemiology of infectious diseases & Basic Concepts (Odd)	Dr. Afifa kalsoom 0333-5506597
					Concept of health & disease (Even)	Dr. Rizwana Shahid 0320-5511684
4.	02-03-2024 Saturday	1st Week	9:20am – 10:10am	Behavioral Sciences	Eating Disorders	Dr. Sadia Yasir (Even)
						Dr. Zona Tahir (Odd)
5.	04-03-2024 Monday	2nd Week	11:20am-12:10pm	Bioethics & Research	Pakistan Medical & dental council Code of Ethics (even)	Dr. Sidra Hamid 0331-5025147
					Introduction to Descriptive Statistics (Odd)	Dr. Rizwana Shahid 0320-5511684
6.	08-03-2024 Friday	2nd Week	08:00am-09:00am	Medicine	Peptic ulcer (Even)	Dr Javeria Khan 03345444083
					Peptic ulcer (Odd)	Dr Anum Abbas 03455057646
7.	08-03-2024 Friday	2nd Week	10:00am-11:00am	Quran Translation-II	Ibadat-II (Even)	Dr Fahd 03005156800
					Imaniyat -II (Odd)	Mufti Naeem Sherazi 03005580299
8.	08-03-2024 Friday	2nd Week	11:00am 12:00pm	Quran Translation-II	Ibadat-II (Even)	Mufti Naeem Sherazi 03005580299
					Imaniyat -II (Odd)	Dr Fahd 03005156800
9.	09-03-2024 Saturday	2nd Week	9:20am – 10:10am	Radiology & Artificial Intelligence	Medical Imaging of abdomen-I	Dr. Quratul Ain (Even) Dr. Aneeqa Saleem (Odd)
10.	12-03-2024 Tuesday	3rd Week	11:10am-11:50am	Research -I & Bioethics	Introduction to descriptive statistics (Even)	Dr. Rizwana Shahid 0320-5511684
					Pakistan Medical & dental council Code of Ethics (Odd)	Dr. Sidra Hamid
11.	13-03-2024 Wednesday	3rd Week	09:20am-10:10am	Research-II LGIS	Classification of different types of data	Dr. Rizwana Shahid 0320-5511684 Dr.

12.	14-03-2024 Thursday	3rd Week	09:20am-10:10am	Medicine	State of the Art Lecture Jaundice	Worthy Vice Chancellor Prof. Dr. Muhammad Umar
13.	14-03-2024 Thursday	3rd Week	11:10am-11:50am	Family Medicine	Common Abdominal diseases	Dr. Sadia
						Dr. Ishtiaq
14.	15-03-2024 Friday	3rd Week	10:00am 11:00am	Quran Translation-III	Ibadaat-3	Dr Fahd 03005156800 (Even)
					Imaniat-3	Mufti Naeem Sherazi 03005580299 (Odd)
15.	15-03-2024 Friday	3rd Week	11:00am 12:00pm	Quran Translation-III	Imaniat-3	Mufti Naeem Sherazi 03005580299 (Even)
					Ibadaat-3	Dr Fahd 03005156800 (Odd)
16.	16-03-2024 Saturday	3rd Week	11:10am-11:50am	Pak Studies/Islamiyat	Tehreek-E-Pakistan Islaahi Tehreekain	Qari Aman Ullah 03467598528
					Akhirat-I	Mufti Naeem Sherazi 03005580299
17.	19-03-2024 Tuesday	4th Week	10:30am-11:10am	Research-III	Scales of Data Measurement	Dr. Rizwana Shahid 0320-5511684
						Dr. Afifa kalsoom 0333-5506597
						Dr. Ishtiaq
18.	21-03-2024 Thursday	4th Week	11:10am-12:00pm	Research-IV	Research IV: Measures of central Tendency	Dr. Rizwana Shahid 0320-5511684
						Dr. Afifa kalsoom 0333-5506597
19.	22-03-2024 Friday	4th Week	08:00am-09:00am	Pak Studies/Islamiyat-I	Toheed	Mufti Naeem Sherazi 03005580299
					Qayam e Pakistan, Aghraaz o Maqasid	Qari Aman Ullah 03467598528
20.	22-03-2024 Friday	4th Week	09:00am-10:00am	Pak Studies/Islamiyat-I	Qayam e Pakistan, Aghraaz o Maqasid	Qari Aman Ullah 03467598528
					Toheed	Mufti Naeem Sherazi 03005580299
21.	22-03-2024 Friday	4th Week	10:00am-11:00am	Entrepreneurship	Ideate Initial Idea	Dr. Asif Maqsood & Dr. Sidra Hamid
22.	23-03-2024 Saturday	4th Week	11:50am – 01:00pm	Pak Studies/Islamiyat	Tehreek-e-Aligarh, Sir Syed Ahmad Khan	Qari Aman Ullah (Even)
					Akhirat -II	Mufti Naeem Sherazi (Odd)
23.	27-03-2024 Wednesday	5th Week	10:30am-11:10am	Research-V	Compute and Interpret measures of central tendency	Dr. Rizwana Shahid 0320-5511684 Dr. Afifa kalsoom 0333-5506597
24.	28-03-2024 Thursday	5th Week	10:30am-11:10am	Research-VI	Measures of dispersion/Secondary Data Analysis	Dr. Rizwana Shahid 0320-5511684 Dr. Afifa kalsoom 0333-5506597

25.	29-03-2024 Friday	5th Week	11:10am-11:50am	Radiology & Artificial Intelligence	Medical Imaging of abdomen-II	Dr. Sana Yaqoob (Even) \ 0342-2064666 Dr. Saba Bint e Kashmir (Odd)

SECTION - V

Spiral Courses

Content

- **Longitudinal Themes**
  - **The Holy Quran Translation**
  - **Biomedical Ethics & Professionlism**
  - **Behavioural Sciences**
  - **Family Medicine**
  - **Artificial Intelligence (Innovation)**
  - **Integrated Undergraduate Research Curriculum (IUGRC)**
  - **Enterpeneurship**
  - **Digital Literacy Module**
  - **Early Clinical Exposure (ECE)**

Introduction to Spiral Courses

The Holy Quran Translation

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

Bioethics

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

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

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

Professionalism

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

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

Communication Skills

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

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

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

Behavioral Sceinces

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

Family Medicine

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

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

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

Artificial Intelligence

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

Integrated Undergraduate Research Curriculum

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

Entrepreneurship

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

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

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

Digital Literacy Module

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

Early Clinical Exposure (ECE)

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

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

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

The Holy Quran Translation lecture

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Imaniyat (Faith)	• Introduction of concept of Imaniyat • Corelate the concept of faith in different situation of life	C2	LGIS	SAQ
Tauheed (Oneness of God)	• Introduction of Quranic Concept of Tauheed • Corelate the concept of tauheed in different situation of life	C2	LGIS	SAQ
Ibadaat (Worship)	• Introduction of concept of Ibadaat • Study of Verses Related to Hajj • Impact of Hajj on a Muslim's Life	C2	LGIS	SAQ
Amr bil Ma'ruf and Nahi anil Munkar (Enjoining Good and Forbidding Evil)	• Introduction of concept of Amr bil Ma'ruf and Nahi anil Munkar • Study of Verses Related to Amr bil Ma'ruf and Nahi anil Munkar • Importance of Amr bil Ma'ruf and Nahi anil Munkar in the life of medical doctors	C2	LGIS	SAQ

Pak Studies/Islamiyat

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Tehreek-E-Pakistan Islaahi Tehreekain	• Understand the history of Tehreek-E-Pakistan Islaahi Tehreekain.	C2	LGIS	SAQ
Akhirat-I	• Introduction of Quranic Concept of Akhriat • Corelate the concept of Akhriat in different situation of life	C2	LGIS	SAQ
Qayam e Pakistan, Aghraaz o Maqasid	• Understand the history of Qayam e Pakistan, Aghraaz o Maqasid Tehreek-E-Pakistan Islaahi Tehreekain.	C2	LGIS	SAQ
Toheed	• Introduction of Quranic Concept of Tauheed • Corelate the concept of tauheed in different situation of life	C2	LGIS	SAQ

Biomedical Ethics & Professionalism

Topic	At the End of The Session, Student Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Pakistan Medical & Dental Council Code of Ethics	At the end of the session students should be able to;	C2	LGIS	SAQ MCQ VIVA
	• Appreciate the value of oath and pledge taken by medical student at the time of graduation from medical school			
	• Appraise the importance of principles to be followed by the medical and dental practitioners to fulfil the social contract with the society in order to win the trust of the public in the profession	C2		
	• Cognizant with disciplinary proceedings in case of violation of rules laid down by regulatory body	C1		

Behavioral Sciences

Topic	At The End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Eating Disorders	• To be able to define eating disorders	C1	LGIS	MCQs
	• To be able to describe the types of eating disorders	C2		
	• To make differential diagnosis	C2		
	• To be able to manage such conditions	C2		

Family Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Approach to a Patient with abdominal pain	• Discuss what is abdominal pain	C2	LGIS-1	MCQs
	• Discuss its causes			
	• Disscus diagnosis & principle of management			

Radiology & Artificial Intelligence

Topic	At the end of lecture student should be able to	Learning Domain	Teaching Strategy	Assessment Tools
X-ray abdomen	• Identify normal and abnormal radiographs of abdomen (AP view)	C1	LGIS	MCQs
	• Identify filling defects (Barium meal and Barium enema)	C1		
	• Recognize the correct and incorrect positioning of feeding tubes	C1		
CT Scan MRI abdomen	• Identify normal and abnormal CT Scan MRI abdomen	C1	LGIS	MCQs
	• Discuss co-relation with Artificial Intelligence	C2		

Integrated Undergraduate Research Curriculum (IUGRC)

Topic	At the End of The Session, Student Should Be Able To	Teaching Strategy	Assessment Tool
Lecture 1: Introduction to Descriptive Statistics	At the end of the session students should be able to;	LGIS	SAQ MCQ VIVA
	• Define & enlist uses of statistical knowledge in research & healthcare profession.		
	• Differentiate descriptive statistics form inferential statistics		
	• Appreciate value of information & precision in scientific decision making		
Lecture 2:	• Describe the concept of data, variable & sources of data with respect to descriptive statistics		SAQ

Classification of different types of Data	• Enlist data types with examples from medical background • Classify types of data with examples (qualitative & quantitative) • Exercise on the identification of different types of data	LGIS	MCQ VIVA
Lecture 3: Scales of Data Measurement	• Enlist types of data measurement scales • Elaboration of different types of data measurement scales with example • Enlist different method of data presentation (tables, graphs, diagrams, pie chart, Bar graph, histogram. line diagram scatter diagram, statistical maps, pictogram and ogive curve) according to type of data.	LGIS	SAQ MCQ VIVA
Lecture 4: Measure of central tendency	• Explain concept of Measures of central tendency with illustrations form medical background • Calculate and interpret the different measures of central tendency	LGIS	SAQ MCQ VIVA
Lecture 5: Measures of Dispersion	• Explain concept of Measures of dispersion with illustrations form medical background • Calculate and interpret the different measures of dispersion	LGIS	SAQ MCQ VIVA
Lecture 6: Practice Session	• Compute and Interpret results of different measures of dispersion form a given data file	LGIS	SAQ MCQ VIVA

Enterpreneurship

Topics	Brief Note	Learning Outcomes
Ideate Initial Idea	• How it would create value	Understand the concept of ideation in the entrepreneurial context. Learn techniques for generating creative and innovative business ideas. Develop skills to evaluate and refine initial ideas for feasibility and viability.

Digital Literacy Module

Topic	Learning Objectives At the end of the lecture the student should be able to	Teaching Strategy	Assessment Tool
RMU Goes digital	• Introduction to LMS, CMS and MS Teams. • Inrtorduction to RMU website • How to use HEC digital library • How to use up to date website	LGIS	MCQs

List of Foundation Module Spiral Courses Lectures

Sr. #	Date/Day	Week	Time	Department	Topic of Lectures	Teacher's Name & Contact #
1.	01-03-2024 Friday	1st Week	10:00am-11:00am	Quran Translation	Imaniat I (Even)	Mufti Naeem Sherazi 03005580299
					Ibadat I (Odd)	Dr Fahd 03005156800
2.	02-03-2024 Saturday	1st Week	9:20am – 10:10am	Behavioral Sciences	Eating Disorders	Dr. Sadia Yasir (Even)
						Dr. Zona Tahir (Odd)
3.	04-03-2024 Monday	2nd Week	11:20am-12:10pm	Bioethics & Research	Pakistan Medical & dental council Code of Ethics (even)	Dr. Sidra Hamid 0331-5025147
					Introduction to Descriptive Statistics (Odd)	Dr. Rizwana Shahid 0320-5511684
4.	08-03-2024 Friday	2nd Week	10:00am-11:00am	Quran Translation-II	Ibadat-II (Even)	Dr Fahd 03005156800
					Imaniyat -II (Odd)	Mufti Naeem Sherazi 03005580299
5.	08-03-2024 Friday	2nd Week	11:00am 12:00pm	Quran Translation-II	Ibadat-II (Even)	Mufti Naeem Sherazi 03005580299
					Imaniyat -II (Odd)	Dr Fahd 03005156800
6.	09-03-2024 Saturday	2nd Week	9:20am – 10:10am	Radiology & Artificial Intelligence	Medical Imaging of abdomen-I	Dr. Quratul Ain (Even) Dr. Aneeqa Saleem (Odd)
7.	12-03-2024 Tuesday	3rd Week	11:10am-11:50am	Research -I & Bioethics	Introduction to descriptive statistics (Even)	Dr. Rizwana Shahid 0320-5511684
					Pakistan Medical & dental council Code of Ethics (Odd)	Dr. Sidra Hamid
8.	13-03-2024 Wednesday	3rd Week	09:20am-10:10am	Research-II LGIS	Classification of different types of data	Dr. Rizwana Shahid 0320-5511684 Dr.
9.	14-03-2024 Thursday	3rd Week	11:10am-11:50am	Family Medicine	Common Abdominal diseases	Dr. Sadia
						Dr. Ishtiaq
10.	15-03-2024 Friday	3rd Week	10:00am 11:00am	Quran Translation-III	Ibadaat-3	Dr Fahd 03005156800 (Even)
					Imaniat-3	Mufti Naeem Sherazi 03005580299 (Odd)
11.	15-03-2024 Friday	3rd Week	11:00am 12:00pm	Quran Translation-III	Imaniat-3	Mufti Naeem Sherazi 03005580299 (Even)

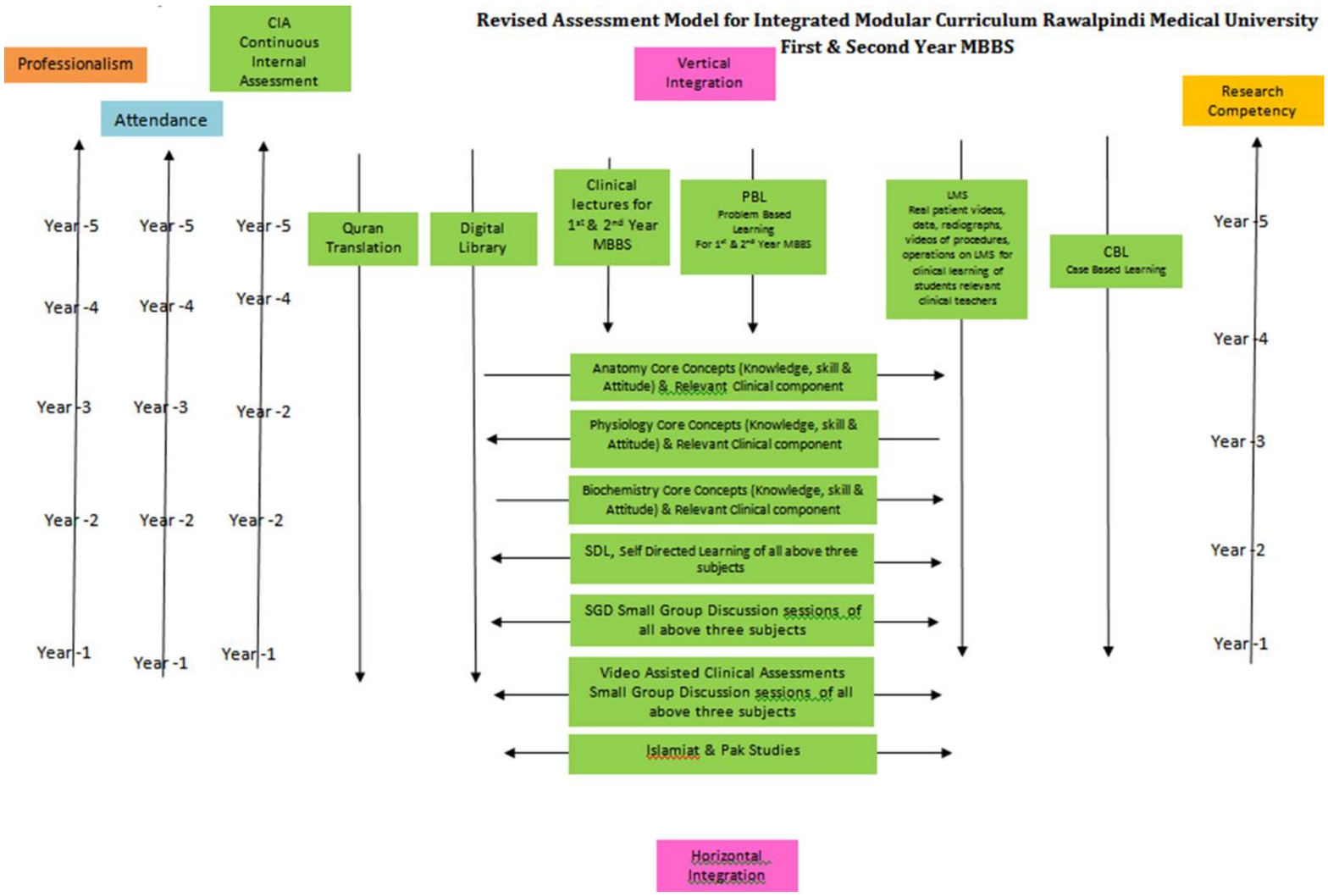
					Ibadaat-3	Dr Fahd 03005156800 (Odd)
12.	16-03-2024 Saturday	3rd Week	11:10am-11:50am	Pak Studies/Islamiyat	Tehreek-E-Pakistan Islaahi Tehreekain	Qari Aman Ullah 03467598528
					Akhirat-I	Mufti Naeem Sherazi 03005580299
13.	19-03-2024 Tuesday	4th Week	10:30am-11:10am	Research-III	Scales of Data Measurement	Dr. Rizwana Shahid 0320-5511684
						Dr. Afifa kalsoom 0333-5506597
						Dr. Ishtiaq
14.	21-03-2024 Thursday	4th Week	11:10am-12:00pm	Research-IV	Research IV: Measures of central Tendency	Dr. Rizwana Shahid 0320-5511684
						Dr. Afifa kalsoom 0333-5506597
15.	22-03-2024 Friday	4th Week	08:00am-09:00am	Pak Studies/Islamiyat-I	Toheed	Mufti Naeem Sherazi 03005580299
					Qayam e Pakistan, Aghraaz o Maqasid	Qari Aman Ullah 03467598528
16.	22-03-2024 Friday	4th Week	09:00am-10:00am	Pak Studies/Islamiyat-I	Qayam e Pakistan, Aghraaz o Maqasid	Qari Aman Ullah 03467598528
					Toheed	Mufti Naeem Sherazi 03005580299
17.	22-03-2024 Friday	4th Week	10:00am-11:00am	Entrepreneurship	Ideate Initial Idea	Dr. Asif Maqsood & Dr. Sidra Hamid
18.	23-03-2024 Saturday	4th Week	11:50am – 01:00pm	Pak Studies/Islamiyat	Tehreek-e-Aligarh, Sir Syed Ahmad Khan	Qari Aman Ullah (Even)
					Akhirat -II	Mufti Naeem Sherazi (Odd)
19.	27-03-2024 Wednesday	5th Week	10:30am-11:10am	Research-V	Compute and Interpret measures of central tendency	Dr. Rizwana Shahid 0320-5511684 Dr. Afifa kalsoom 0333-5506597
20.	28-03-2024 Thursday	5th Week	10:30am-11:10am	Research-VI	Measures of dispersion/Secondary Data Analysis	Dr. Rizwana Shahid 0320-5511684 Dr. Afifa kalsoom 0333-5506597
21.	29-03-2024 Friday	5th Week	11:10am-11:50am	Radiology & Artificial Intelligence	Medical Imaging of abdomen-II	Dr. Sana Yaqoob (Even) \ 0342-2064666 Dr. Saba Bint e Kashmir (Odd)

SECTION - VI

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in GIT Module**



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

60% and above is passing marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%	81 - 100%

90% is eligibility criteria for appearing in professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular,modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given theshare according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based),modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in GIT Module

Block	Sr #	Module – 1 GIT Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6.	Biochemistry Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	7.	Assessment of Clinical Lectures	Formative	15 Minutes				
	8.	Assessment of Bioethics Lectures	Summative	2 Minutes				
	9.	Assessment of IUGRC, Family Medicine Lectures	Summative	10 Minutes				

No. of Assessments of Anatomy for Second Year MBBS
GIT Module

Block	Sr #	Module – 1 GIT Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module (when 2/3rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	25-02-2023 09:00PM - 09:30PM 30 Minutes	2 Hours & 40 minutes	30 Minutes	3 Formative	3 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	29-03-2023 12:00pm-12:30pm 10 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	08-03-2023 08:30am - 10:30am 2 Hours				
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes				
	5	Structured & Clinically oriented Viva voce	Summative	06-03-2023 & 07-03-2023 09:00am - 01:00pm 10 Minutes/student				
	6	Assessment of Clinical Lectures	Formative	10-03-23 09:30am-10:00am 10 Minutes				

No. of Assessments of Physiology for Second Year MBBS
GIT Module

Block	Sr. #	Module – 1 GIT Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Date/Time/Duration	Summative Assessment Time	Formative Assessment Time		
Block - I	1	Mid Module (when 2/3rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	25-02-2023 09:00PM -09:30PM 30 Minutes	2 Hours & 40 minutes	20 minutes	2 Formative	3 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	18-03-2023 12:00pm - 12:30pm 10 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	09-03-2023 08:30am -10:30am 2 Hours				
	4	Structured & Clinically oriented Viva voce	Summative	06-03-2023 & 07-03-2023 09:00am -01:00pm 10 Minutes/student				
	5	Assessment of Clinical Lectures	Formative	10-03-23 09:30am-10:00am 10 Minutes				

No. of Assessments of Biochemistry for Second Year MBBS
GIT Module

Block	Sr. #	Module – 1 GIT Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module (when 2/3rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	25-02-2023 09:00PM - 09:30PM 30 Minutes	2 Hours & 40 minutes	20 Minutes	2 Formative	3 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	18-03-2023 12:00pm - 12:30pm 10 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	10-03-2023 08:30am- 10:30am 2 Hours				
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	5	Assessment of Clinical Lectures	Formative	10-03-2023 08:30am- 10:30am 10 Minutes				
	Total			**3 Hours**			**5 Assessments**	

Learning Resources

Subject	Resources
Anatomy	**A. Gross Anatomy** 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S.Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III 5. http://www.anatomyzone.com 3D **anatomy** https://www.kenhub.com/en/library/anatomy/the-digestive-system https://teachmeanatomy.info/ **B. Histology** 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. https://www.udemy.com/course/**histology**/ https://www.youtube.com/@DrRubenGarciaGarza/community **C. Embryology** 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	**A. Textbooks** 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. **B. Reference Books** 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	**Textbooks** 1. Lippincott IIIustrated Reviews: Biochemistry – Wolters Kluwer 2. Harper's Illustrated Biochemistry 32th edition. 3. Lehninger Principle of Biochemistry 8th edition. 4. Biochemistry by Devlin 7th edition.
Community Medicine	**Textbooks** 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.

Pathology/Microbiology	**Textbooks** 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
Pharmacology	**Textbooks** 1. Lippincot Illustrated Pharmacology 9th edition. 2. Basic and Clinical Pharmacology by Katzung 5th edition.

SECTION - VI

Time Table

Integrated Clinically Oriented Modular Curriculum for Second Year MBBS

GIT Module Time Table

Second Year MBBS

Session 2023 - 2024

Batch- 50

GIT Module Team

Module Name	:	GIT Module
Duration of module	:	06 Weeks
Coordinator	:	Dr. Uzma Kiyani
Co-coordinator	:	Dr. Minahil Haq
Reviewed by	:	Module Committee

Module Committee	
Vice Chancellor RMU	Prof. Dr. Muhammad Umar
Director DME	Prof. Dr. Rai Muhammad Asghar
Convener Curriculum	Prof. Dr. Naeem Akhter
Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
Additional Director DME	Prof. Dr. Ifra Saeed
Chairperson Physiology	Prof. Dr. Samia Sarwar
Chairperson Biochemistry	Dr. Aneela Jamil
Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
Focal Person Physiology	Dr. Sidra Hamid
Focal Person Biochemistry	Dr. Aneela Jamil
Focal Person Pharmacology	Dr. Zunera Hakim
Focal Person Pathology	Dr. Asiya Niazi
Focal Person Behavioral Sciences	Dr. Saadia Yasir
Focal Person Community Medicine	Dr. Afifa kalsoom
Focal Person Quran Translation Lectures	Dr. Uzma Zafar
Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team	
Coordinator	Dr. Uzma Kiyani (Senior Demonstrator of Physiology)
DME Focal Person	Dr. Sidra Hamid (DHPE)
Co-coordinator	Dr. Shazia Nosheen (Senior Demonstrator of Physiology)
Co-Coordinator	Dr. Minahil Haq (Senior Demostrator of Anatomy)
Co-coordinator	Dr. Uzma Zafar (APWMO of Biochemistry)

DME Implementation Team	
Director DME	Prof. Dr. Rai Muhammad Asghar
Implementation Incharge 1st & 2nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
Module planner & Implementation Coordinator	Dr. Sidra Hamid
Editor	Muhammad Arslan Aslam

Discipline wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
1	Anatomy	-	Tongue, Body Cavities, Gastrointestinal System	Digestive Tract & associated organs (Junqueira)	Oral Cavity, Abdomen and associated visceras
	Biochemistry	Carbohydrate metabolism, GIT digestive juices, Digestion and absorption, GIT Hormones LFTs, Jundice & Nutrition,			
	Physiology	General Principles of Gastrointestinal Function—Motility, Nervous Control, and Blood Circulation Propulsion and Mixing of Food in the Alimentary Tract Secretory Functions of the Alimentary Tract, Digestion and Absorption in the Gastrointestinal Tract Physiology of Gastrointestinal Disorders			
	Orientation Session				
	Department of Medical Education (DME)	• Orientation Session on Curricular Reform RMU & Feedback of Year 2023 • Student Session on Standardization of Teaching Strategies			
	Spiral Courses				
	The Holy Quran Translation	The Holy Quran Translation Component • Imaniat I • Ibadat I • Ibadaat-II • Imaniyaat-II • Ibadaat-III • Imaniat-III			
	Pak Studies/Islamiyat	• Tehreek-E-Pakistan Islaahi Tehreekain • Akhirat-I • Toheed • Qayam e Pakistan, Aghraaz o Maqasid • Tehreek-e-Aligarh, Sir Syed Ahmad Khan • Akhirat -II			
	Bioethics & Professionalism	• Pakistan Medical & dental council Code of Ethics			
	Research (IUGRC)	• Introduction to descriptive statistics (Research-I) • Classification of different types of Data (Research-II) • Scales of Data measurement (Research-III) • Measures of central Tendency (Research-IV)			

		• Compute & Interpret measures of central tendency (Research-V) • Measure of dispersion/ Secondary data Analysis (Research-VI)
	Radiology & Artificial Intelligence	• Medical imaging of abdomen- I • Medical imaging of abdomen-II
	Family Medicine	• Common Abdominal diseases
	Behavioral Sciences	• Eating Disorders
	Vertical Integration	
	Clinically content relevant to GIT module • Concept of health & disease (Community medicine) • Epidemiology of infectious diseases & Basic Concepts (Community medicine) • Peptic ulcer (Medicine) • Jaundice (Medicine) • Irritable Bowel Syndrome (Medicine) • Antidiarrheal drugs & drugs for Peptic Ulcer Disease (Pharmacology) • Acute & Chronic Diarrhea (Pediatrics) • Common GIT problems in pregnancy (Hyperemesis gravidarum, GERD, Constipation, hemorrhoids) (Gynae and OBS)	

Categorization of Modular Content

Anatomy:

CATEGORY A	CATEGORY B	CATEGORY C				
Special Embryology	**Special Histology**	**Demonstrations**	**Practical's**	**CBL**	**SSDL**	**SDL**
Development Of - Tongue, - Salivary Glands - Esophagus & Stomach - Liver - Gallbladder & Pancreas - Small Intestine - Large Intestine	Histological Features Of - Tongue, - Salivary Glands -General Structure of GIT - Esophagus & Stomach - Liver - Gallbladder & Pancreas - Small Intestine - Large Intestine	**Gross Anatomy:** -Topographical Organization Of GIT -Oral Cavity -Tongue - Salivary Glands -Anterolateral Abdominal Wall -Rectus Sheath -Inguinal Region & Hernias - Testes -Scrotum -Peritoneum & Peritoneal Cavity -Subdivisions of Peritoneal Cavity -Esophagus -Stomach -Small & Large Intestines -Liver -Gallbladder -Biliary Apparatus -Spleen -Pancreas -Vasculature of GIT -Portosystemic Anastomosis -Rectum -Anal Canal -Innervation of Abdominal Viscera	• Histology of Tongue & Salivary glands • Esophagus & Stomach • Liver & Gallbladder • Small Intestine • Large Intestine	• Acute Appendicitis • Liver & Portal Hypertension	• Subdivission of Pretonial Cavity • Liver-II (Functional Sagments) • Spleen • Pancrease	• Anteriolateral Abdominal Wall • Rectus Sheath • Peritoneum & Peritoneal Cavity • Small Intestine • Large Intestine • Liver & Pancrease • Blood Supply, Venous drainage, Lymphatic drainage • Rectum & Anal Canal • Innervation of Abdominal Vessras
	Development of Body Cavities Histology Of Liver					

Category A: By Professors

Category B: By Associate & Assistant Professors

Category C: By Senior Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

Sr. #	Designation of Teaching Staff / Human Resource	Total Number of Teaching Staff
1.	Professor of Anatomy department	01
2.	Assistant professor of Anatomy department (AP)	01
3.	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)	38 hours
2.	Small Group Discussions (SGD) Supervised Self-Directed Learning (SSDL)	31 hours 6 hours
3.	Practical / Skill Lab	37.5 hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type ofTeaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	19 hours
2.	Small Group Discussions (SGD) Supervised Self-Directed Learning (SSDL)	31 hours 6 Hours
3.	Practical / Skill Lab	7.5 hours
4.	Self-Directed Learning (SDL)	20 hours

Physiology:

Category A	Category B	Category C
Introduction to GIT, electrical activity in GIT, Enteric Nervous System and GIT reflexes **(Dr. Samia Sarwar)**	Saliva and mastication, stages of swallowing, clinical disorders of esophagus and swallowing, achalasia and vomiting (Dr. Shazia)	PBL:
Small intestine motility and malabsorption (sprue, paralytic ileus and Crohn's disease) **(Dr. Samia Sarwar)**	Movements of GIT, control of GIT motility and factors affecting GIT blood flow, hormones of GIT (Dr. Aneela)	CBL: Peptic Ulcer Food poisoning
	Motor functions of stomach, physiology of regulation of gastric emptying (Dr. Shazia)	Practical: Sense of taste Sense of smell Examination of superficial reflexes (CNS) Examination of deep reflexes Performance of axon reflex (triple response of skin)
	Physiology of liver and gall bladder, liver and biliary secretion(Dr. Aneela)	SGD: Saliva and mastication, stages of swallowing, clinical disorders of esophagus and swallowing, achalasia and vomiting Motor functions of stomach, physiology of regulation of gastric emptying Physiology of liver and gall bladder, liver and biliary secretion
	Gastric secretion, digestion in stomach, peptic ulcer and gastritis (Dr. Shazia)	SDL: Introduction to GIT, electrical activity in GIT, Enteric Nervous System and GIT reflexes Gastric secretion, digestion in stomach, peptic ulcer and gastritis Small intestine motility and malabsorption (sprue, paralytic ileus and Crohn's disease) Intestinal secretion and its functions, pancreatic juice, its composition and functions Pancreatitis, overall mechanism of digestion and absorption of intestine (amino acids, fatty acids and glucose) Motor function of large gut, defecation reflex Pathophysiology (diarrhea, constipation , ulcerative colitis, mega colon and carcinoma of colon)
	Liver function tests, types of jaundice, pathophysiology of cirrhosis and portal hypertension (Dr. Aneela)	
	Intestinal secretion and its functions, pancreatic juice, its composition and functions, pancreatitis, overall mechanism of digestion and absorption of intestine (amino acids, fatty acids and glucose) (Dr. Aneela)	
	Motor function of large gut, defecation reflex and pathophysiology (diarrhea, constipation , ulcerative colitis, mega colon and carcinoma of colon) (Dr. Shazia)	

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 (DME)
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	08

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type oTeaching Strategies	Total Hours
1.	Large Group Interactive Session (Lectures)	22 hours
2.	Small Group Discussions (SGD)/CBL	38.5 hours
3.	Problem Based Learning (PBL)	2.5 hours
4.	Practical / Skill Lab	38.5 hours
5.	Self-Directed Learning (SDL)	17 hours

Biochemistry:

CATEGORY A	CATEGORY B	CATEGORY C
Introduction to Carbohydrate metabolism	Saliva	PBL: GERD (Gastroesophageal Reflux Disease)
Glycolysis Fate of Pyruvate	Gastric Juice	CBL: G6PDH Deficiency Lactose Intolerance
Gluconeogenesis Metabolism of Individule sugars	Bile & Pancreatic Juice	Practical: Saliva Bile Analysis Of Food Components (Wheat)
TCA cycle	Nutrition	SGD: Gluconeogenesis and Its Regulation Jaundice And LFTs
Glycogen metabolism	GIT Hormones & Succus Entericus	
LFTS, Jaundice		
Digestion And Absorption of Carbohydrates, Proteins and Lipids		

Category A*: By Assistant Professor & Senior Demonstrators with Postgraduate Qualification

Category B:** By Senior Demonstrators

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation of Teaching Staff / Human Resource	Total Number of Teaching Staff
1	Assistant Professor of Biochemistry Department (AP)	01
2	Demonstrators of Biochemistry Department	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	20 hours	10 hours
2.	Small Group Discussions (SGD)	38 hours	7.5 hours
4.	Practical / Skill Lab	38 hours	7.5 hours
5.	Self-Directed Learning (SDL)	4 hours	05 hours

Time Table for GIT Module (First Week)
(26-02-2024 to 02-03-2024)

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)
26-02-2024 MONDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**PHYSIOLOGY LGIS**		Break	**DME (LGIS)**		**BIOCHEMISTRY LGIS**		Break	**DISSECTION/SGD**	SDL Physiology Enteric Nervous System
		Introduction to GIT Electrical Activity in GIT, Enteric Nervous System & GIT Reflexes	Saliva &Mastication, Stages ofSwallowing, Clinical DisordersofEsophagus &Swallowing, Achalasia & Vomiting		Orientation Session on Curricular Reform RMU & Feedback of Year 2023		Introduction to Carbohydrate Metabolism	Saliva		Topographical Organization of GIT Refere to Table No. 1	
		Prof. Dr. Samia Sarwar / Dr. Aneela (Even)	Dr Shazia (Odd)		Prof Ifra Saeed (Even)	Dr. Sidra hamid (Odd)	Dr Uzma Zafar (Even)	Dr. Almas (Odd)			
27-02-2024 TUESDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**PHYSIOLOGY LGIS**			**ANATOMY LGIS**		**BIOCHEMISTRY LGIS**			**DISSECTION/SGD**	SDL Physiology GIT Reflexes
		Saliva & Mastication, Stages of Swallowing, Clinical Disorders of Esophagus & Swallowing, Achalasia &Vomiting	Introduction to GIT Electrical Activity in GIT, Enteric Nervous System & GIT Reflexes		Development of Tongue	Histology of Tongue	Carbohydrate Metabolism	Saliva		Oral Cavity, Tongue and Salivary Glands Refere to Table No.	
		Dr Shazia (Even)	Prof. Dr. Samia Sarwar / Dr. Aneela (Odd)		Prof. Dr Ifra (Even)	Ass. Prof. Dr Maria (Odd)	Dr Uzma Zafar (Odd)	Dr. Almas (Even)			
28-02-2024 WEDNESDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**BIOCHEMISTRY LGIS**			**ANATOMY LGIS**		**DME (LGIS)**			**DISSECTION/SGD**	SDL Biochemistry Glycolysis
		Metabolism of Monosaccharide & Disaccharide (Fructose, Lactose, Galactose)	Glycolysis		Histology of Tongue	Development of Tongue	Student Session on Standardization of Teaching Stratigies & feedback of year 2024 with Worthy Vice Chancellor			Anterolateral Abdominal Wall Refere to Table No.1	
		Dr. Aneela (Even)	Dr Uzma Zafar (Odd)		Ass. Prof. Dr Maria (Even)	Prof. Dr Ifra (Odd)	Dr. Sidra Hamid (Even)	Dr. Rizwana Shahid (Odd)			
29-02-2024 THURSDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**COMMUNITY MEDICINE LGIS**			**ANATOMY LGIS**		**BIOCHEMISTRY LGIS**			**DISSECTION/SGD**	SDL Anatomy Anterolateral Abdominal Wall
		Concept of Health & Disease	Epidemiology of Infectious Diseases& Basic Concepts		Development of Salivary Glands	Histology Salivary Glands	Glycolysis	Metabolism of Monosaccharide & Disaccharide (Fructose, Lactose, Galactose)		Rectus Sheath Refere to Table No.1	
		Dr. Rizwana Shahid (Even)	Dr. Asif (Odd)		Prof. Dr Ifra (Even)	Ass. Prof. Dr Maria (Odd)	Dr Uzma Zafar (Even)	Dr. Aneela (Odd)			
01-03-2024 FRIDAY	**8:00-9:00AM**	**9:00-10:00AM**		**10:00-11:00AM**			**11:00-12:00PM**				
	ANATOMY LGIS	**BIOCHEMISTRY LGIS**		**QURAN TRANSLATION I**			**COMMUNITY MEDICINE LGIS**				
	Histology Salivary Glands	Development Of Salivary Glands	Fate of Pyruvate	Gluconeogenesis	Imaniat I	Ibadat I		Epidemiology of Infectious Diseases Basic Concepts	Concept of Health & Disease		
	Ass. Prof. Dr Maria (Even)	Prof. Dr Ifra (Odd)	Dr Uzma Zafar (Even)	Dr. Aneela (Odd)	Mufti Naeem Sherazi (Even)	Dr. Fahd Anwar (Odd)		Dr. Asif (Even)	Dr. Rizwana Shahid (Odd)		
02-03-2024 SATURDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**BEHAVIORAL SCIENCES**		**10:10am – 10:30am**	PBL SESSION – I		Elections				SDL Anatomy Rectus Sheath
		Eating Disorders		Break	PBL SESSION – I Team Leader Dr. Sidra Hamid						
		Dr. Sadia Yasir (Even)	Dr. Zona Tahir (Odd)		Physiology Batch Teachers Of 2nd Year						

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Disscusion (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

- Histology Of Tongue and Salivary Glands (Anatomy Histology Practical) Venue- Histology Lab-Dr Gaiti Ara
- Saliva I (Biochemistry Practical) Venue- Biochemistry Laboratory
- Sense Of Taste (Physiology Practical) Venue – Physiology Lab

Topics for SGDs with Venue

- Physiology SGD: Saliva and mastication, stages of swallowing, clinical disorders of esophagus and swallowing, achalasia and vomiting Saliva Venue - Lecture Hall No 5
- Biochemistry SGD: Saliva Venue - Lecture Hall No 2

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Physiology Practical		Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name
Monday	C	Dr. Gaiti Ara	B	Dr. Rahat	E	Dr. Kamil	A	Dr. Aneela	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab	A	Dr. Aneela	B	Dr. Shazia	E	Dr. Almas
Wednesday	E		D	Dr. Uzma	B	Dr. Shazia	C	Dr. Nayab	A	Dr. Romessa
Thursday	B		A	Dr. Almas	D	Dr. Iqra	D	Dr. Iqra	C	Dr. Nayab
Saturday	A		E	Dr. Romessa	C	Dr. Nayab	E	Dr. Kamil	B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Disscussion SGDs / Dissections

Batches	**Roll No**	**Anatomy Teacher**	**Venue**
A	01-120	Dr. Gaiti Ara	New Lecture Hall Complex 01
B	121-240	Dr. Minahil Haq	Anatomy Lecture Hall 04
C	241 onwards	Dr Sadia Baqir	Anatomy Lecture Hall 03

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Sidra Hamid (Assitant Professor Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL Session during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Time Table for GIT Module (Second Week)
(04-03-2024 to 09-03-2024)

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)
04-03-2024 MONDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**PHYSIOLOGY LGIS**		Break	**BIOCHEMISTRY LGIS**		**BIOETHICS LGIS & RESEARCH-I LGIS**		Break	**DISSECTION/SGD**	SDL Physiology Control Of GI Motility & Factors Affecting GIT Blood Flow
		Movements of GIT, control of GIT motility and factors affecting GIT blood flow, hormones of GIT	Motor functions of stomach, physiology of regulation of gastric emptying		Gluconeogenesis	Fate Of Pyruvate	Pakistan Medical & Dental Council Code of Ethics	Introduction to Descriptive Statistics		Inguinal Region And Hernias Refere to Table No.1	
		Dr. Aneela (Even)	Dr. Shazia (Odd)		Dr. Aneela (Even)	Dr Uzma Zafar (Odd)	Dr. Sidra Hamid (Even)	Dr. Rizwana Shahid (Odd)			
05-03-2024 TUESDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**PHYSIOLOGY LGIS**			**ANATOMY LGIS**		**BIOCHEMISTRY LGIS**			**DISSECTION/SGD**	SDL Physiology Swallowing
		Motor functions of stomach, physiology of regulation of gastric emptying	Movements of GIT, control of GIT motility and factors affecting GIT blood flow, hormones of GIT		Development Of Esophagus & Stomach-1	Histology General Structure of GIT & Esophagus	Function Of NADPH & Deficiency of G6PD	Citric Acid Cycle		Testes & Scrotum Refere to Table No.1	
		Dr. Shazia (Even)	Dr. Aneela (Odd)		Prof. Dr Ifra (Even)	Ass. Prof. Dr Maria (Odd)	Dr. Aneela (Even)	Dr Uzma Zafar (Odd)			
06-03-2024 WEDNESDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**PHYSIOLOGY LGIS**			**ANATOMY LGIS**		Disection & Spotting			**DISSECTION/SGD**	SDL Biochemistry TCA Cycle
		Physiology of liver and gall bladder, liver and biliary secretion	Gastric secretion, digestion in stomach, peptic ulcer and gastritis		Histology General Structure of GIT & Esophagus	Development Of Esophagus & Stomach-1				Peritoneum & Peritoneal Cavity Refere to Table No.1	
		Dr. Aneela (Even)	Dr. Shazia (Odd)		Ass. Prof. Dr Maria (Even)	Prof. Dr Ifra (Odd)					
07-03-2024 THURSDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**PHYSIOLOGY LGIS**			**PHYSIOLOGY SGD**		**BIOCHEMISTRY LGIS**			**SSDL**	SDL Anatomy Inguinal Region Canal and Hernias
		Gastric secretion, digestion in stomach, peptic ulcer and gastritis	Physiology of liver and gall bladder, liver and biliary secretion		Movements of GIT, control of GIT motility and factors affecting GIT blood flow, hormones of GIT		Citric Acid Cycle	Function of NADPH & Deficiency of G6PD		Sub divisions of Peritoneal Cavity Refere to Table No.1	
		Dr. Shazia (Even)	Dr. Aneela (Odd)		SGD Team of Second Year MBBS		Dr Uzma Zafar (Even)	Dr. Aneela (Odd)			
08-03-2024 FRIDAY	**8:00-9:00am**	**9:00-10:00am**			**10:00-11:00am**		**11:00-12:00pm**				
	DIGITAL LITRACY MODULE	**ANATOMY LGIS**			**Quran Translation - II**		**Quran Translation - II**				
	RMU Goes digital	Development of Stomach-2	Histology of Stomach		Ibadaat-2	Imaniyaat-2	Ibadaat-2	Imaniyaat-2			
	Director IT Hafiz Shahid Rasool / Mr Haider	Prof. Dr. Ifra (Even)	Ass. Prof. Dr Maria (Odd)		Dr Fahd (Even)	Mufti Naeem Sherazi (Odd)	Dr Fahd (Odd)	Mufti Naeem Sherazi (Even)			
09-03-2024 SATURDAY	**Practical &CBL/SGD** Topic & Venue Mentioned at The End	**RADIOLOGY & ARTIFICIAL INTELLIGENCE (LGIS)**		Break	**ANATOMY LGIS**		**BIOCHEMISTRY LGIS**		Break	**DISSECTION/SGD**	SDL Anatomy Peritoneum & Peritoneal Cavity
		Medical Imaging of abdomen-I			Histology Of Stomach	Development of Stomach-2	Glycogen Metabolism	Gastric Juice		Esophagus and stomach Refere to Table No.1	
		Dr. Qurat ul Ain (Even)	Dr. Aniqua Saleem (Odd)		Ass. Prof. Dr Maria (Even)	Prof. Dr. Ifra (Odd)	Dr. Aneela (Even)	Dr. Almas (Odd)			
Online LMS Assessment Will be Conducted on 09-03-2024, Saturday at 8:30 pm											

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Disscusion (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

- Histology of Esophagus & Stomach (Anatomy Histology Practical) Venue- Histology lab-Dr Minahil Haq
- Saliva II (Biochemistry Practical) Venue- Biochemistry laboratory
- Sense of Smell (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Motor functions of stomach, physiology of regulation of gastric emptying Venue: Lecture Hall No 5)
- Biochemistry CBL: Glucose 6 Phosphate Dehydrogenase Deficiency (Venue: Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Physiology Practical		Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name
Monday	C	Dr Minahil Haq	B	Dr. Rahat	E	Dr. Kamil	A	Dr. Aneela	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab	A	Dr. Aneela	B	Dr. Shazia	E	Dr. Almas
Wednesday	E		D	Dr. Uzma	B	Dr. Shazia	C	Dr. Nayab	A	Dr. Romessa
Thursday	B		A	Dr. Almas	D	Dr. Iqra	D	Dr. Iqra	C	Dr. Nayab
Saturday	A		E	Dr. Romessa	C	Dr. Nayab	E	Dr. Kamil	B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Disscussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-120	Dr. Gaiti Ara	New Lecture Hall Complex 01
B	121-240	Dr. Minahil Haq	Anatomy Lecture Hall 04
C	241 onwards	Dr Sadia Baqir	Anatomy Lecture Hall 03

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Sidra Hamid (Assitant Professor Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL Session during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

The Holy Month of Ramzan Observed
Timining are from 08:00AM – 01 :00PM

Time Table for GIT Module (Third Week)
(11-03-2024 to 16-03-2024)

DATE/DAY	8:00am-9:20am	9:20am – 10:10am		10:10am – 10:30am	10:30am-11:10am		11:10am-11:50am		11:50am – 01:00pm	Home Assignments (2HRS)
11-03-2024 MONDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & venue mentioned at the end	**PHYSIOLOGY LGIS**		Break	**PHYSIOLOGY SDL-I**		**BIOCHEMISTRY LGIS**		**DISSECTION/SGD**	SDL Physiology Clinical disorders of Esophagus & Swallowing., Achalasia/ vomiting
		Liver function tests, types of jaundice, pathophysiology of cirrhosisandportalhypertension	Small intestine motilityand malabsorption (sprue, paralytic ileus and Crohn's disease)		Introduction to GIT, electrical activity in GIT, Enteric Nervous System and GIT reflexes		Gastric Juice	Glycogen Metabolism	Small intestine (Duodenum) Refere to Table No.1	
		Dr. Aneela (Even)	Prof. Dr. Samia Sarwar / Dr. Shazia (Odd)		Dr. Uzma (Even)	Dr. Fareed (Even)	Dr. Almas (Even)	Dr. Aneela (Odd)		
12-03-2024 TUESDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & venue mentioned at the end	**PHYSIOLOGY LGIS**			**ANATOMY LGIS**		**RESEARCH -I & BIOETHICS**		**DISSECTION/SGD**	SDL Physiology Motor function of stomach
		Small intestine motility and malabsorption (sprue, paralytic ileus and Crohn's disease)	Liver function tests, types of jaundice, pathophysiology of cirrhosis and portal hypertension		Development of Liver & Biliary Apparatus	Histology of Liver	Introduction to descriptive statistics	Pakistan Medical & dental council Code of Ethics	Small intestine (Jejunum & ileum) Refere to Table No.1	
		Prof. Dr. SamiaSarwar / Dr. Shazia (Even)	Dr. Aneela (Odd)		Prof. Dr Ifra (even)	Prof Dr. Ayesha / Dr Maria (Odd)	Dr. Rizwana Shahid (Even)	Dr. Sidra Hamid (Odd)		
13-03-2024 WEDNESDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & venue mentioned at the end	**RESEARCH-II LGIS**			**ANATOMY LGIS**		**BIOCHEMISTRY LGIS**		**DISSECTION/CBL**	SDL Biochemistry Glycogen Metabolism
		Classification of different types of data			Histology of Liver	Development of Liver & Biliary Apparatus	LFT's Jaundice	Bile & pancreatic juice	Liver-I CBL- Liver & portal Hypertension Refere to Table No.1	
		Dr. Rizwana Shahid (Even)	Dr. Asif (Odd)		Prof Dr. Ayesha / Dr Maria (even)	Prof. Dr Ifra (Odd)	Dr. Nayab (Even)	Dr. Almas (Odd)		
14-03-2024 THURSDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & venue mentioned at the end	**ANATOMY**			**MEDICINE LGIS**		PBL SESSION – II		**SSDL**	SDL Anatomy Small Intestine
		Development of Gallbladder & Pancreas	Histology of Gallbladder & Pancreas		State Of The Art Lecture On Jaundice		PBL SESSION – II Team Leader Dr. Sidra Hamid		Liver II (Functional Sagment) Refere to Table No.1	
		Prof Dr Ifra (Even).	Ass. Prof. Dr Maria (Odd)		Worthy Vice Chancellor Prof. Dr. Muhammad Umar		Physiology Batch Teachers Of 2nd Year			
15-03-2024 FRIDAY	**8:00-9:00AM**	**9:00-10:00AM**			**10:00-11:00AM**		**11:00-12:00PM**			
	DISSECTION	**ANATOMY LGIS**			**QURAN TRANSLATION-III**		**QURAN TRANSLATION-III**			
	Dissection / Spotting	Histology Of Gallbladder & Pancreas	Development Of Gallbladder &Pancreas		Ibadaat-3	Imaniat-3	Imaniat-3	Ibadaat-3		
		Ass. Prof. Dr Maria (Even)	Prof Dr Ifra (Odd)		Dr. Fahd Anwar (Even)	Mufti Naeem Sherazi (Odd)	Mufti Naeem Sherazi (Even)	Dr. Fahd Anwar (Odd)		
16-03-2024 SATURDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & Venue Mentioned at The End	**PHYSIOLOGY LGIS**		Break	**ANATOMY LGIS**		**PAK STUDIES/ISLAMIYAT**		**SDL EVALUATION**	**DISSECTION/SGD**	SDL Anatomy Large Intestine Online SDL Evaluation
		Intestinal secretion and its functions, pancreatic juice, its composition and functions, pancreatitis, overall mechanism of digestion and absorption of intestine (amino acids, fatty acids and glucose	Motor function of large gut, defecation reflex and pathophysiology (diarrhea, constipation, ulcerative colitis, mega colon and carcinoma of colon)		Development Of Small Intestine	Histology Of Small Intestine	Tehreek-E-Pakistan Islaahi Tehreekain	Akhirat-I / Akhrt-I / TehreekE-Pakistan Islaahi Tehreekn	**SDL Evaluation**	Gallbladder & Biliary Apparatus	
		Dr Aneela (Even)	Dr Shazia (Odd)		Prof Dr Ifra (Even)	Ass. Prof. Dr Maria (Odd)	Qari Aman Ullah (Even)	Mufi Naeem Sherazi (Odd) (Even) / Qari Aman Ullah (Odd)			

Online LMS Assessment Will be Conducted on 16-03-2024, Saturday at 8:30 pm

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Disscusion (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

- Histology of Liver & Gall Bladder (Anatomy Histology Practical) Venue-Histology Laboratory-Dr Sadia Baqir
- Bile (Biochemistry Practical) Venue-Biochemistry Laboratory
- Examination of Superficial Reflexes (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology CBL: Peptic Ulcer (Venue: Lecture Hall No 5)
- Biochemistry SGD: Gluconeogenesis and Its Regulation (Venue: Lecture Hall No 2)
- Anatomy CBL: Liver and Portal Hypertension

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Physiology Practical		Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name
Monday	C	Dr Sadia Baqir	B	Dr. Rahat	E	Dr. Kamil	A	Dr. Aneela	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab	A	Dr. Aneela	B	Dr. Shazia	E	Dr. Almas
Wednesday	E		D	Dr. Uzma	B	Dr. Shazia	C	Dr. Nayab	A	Dr. Romessa
Thursday	B		A	Dr. Almas	D	Dr. Iqra	D	Dr. Iqra	C	Dr. Nayab
Saturday	A		E	Dr. Romessa	C	Dr. Nayab	E	Dr. Kamil	B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Disscussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-120	Dr. Gaiti Ara	New Lecture Hall Complex 01
B	121-240	Dr. Minahil Haq	Anatomy Lecture Hall 04
C	241 onwards	Dr Sadia Baqir	Anatomy Lecture Hall 03

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Sidra Hamid (Assitant Professor Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL Session during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Time Table for GIT Module (Fourth Week)
(18-03-2024 to 23-03-2024)

DATE/DAY	8:00am-9:20am	9:20am – 10:10am		10:10am – 10:30am	10:30am-11:10am		11:10am-11:50am		11:50am –01:00pm	Home Assignments(2HRS)
18-03-2024 MONDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & Venue Mentioned at The End	**PHYSIOLOGY LGIS**		**B r e a k**	**ANATOMY LGIS**		**PHYSIOLOGY SDL-II**		**SSDL**	SDL Physiology Physiology of Liver / Gall Bladder, Liver and Biliary Secretion
		Motor function of large gut, defecation reflex and pathophysiology (diarrhea, constipation, ulcerative colitis, mega colon and carcinoma of colon)	Intestinal secretion and its functions, pancreatic juice, its composition and functions, pancreatitis, overall mechanism of digestion and absorption of intestine (amino acids, fatty acids and glucose)		Histology Of Small Intestine	Development Of Small Intestine	Gastric secretion, digestion in stomach, peptic ulcer and gastritis		Spleen	
		Dr Shazia (Even)	Dr Sidra Hamid (Odd)		Ass. Prof. Dr. Maria (Even)	Prof. Dr. Ifra(Odd)	Dr. Shazia (Even)	Dr. Sheena (Even)		
19-03-2024 TUESDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & Venue Mentioned at The End	**BIOCHEMISTRY LGIS**			**RESEARCH-III LGIS**		**PHYSIOLOGY SDL-III**		**SSDL**	SDL Physiology LFTs, Jaundice
		Bile & Pancreatic Juice	LFT's Jaundice		Scales of Data Measurement		Small intestine motility and malabsorption (sprue, paralytic ileus and Crohn's disease)		Pancreas	
		Dr. Almas (Even)	Dr. Nayab (Odd)		Dr. Rizwana Shahid (Even)	Dr. Asif (Odd)	Dr Uzma (Even)	Dr. Fareed (Odd)		
20-03-2024 WEDNESDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & Venue Mentioned at The End	**FAMILY MEDICINE LGIS**			**PHYSIOLOGY SDL-IV**		**ANATOMY LGIS**		**CBL**	SDL Biochemistry Individual Sugars
		Common Abdominal diseases			Intestinal secretion and its functions, pancreatic juice, its composition and functions		Development of Large Intestine	Histology of Large Intestine I	Large intestine CBL- Acute Appendicitis	
		Dr. Sadia (Even)	Dr. Ishtiaq (Odd)		Dr. Shazia (Even)	Dr. Sheena (Odd)	Prof. Dr. Ifra (Even)	Prof Dr. Saima (Odd)		
21-03-2024 THURSDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & Venue Mentioned at The End	**BIOCHEMISTRY LGIS**			**ANATOMY LGIS**		**RESEARCH-IV**		**DISSECTION/ SGD**	SDL Anatomy Liver and Pancreas
		Nutrition-I	GIT Hormones & Succusentericus		Histology of Large Intestine-I	Development of Large Intestine	Measures of central tendency		Vasculature of GIT (Blood Supply, Venous drainage, Lymphatic drainage)	
		Dr. Rahat (Even)	Dr. Almas (Odd)		Prof Dr. Saima (Even)	Prof. Dr. Ifra (Odd)	Dr. Rizwana Shahid (Even)	Dr. Asif (Odd)		
22-03-2024 FRIDAY	**8:00am -- 9: 20am**	**9:20am - 10:00am**			**10:00-11:00am**		**11:00-12:00pm**		SDL Anatomy (Blood Supply, Venous drainage, Lymphatic drainage)	
	Practical & CBL / SGD Topic & Venue Mentioned at The End	**Physical Activity**			**PAK STUDIES**		**ISLAMIYAT-I**			
					Qayam e Pakistan, Aghraaz o Maqasid		Toheed			
					Qari Aman Ullah		Mufti Naeem Sherazi (Odd)			
23-03-2024 SATURDAY	**Pakistan Day**									

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Disscusion (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

- Histology of Small Intestine (Anatomy Histology Practical) Venue-Histology laboratory-Dr Tariq Furqan
- Estimation of ALT & ALP (wheat) (Biochemistry Practical) Venue-Biochemistry laboratory
- Examination of Deep reflexes (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Physiology of liver and gall bladder, liver and biliary secretion (Venue: Lecture Hall No 5)
- Biochemistry SGD: Jaundice & LFTs (Venue: Lecture Hall No 2)
- Anatomy CBL: Acute Appendicitis

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Physiology Practical		Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name
Monday	C	Dr Tariq Furqan	B	Dr. Rahat	E	Dr. Kamil	A	Dr. Aneela	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab	A	Dr. Aneela	B	Dr. Shazia	E	Dr. Almas
Wednesday	E		D	Dr. Uzma	B	Dr. Shazia	C	Dr. Nayab	A	Dr. Romessa
Thursday	B		A	Dr. Almas	D	Dr. Iqra	D	Dr. Iqra	C	Dr. Nayab
Saturday	A		E	Dr. Romessa	C	Dr. Nayab	E	Dr. Kamil	B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Disscussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-120	Dr. Gaiti Ara	New Lecture Hall Complex 01
B	121-240	Dr. Minahil Haq	Anatomy Lecture Hall 04
C	241 onwards	Dr Sadia Baqir	Anatomy Lecture Hall 03

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Maryam (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Almas (PBL) Dr. Najam-us-Sehar (SGD)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Muhammad Usman
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Nayab (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Rahat (PBL) Dr. Fareed Ullah (SGD)
No PBL Session during this week									

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Time Table for GIT Module (Fifth Week)

(25-03-2024 to 30-03-2024)

DATE/DAY	8:00am-9:20am	9:20am – 10:10am		10:10am – 10:30am	10:30am-11:10am		11:10am-11:50am		11:50am – 01:00pm	Home Assignments(2HRS)
25-03-2024 MONDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & venue mentioned at the end	**PHYSIOLOGY SDL-V**		**B r e a k**	**BIOCHEMISTRY LGIS**		**ANATOMY LGIS**		**DISSECTION/SGD**	SDL Physiology Hormones of GIT
		Pancreatitis, overall mechanism of digestion and absorption of intestine (amino acids, fatty acids and glucose)			GIT Hormones & Succusentericus	Nutrition-I	Development of Body Cavities-I	Histology of Large Intestine-II	Radiological Anatomy	
		Dr. Uzma (Even)	Dr. Fareed (Odd)		Dr. Almas (Even)	Dr. Rahat (Odd)	Prof Dr. Ifra Saeed (Even)	Prof. Dr. Ayesha / Ass. Prof Dr Maria (Odd)		
26-03-2024 TUESDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & venue mentioned at the end	**PHYSIOLOGY SDL-VI**			**ANATOMY LGIS**		**BIOCHEMISTRY LGIS**		**DISSECTION/SGD**	SDL Physiology Digestion & Absorption
		Motor function of large gut, defecation reflex			Histology of Large Intestine-II	Development of Body Cavities-I	Digestion & Absorption-I	Nutrition-II	Rectum	
		Dr. Shazia (Even)	Dr. Sheena (Odd)		Prof. Dr. Ayesha / Ass. Prof Dr Maria (Even)	Prof Dr. Ifra Saeed (Odd)	Dr. Kashif (Even)	Dr. Rahat (Odd)		
27-03-2024 WEDNESDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & venue mentioned at the end	**ANATOMY LGIS**			**RESEARCH (LGIS)**		**BIOCHEMISTRY LGIS**		**DISSECTION/SGD**	SDL Biochemistry Lipid Digestion and Absorbstion **Online Clinical Evaluation**
		Development of body Cavities-II	Development of body Cavities-II		SRC (Teamwork, Professionalism)		Digestion and absorption-I	Nutrition-II	Anal canal	
		Prof. Dr. Ifra Saeed (Evem)	Prof. Dr. Saima (Odd)		Dr. Asif (Even)	Dr. Rizwana Shahid (Odd)	Dr. Kashif (Odd)	Dr. Rahat (Even)		
28-03-2024 THURSDAY	**Practical (Supervised by Prof Ifra Saeed) &CBL/SGD** Topic & venue mentioned at the end	**PHYSIOLOGY SDL-VII**			**RESEARCH PRACTICAL SESSION I**		**BIOCHEMISTRY LGIS**		**DISSECTION/SGD**	SDL Anatomy Rectum & Anal canal
		Pathophysiology (diarrhea, constipation, ulcerative colitis, mega colon and carcinoma of colon)			Synopsis wrting session		Digestion & Absorption-II	Nutrition-III	Innervation of abdominal Viscera	
		Dr. Uzma (Even)	Dr. Fareed (Odd)		Dr. Asif (Even)	Dr. Rizwana Shahid (Odd)	Dr. Kashif (Even)	Dr. Rahat (Odd)		
29-03-2023 FRIDAY	**8:00-9:00AM**	**9:00-10:00AM**			**10:00AM-11:00AM**		**11:00AM-12:00PM**			
	Practical (Supervised by Prof Ifra Saeed) &CBL/SGD Topic & venue mentioned at the end **(Saturday Batch)**	**BIOCHEMISTRY LGIS**			**DISSECTION/SGD**		**RADIOLOGY & ARTIFICIAL INTELLIGENCE (LGIS)**			
		Nutrition-III	Digestion & Absorption-II		Cross Sectional Anatomy		Medical Imaging of abdomen-II			
		Dr. Rahat (Even)	Dr. Kashif (Odd)				Dr. Sana Yaqoob (Even)	Dr. Saba Bint e Kashmir (Odd)		
30-03-2023 SATURDAY	Early Clinical Exposure* (Its Implementation will be explained on Implementation page) *			**Break**	Early Clinical Exposure* (Its Implementation will be explained on Implementation page) *					SDL Anatomy Innervation of abdominal Visceras

Online LMS Assessment Will be Conducted on 30-03-2024, Saturday at 8:30 pm

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Disscusion (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

- Histology of Large Intestine (Anatomy Histology Practical) Venue-Histology laboratory-Dr Gaiti Ara
- Analysis of food components (wheat) (Biochemistry Practical) Venue-Biochemistry laboratory
- Performance of Axon reflexes (Triple Response of Skin) (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology CBL: Food Poisoning (Venue: Lecture Hall No 5)
- Biochemistry CBL: Lactose Intolerance (Venue: Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Physiology Practical		Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name
Monday	C	Dr Gaiti Ara	B	Dr. Rahat	E	Dr. Kamil	A	Dr. Aneela	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab	A	Dr. Aneela	B	Dr. Shazia	E	Dr. Almas
Wednesday	E		D	Dr. Uzma	B	Dr. Shazia	C	Dr. Nayab	A	Dr. Romessa
Thursday	B		A	Dr. Almas	D	Dr. Iqra	D	Dr. Iqra	C	Dr. Nayab
Saturday	A		E	Dr. Romessa	C	Dr. Nayab	E	Dr. Kamil	B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Disscussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-120	Dr. Gaiti Ara	New Lecture Hall Complex 01
B	121-240	Dr. Minahil Haq	Anatomy Lecture Hall 04
C	241 onwards	Dr Sadia Baqir	Anatomy Lecture Hall 03

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Nayab (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL Session during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Time Table for GIT Module (Sixth Week)
(01-04-2024 TO 06-04-2024)

Date / Days	Tentative Exam Discipline Details	Time
01-04-2024 Monday	Anatomy Written	08:00am - 11:00am
02-04-2024 Tuesday	Biochemistry Written / Assessment of Clinical Subjects	08:00am - 11:00am
03-04-2024 Wednesday	Physiology Written / Video Assisted Quiz	08:00am - 02:00pm
04-04-2024 Thursday	Anatomy Viva Voce (Roll No 1-120) Physiology Viva Voce (Roll No 121-240) Biochemistry Viva Voce (Roll No.241-onwards)	08:00am - 02:00pm
05-04-20234 Friday	Anatomy Viva Voce (Roll No.241-onwards) Physiology Viva Voce (Roll No 1-120) Biochemistry Viva Voce (Roll No 121-240)	08:00am - 02:00pm
06-04-2024 Saturday	Anatomy Viva Voce (Roll No 121-240) Physiology Viva Voce (Roll No.241-onwards) Biochemistry Viva Voce (Roll No 1-120)	08:00am - 02:00pm

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

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

Note: OSPE wiil be conducted in block exam.

SECTION VIII

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

Details of Written Assessment and Viva Voce

Sr No	Subject	No of SAQs	Marks	Overall %	Distribution with domain	No of MCQs	Marks	Overall %	Distribution with domain	Total no. of Viva Questions (K)
1.	**Anatomy**	4	20 (5 Marks each)	**50% Core Knowledge (2 Questions)**	**Q1:** Core Knowledge **(25%)** **Q2:** Core Knowledge **(25%)**	35	35 (1 Mark each)	**50% Core Knowledge**	Core Knowledge **48% (Approx. 50%) (17 MCQs)**	**6** (25 Marks)
				50%Integrations (2 Questions)	**Q3:** Spiral Integration **(25%)** **Q4:** Vertical integration **(12.5%)** + Horizontal integration **(12.5%)**			**50%Integrations**	Spiral Integration **20% (7 MCQs)** Horizontal Integration **8.5% (3 MCQs)** Vertical Integration **22.8% (8 MCQs)**	
2.	**Physiology**	4	20 (5 Marks each)	**50% Core Knowledge (2 Questions)**	**Q1:** Core Knowledge **(25%)** **Q2:** Core Knowledge **(25%)**	35	35 (1 Mark each)	**50% Core Knowledge**	Core Knowledge **48% (Approx. 50%) (17MCQs)**	**6** (25 Marks)
				50%Integrations (2 Questions)	**Q3:** Spiral integration **(25%)** **Q4:** Vertical integration **(12.5%)** + Horizontal integration **(12.5%)**			**50%Integrations**	Spiral Integration **20%(7MCQs)** Horizontal Integration **8.5% (3 MCQs)** Vertical Integration **22.8% (8 MCQs)**	
3.	**Biochemistry**	4	20 (5 Marks each)	**50% Core Knowledge (2 Questions)**	**Q1:** Core Knowledge **(25%)** **Q2:** Core Knowledge **(25%)**	35	35 (1 Mark each)	**50% Core Knowledge**	Core Knowledge **48% (Approx. 50%) (17MCQs)**	**6** (25 Marks)
				50%Integrations (2 Questions)	**Q3:** Spiral integration **(25%)** **Q4:** Vertical integration **(12.5%)** + Horizontal integration **(12.5%)**			**50%Integrations**	Spiral Integration **20% (7 MCQs)** Horizontal Integration **8.5% (3 MCQs)** Vertical Integration **22.8% (8 MCQs)**	
	Total	**12 SAQs**	**60 Marks**			**105 MCQs**	**105 Marks**			**75 Marks**
	Total Marks : 60+105+75= 240 Marks									

Annexure I

- **Model Templates for MCQ & SEQ Paper,**

- **MCQ & SEQ Sample**

Rawalpindi Medical University Rawalpindi
Model Template for MCQ Paper (Module & Block)

Total Marks:35 (1 mark for each question) Date: Roll No._____

Total Time:35 Minutes *Encircle the single best response*

Q. #	**Integrated & Clinically Oriented Assessment of the Subject of Anatomy (MCQ Paper) Section - A: Anatomy Core Knowledge 48%** **(i) Gross: 24%**	**Level of Cognition**
1.	a. b. c. d. e.	**C2**
2.	a. b. c. d. e.	**C2**
3.	a. b. c. d. e.	**C1**
4.	a. b. c. d. e.	**C1**
5.	a. b. c. d. e.	**C3**
6.	a. b. c. d. e.	**C3**
7.	a. b. c. d. e.	**C3**
8.	a. b. c. d.	**C2**

	e.	
9.	a. b. c. d. e.	**C3**
(ii)	**Histology: 12%**	
10.	a. b. c. d. e.	**C1**
11.	a. b. c. d. e.	**C1**
12.	a. b. c. d. e.	**C1**
13.	a. b. c. d. e.	**C1**
(iii)	**Embryology: 12%**	
14.	a. b. c. d. e.	**C1**
15.	a. b. c. d. e.	**C3**
16.	a. b. c. d. e.	**C2**
17.	a. b. c. d. e.	**C1**

Section - B: Anatomy Horizontal Integrations 9% **Horizontal Integration with Physiology (6%)**			
18.	a. c. e.	b. d.	**C3**
19.	a. c. e.	b. d.	**C3**
Horizontal Integration with Biochemistry (3%)			
20.	a. c. e.	b. d.	**C3**
Section - C: Anatomy Vertical Integration 23%			
21.	a. c. e.	b. d.	**C2**
22.	a. c. e.	b. d.	**C3**
23.	a. c. e.	b. d.	**C3**
24.	a. c. e.	b. d.	**C3**
25.	a. c. e.	b. d.	**C2**
26.	a. c. e.	b. d.	**C2**

27.	a. c. e.	b. d.	**C1**
28.	a. c. e.	b. d.	**C3**
Section - D: Anatomy Spiral Integration 20% **Research (5.7%)**			
29.	a. c. e.	b. d.	**C1**
30.	a. c. e.	b. d.	**C1**
Bioethics (5.7%)			
31.	a. c. e.	b. d.	**C1**
32.	a. c. e.	b. d.	
Family Medicine (5.7%)			
33.	a. c. e.	b. d.	**C3**
34.	a. c. e.	b. d.	

Artificial Intelligence (2.85%)			
35.	a. c. e.	b. d.	**C2**

Annexure II

- **Structured Viva**

GIT Module
Structured Viva
2nd Year MBBS Session 2023

Roll No.	Anterolateral abdominal wall & clinicals 2 marks	Oral cavity 1 mark	Inguinal canal, Testis and scrotum & clinicals 3 marks	Peritoneum & clinicals 5 marks	Esophagus, Stomach & Spleen 4 marks	Small & Large intestine & clinicals 7 marks	Liver, Pancreas, Gall bladder & clinicals 6 marks	Vasculature & Innervation of GIT 9 marks	Rectum & Anal Canal & clinicals 8 marks	Surface marking (Skill) 3 marks	Soft tissue spotting (Skill) 7 marks	Gross sketch copy (Skill) 2 marks	Professionalism (PDC)* 3 marks	Total marks 60

P: Punctuality, D: Dressing , C: Communication

Head of Anatomy Department
Rawalpindi Medical University
Rawalpindi

DEPARTMENT OF PHYSIOLOGY RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI

Updated Structured Performa for Viva Voce

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

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

Updated on: 7th October 2023

Prof. Dr Samia Sarwar Department of Physiology Rawalpindi Medical University

Rawalpindi Medical University Department of Biochemistry
2ND Year MBBS Batch 50
GIT Module (Structured Viva)

Date: Time: Teacher's Name

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

Instructions:
All students should bring their practical copies
University **ID CARD** is must during viva examination

Dr. Aneela Jamil
Head of Biochemistry Department
Rawalpindi Medical University
Rawalpindi

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
2nd Year MBBS Module Exam (GIT)

1. Omental bursa develops due to:
    a. Gut rotation.
    b. Rotation of stomach.
    c. Rotation of dorsal mesogastrium.
    d. Rotation &cavitations in dorsal mesogastrium.
    e. Formation of synovial membrane behind stomach.
3. Primarily retro peritoneal organs include:
    a. Pancreas.
    b. Ascending & descending colon.
    c. Kidneys &suprarenals.
    d. Kidneys, suprarenals& rectum.
    e. Duodenum & pancreas.
5. Which of the following is not a derivative of hind gut:
    a. Left 1/3 of transverse colon.
    b. Descending colon.
    c. Rectum & upper part of anal canal.
    d. ileum
    e. Sigmoid colon

2. Rotation of stomach takes place around:
    a. Longitudinal &antero posterior axes.
    b. Axis formed by celiac trunk.
    c. Dorsal mesogastrium.
    d. Ventral mesogastrium.
    e. Longitudenal axis only
4. Regarding spleen:
    a. It is derived from foregut endoderm.
    b. It develops from a mass of mesenchymal cells located between the layers of the dorsal mesogastrium.
    c. Develops in ventral mesogastrium.
    d. Is solely ectodermal.
    e. Never functions as hematopoietic organ

RAWALPINDI MEDICAL UNIVERSITY
GIT MODULE EXAM 2ND YEAR MBBS
ANATOMY SEQS

1.	a. Describe formation and enlist contents of rectus sheath.	2.5
	b. Give various sites of portosystemic anastomosis with its clinical significance.	2.5
2.	a. Draw and label posterior relations of right kidney.	02
	b. Give course and relations of abdomino pelvic part of left ureter.	03

RAWALPINDI MEDICAL UNIVERSITY
DEPARTMENT OF PHYSIOLOGY
GIT MODULE EXAMINATION MCQ PAPER FOR SECOND YEAR MBBS

1. Mass Movements are initiated by following reflex:
   a. Vomimting
   b. Entrogastric
   c. Gastro colic
   d. Vasovagal
   e. Chewing
2. Intrinsic factor is secreted by the following cells:
   a. Chief
   b. Peptic
   c. Mucus Neck
   d. Enterochromaffin-like
   e. Parietal
3. The center for control of parasymphatetic defecation reflex is located in:
   a. Brainstem
   b. Meissner's plexus
   c. Cerenbral cortex
   d. Sacral segments of spinal cord
   e. Myenteric plexus
4. Spike potentials in intestinal smooth miscle are caused by influx of:
   a. Sodium ions
   b. Chloride ions
   c. Potassium ions
   d. Both sodium ions & calcium ions
   e. Calcium ions
5. The cephalic phase of gastric secretion accounts for the following percentage of total gastric secretion:
   a. 10%
   b. 60%
   c. 20%
   d. 70%
   e. 30%

RAWALPINDI MEDICAL UNIVERSITY
GIT MODULE EXAM 2ND YEAR MBBS
PHYSIOLOGY SEQS

1. A 5-year -old child went to the amusemet park. While taking rotatory rides he developed nausea, vomiting & vertigo.
   a) Name the center located in medulla for initiation of vomiting by motion sickness. 1
   b) Give a brief account of vomiting reflex leading to the vomiting act. 4

2. Briefly write the physiological importance of:
   a) Countercurrent blood flow in the villi 2
   b) Mastication (Chewing) 3

Rawalpindi Medical University Department of Biochemistry
2nd Year MBBS
GIT Module

1. Glycogen:

   a. Stores are increased in fed state
   b. Structure is abnormal shaped in von Gierke's disease
   c. Less branchedstructure than starch
   d. Stores in liver decrease if phosphofructokinase enzyme is deficient
   e. Muscle glycogen provides glucose to brain during fasting

2. End product of carbohydrate digestion is:

   a. Glucose
   b. Lactose
   c. Starch
   d. Glycogen
   e. Maltose Synthase

3. Regulatory enzyme of Glycogenolysis is:

   a. Synthase
   b. Phosphorylase
   c. Branching enzyme
   d. Debranching enzyme
   e. Phosphoglucomutase mutase

4. End product of anaerobic glycolysis is:

   a. Pyruvate
   b. Acetyl CoA
   c. Citrate
   a. Lactate
   d. Oxaloacetate

SEQ

Q. a. Explain composition and role of gastric juice. 03

b. Discuss fate of pyruvate. 02

RAWALPINDI MEDICAL UNIVERSITY
DEPARTMENT OF BIOMEDICAL ETHICS
2ND YEAR MBBS
GIT MODULE

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
   a. Bio-piracy
   b. Biosafety
   c. Bioethics
   d. Bio-patents
   e. Bio-logistic

2. The right of patients having self-decision is called.
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

3. Following is not code of ethics.
   a. Integrity
   b. Objectivity
   c. Confidentiality
   d. Behaviour
   e. Autonomy

4. -------in the context of medical ethics, if it's fair and balanced
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

5. ------Principle requiring that physicians provide, positive benefits
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

Rawalpindi Medical University
Department of Medical Education (DME)

Study Guide
Renal Module 2024



Procedure For Control of Documented Information

In-Compliance with

ISO 9001:2015

Clause 7.5

Copyright

The copyright of this procedure, together with all confidential information contained herein is the sole property of Rawalpindi Medical University

It may be copied in full or in parts only by the Management/personnel and only for Company-related activities. Disclosure of any information contained within this procedure to any person (s) outside the employee of the institute without written permission of the Vice Chancellor or Principal or ISO Committee Head is strictly prohibited.

Document Information

Category	**Renal Module Study Guide**
Document	Procedure for Control of Documented Information
Issue	1
Rev	00
Identifier	RMU-MR-SOP-57
Status	Final Document
Author(s)	Director Medical Education, Asst. Director Medical Education,
Reviewer(s)	Curriculum Committee.
Approver(s)	Vice Chancellor
Creation Date	15-03-2024
Effective Date	15-03-2024
Control Status	**Controlled**
Distribution	VC, Principal, ISO Committee
Disclaimer	This document contains confidential information. Do not distribute this document without prior approval from higher management of **Rawalpindi Medical University.**

Document Approval

Prepared By	Reviewed By	Approved By
Director Medical Education, Asst. Director Medical Education,	Curriculum Committee	Vice Chancellor

Document Revision History

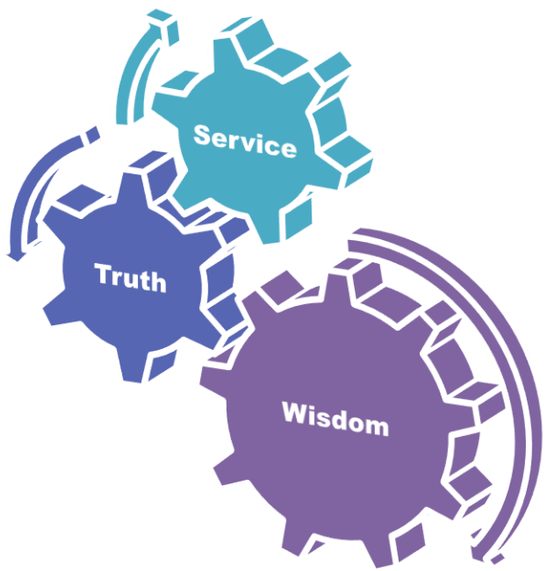
Author(s)	Date	Version	Description
Prof Naeem Akhtar, Dr Ifra Saeed, Dr Sidra Hamid, Dr Tehmina Qamar	2017-2018	1st	Developed for second year MBBS. Composed of Horizontally and vertically Integrated Renal Module.
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr Tehmina Qamar, Dr Sidra Hamid	2019-2020	2nd	Developed for second year MBBS. Horizontally and vertically integrated Learning objectives updated
Dr Tehzeeb, Dr Samia Sarwar, Dr Ayesha Yousaf Dr Ifra Saeed, Dr Tehmina Qamar, Dr Sidra Hamid	2021-2022	3rd	Developed for second year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum incorporated
Dr Tehzeeb, Dr Samia Sarwar, Dr Ayesha Yousaf Dr Ifra Saeed, Dr Tehmina Qamar, Dr Sidra Hamid	2022-2023	4th	Developed for second year MBBS. Horizontally and vertically integrated Learning objectives updated, Research, Bioethics, Family Medicine curriculum incorporated along with Professionalism
Dr Ayesha Yousaf, Dr Samia Sarwar, Dr Ayesha Yousaf Dr Ifra Saeed, Dr Tehmina Qamar, Dr Sidra Hamid	2023-2024	5th	Developed for second year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum revamped Bioethics, Family Medicine curriculum incorporated along with Professionalism. Entrepreneurship curriculum incorporated

List of Copy Holders

Document Code	Issue # /Rev.#	Copy #	Copy Holders	Distribution Mode	Signature
RMU-MR-SOP-57	**01/00**	**01**	**V.C**	**Email**	
RMU-MR-SOP-57	**01/00**	**02**	**HODs**	**Email**	
RMU-MR-SOP-57	**01/00**	**03**	**IC**	**Hard Copy**	

University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

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

Vision and Values

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

Goals of the Undergraduate Integrated Modular Curriculum

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

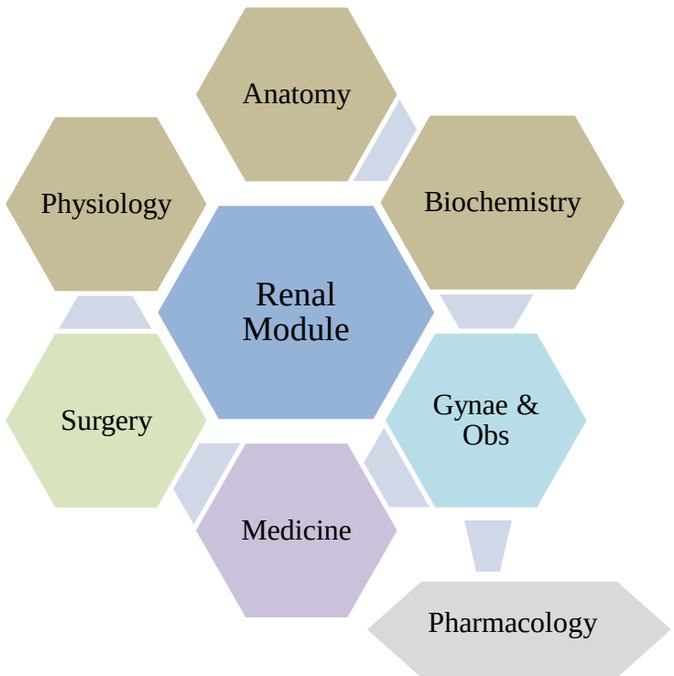
- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional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

Second Year MBBS 2024

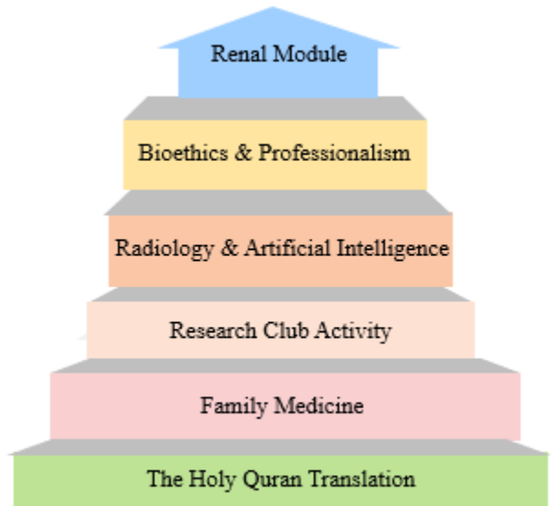
Study Guide

Renal Module

Integration of Disciplines in Renal Module



Spiral / General Education Cluster Courses



Discipline wise Details of Modular Content

Block	Module	Embryology	Histology	Gross Anatomy
I	• Anatomy	Embryology • Kidney • Ureter • Urinary Bladder • Urethra	Histology • Kidney • Ureter • Urinary Bladder	• Posterior Abdominal Wall & Organs of Urinary System
	• Biochemistry	• Amino Acid Pool Protein Turn Over Nitrogen Balance & transport of Amino Acid, • Urea Cycle & Disorder • Amino Acid Metabolism • Ammonia Toxicity • Acid Base in Balance • Serum Electrolyte		
	• Physiology	• Body Fluid Compartments, Volume & osmolarity of ECF NICF • Physiology of Renal System, GFR • Regulation of GFR & RBF • Tubular Reabsorbtion & Scretion • Micturition Reflex & Abnomalities • Acid base balance		
	Spiral Courses			
	• The Holy Quran Translation	• Imaniat 3 • Ibadat 3 • Imaniat 4 • Ibadat 4		
	• Bioethics & Professionalism	• Ethical principles		
	• Radiology & Artificial Intelligence	• Prenatal ultrasonography • Contrast Nephropathy		
	• Research Club Activity	• Questionnaire Development (Practical Session-II) • Session on data analysis (Practical Session-III) • Manuscript writing (Practical Session-IV)		
	• Family Medicine	• Renal Failure		

	Vertical Integration	
	Clinically content relevant to Renal module • Acute renal failure (Medicine) • Potassium imbalance and its management (Medicine) • CRF & Rehabilitation of patient with CRF(Medicine) • Hydronephrosis / Pyonephrosis (Surgery) • Investigations of urinary tract (Surgery) • Renal calculi (Surgery) • Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis, stress incontinence) (Obstetrics & Gynecology) • Introduction to diuretics (Pharmacology)	
	Entrepreneurship	
	• Ideate Initial Idea	
	Early Clinical Exposure (ECE)	
	• Clinical Rotations	• Cases of Renal failure • Dialysis • Renal Transplant • Ultrasound of Kidney • Plain X-Ray • KUB Nephrotic Syndrome

Table of Contents

University Moto, Vision, Values & Goals 7
Discipline wise Details of Modular Content 10
Renal Module Team 15
Module II – Renal Module 16
Module Outcomes 16
Knowledge 16
Skills 16
Attitude 16
SECTION - I 17
Terms & Abbreviations 17
Teaching and Learning Methodologies / Strategies 19
Large Group Interactive Session (LGIS) 19
Small Group Discussion (SGD) 20
Self-Directed Learning (SDL) 22
Case Based Learning (CBL) 22
Problem Based Learning (PBL) 22
Practical Sessions/Skill Lab (SKL) 23
SECTION – II 24
Learning Objectives, Teaching Strategies & Assessments 24
Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry) 25
Anatomy Large Group Interactive Session (LGIS) 25
Physiology Large Group Interactive Session (LGIS) 27
Biochemistry Large Group Interactive Session (LGIS) 29

Anatomy Small Group Discussion (SGDs) 31
Physiology Small Group Discussion (SGDs) 35
Biochemistry Small Group Discussion (SGDs) 35
Anatomy Self Directed Learning (SDL) 37
Physiology Self Directed Learning (SDL) 39
Biochemistry Self Directed Learning (SDL) 41
Histology Practicals Skill Laboratory (SKL) 43
Physiology Practicals Skill Laboratory (SKL) 43
Biochemistry Practicals Skill Laboratory (SKL) 44
SECTION - III 45
Basic and Clinical Sciences (Vertical Integration) 45
Basic and Clinical Sciences (Vertical Integration) 46
Case Based Learning (CBL) 46
Large Group Interactive Sessions (LGIS) 47
Community Medicine 47
Obstetrics & Gynaecology 48
List of Renal Module Vertical Courses Lectures 50
SECTION – IV 51
Spiral Courses 51
Introduction to Spiral Courses 52
The Holy Quran Translation Lecture 56
Radiology & Artificial Intelligence 56
Biomedical Ethics and Professionalism 56
Integrated Undergraduate Research Curriculum (IUGRC) 57

Family Medicine 58
List of Renal Module Spiral Courses Lectures 59
Assessment plan 60
Types of Assessment: 61
Modular Assessment 61
Block Assessment 61
No. of Assessments of Anatomy for Second Year MBBS 63
No. of Assessments of Physiology for Second Year MBBS 64
No. of Assessments of Biochemistry for Second Year MBBS 65
Learning Resources 66
SECTION - V 68
Time Table 68
Renal Module Team 70
SECTION-VI 91
Table of Specification (TOS) For Renal Module Examination for Second Year MBBS 91
Table of Specification for Integrated OSPE 92
Table Of Specification for Gross Anatomy OSPE 93
Annexure-I 94
(Sample MCQ, SEQ Papers & OSPE) 94

Renal Module Team

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

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Sheena Tariq (Senior Demonstrator of Physiology)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Ali Raza (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Rahat Afzal (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Uzma Kiyani (Senior Demonstrator of Physiology)

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

Module II – Renal Module

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

Module Outcomes

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

Knowledge

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

Skills

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

Attitude

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

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

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning Methodologies/Strategies
    - 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

Table1. Domains of Learning According to Blooms Taxonomy

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

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

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

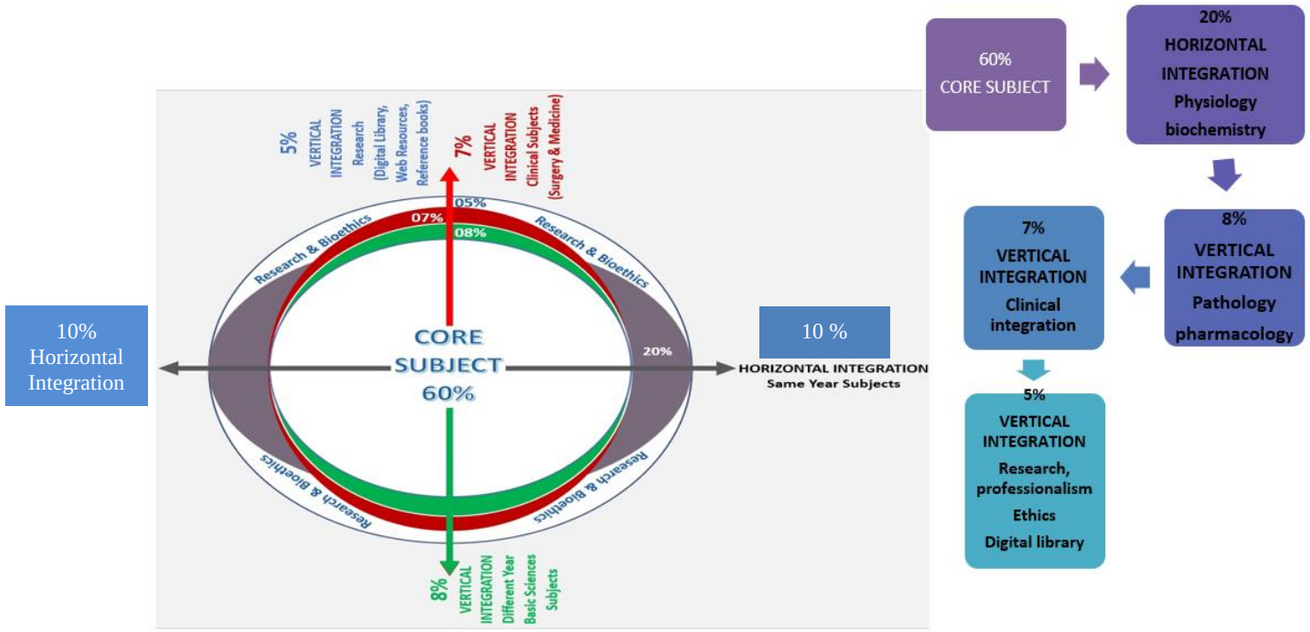


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementation of Small Group Discussions

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

Self-Directed Learning (SDL)

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

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

  ii.OSPE station

Case Based Learning (CBL)

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

Problem Based Learning (PBL)

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

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

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

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

SECTION – II

Learning Objectives, Teaching Strategies & Assessments (Core Subjects)

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

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End of The Lecture the Student Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Embryology				
Development of Kidney & ureter	• Enumerate the derivatives of intermediate mesoderm, urogenital and gonadal ridges.	C1	LGIS	SAQ MCQ VIVA
	• Describe the stages of development of human kidneys	C2		
	• Describe the molecular regulation of kidney development.	C2		
	• Correlate positional changes of the kidney with its blood supply	C1		
	• Describe different stages of development of ureter from ureteric bud and metanephrogenicblastema.	C1		
	• Understand the bio-physiological aspects of kidney & ureter development	C2		
	• Enumerate Congenital anomalies of kidney and ureter.	C3		
	• Correlate the clinical conditions (polycystic kidney, horseshoe shaped kidney)	C3		
	• Understand the preventive and curative health care measures	C3		
	• Practice the principles of Bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Development of urinary bladder & urethra	• Describe the development of urinary bladder	C2	LGIS	SAQ MCQ VIVA
	• Understand the bio-physiological aspects of bladder development	C2		
	• Discuss the parts of urethra in males and females	C2		
	• Describe development of male urethra	C2		
	• Describe development of female urethra	C2		
	• Discuss the anomalies related to urethra & bladder development	C3		
	• Correlate the clinical conditions	C3		
	• Understand the preventive and curative health care measures	C3		
	• Practice the principles of Bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		

Histology				
Histology of kidney I (Cortex & Medulla)	• Discuss the structural components of the nephron.	C2	LGIS	SAQ MCQ VIVA
	• Discuss the histology of filtration barrier.	C2		
	• Understand the bio-physiological aspects of filtration	C2		
	• Distinguish the key microscopic components of the renal cortex and medulla.	C2		
	• Differentiate the histological appearance of proximal tubule, loop of Henley, distal convulated tubule and collecting duct.	C2		
	• Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	C3		
Histology of kidney II (Collecting System)	• Enumerate the component cells of the juxta glomerular apparatus.	C1	LGIS	SAQ MCQ VIVA
	• Discuss the component cells of the juxtaglomerular apparatus	C2		
	• Discuss the effect of diabetes & hypertension on glomerular filtration rate	C2		
	• Understand the effect of hypertension on renin angiotensin release	C3		
	• Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	C3		
Histology of Urinary bladder	• Describe histological characteristics of urinary bladder.	C2	LGIS	SAQ MCQ VIVA
	• Explain the concept of umbrella cells and Uroplakins.	C2		
	• Explain the concept of internalization	C2		
	• Understand the bio-physiological effects of urinary epithelium	C2		
	• Compare the histological changes of empty and full bladder.	C2		
	• Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply strategic use of AI in health care • Read relevant research article	C3		

Histology of ureter & urethra	• Describe the microscopic structure of ureter	C2	LGIS	SAQ MCQ VIVA
	• Discuss the histological features of urethra	C2		
	• Distinguish the transition in epithelium in different types of urethra	C2		
	• Correlate the clinical conditions	C3		
	• Understand the preventive and curative health care measures			
	• Practice the principles of Bioethics			
	• Apply strategic use of AI in health care			
	• Read relevant research article			

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
Body fluid compartments, Volume & osmolarity of ECF & ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality,Osmosis and Osmotic pressure	C1 C2 C2 C1	LGIS	SAQ MCQ VIVA
Physiology of Renal system,Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	C2 C2 C2 C1 C1	LGIS SGD	SAQ MCQ VIVA
Abnormalities of fluid volume &regulation, Edema	• Volume and osmolarity in abnormalstates • Abnormalities of fluid volume &Regulation • Hyponatremia and Hypernatremia • Edema and its Mechanism. • Fluid in potential spaces of the body	C1 C1 C2 C1 C2	LGIS SGD	SAQ MCQ VIVA

A. Regulation of GFR & RBF-I (Determinants of GFR & RBF) Regulation of GFR & RBF-II,Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	C1 C1 C2	LGIS SGD	SAQ MCQ VIVA
RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback Mechanism • Macula-densa Feedback Mechanism	C1 C1 C2 C1 C2 C3	LGIS SGD	SAQ MCQ VIVA
Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in ○ Proximal tubule ○ Loop of Henle ○ Distal tubule & collecting tubule. Active and passive transport mechanisms	C1 C2 C1 C1 C2	LGIS Group presentations	SAQ MCQ VIVA
Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	C1 C2	LGIS SGD Group presentations	SAQ MCQ VIVA
A. Clearance methods to quantify kidney function Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	C1 C1 C1 C1 C1 C2	LGIS SGD	SAQ MCQ VIVA

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to protein metabolism	Understand protein turn-over, amino acid pool and entry of amino acid into cell	C2	LGIS	MCQs, SAQs & Viva
Nitrogen balance	Describe positive and negative nitrogen balance	C2	LGIS	MCQs, SAQs & Viva
General reactions of amino acids	Discuss reactions of amino acids Interpret the clinical importance of transaminases	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of ammonia	Explain sources of NH_3 formation and its transport Discuss causes and effects of Hyperammonemia Explain mechanism of ammonia toxicity	C2 C3 C2	LGIS	MCQs, SAQs & Viva
Urea cycle	Describe the location, steps and regulation of Urea cycle	C2	LGIS	MCQs, SAQs & Viva
Disorders of urea cycle	Describe Disorders of the urea cycle	C2	LGIS	MCQs, SAQs & Viva
Metabolism of glycine	Explain Glycine metabolism and related disease	C2	LGIS	MCQs, SAQs & Viva
Metabolism of phenyl alanine and tyrosine	Explain Phenyl alanine & tyrosine metabolism Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of Tryptophan	Explain Tryptophan metabolism Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva

Metabolism of methionine	Describe metabolism of sulpher containing amino acids Discuss related disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of branched chain amino acids	Explain Metabolism of branched chain amino acids Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of polyamines	Discuss Synthesis of polyamines and their clinical significance	C2	LGIS	MCQs, SAQs & Viva
Acid base imbalance	Explain causes and compensation of metabolic and respiratory acid base disorders Describe anion gap and its significance Interpret different acid base disorders	C2 C2 C3	LGIS	MCQs, SAQs & Viva
Water	Explain Distribution of water in different compartments of body Interpret Dehydration & over hydration	C2 C3	LGIS	MCQs, SAQs & Viva
Electrolytes Sodium (Na)	Describe Daily requirements, sources and functions of sodium Explain causes and effects of hyponatremia & hypernatremia	C2 C3	LGIS	MCQs, SAQs & Viva
Potassium	Describe Daily requirements, sources and functions of potassium Explain causes and effects of hypokalemia & hyperkalemia	C2 C3	LGIS	MCQs, SAQs & Viva
Chloride (Cl) & Bicarbonate ($HCO_{3)}$	Describe Daily requirements, sources, functions & their deficiency and toxic effects on body	C2	LGIS	MCQs, SAQs & Viva

Anatomy Small Group Discussion (SGDs)

Topics	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Posterior abdominal wall I (Fascia & Muscles)	• Describe thethe fascia of posterior abdominal wall • Tabulate the muscles of posterior abdominal wall with reference to, origen, insertion, nerve supply and action, • Describe the relations of Psoas major muscle. • Correlate the clinical conditions (Psoas Abscess) • Understand the preventive and curative health care measures • Map Root of mesentery on SP/Model • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C3 C3 C3 C3 C3 C3	Skill labs	OSPE MCQ SAQ VIVA
Posterior abdominal wall II (Nerves)	• Trace the nerves present on posterior abdominal wall • Discuss the formation of nerves • Discuss the formation of lumbosacral plexus • Correlate the clinical conditions (Lumbar symphathectomy) • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C2 C3 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Posterior abdominal wall III (vessels) & Lumbar Vertebrae	• Enlist branches of Abdominal Aorta. • Describe the tributaries of inferior vena cava. • Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk. • Differentiate between typical and atypical lumbar vertebrae. • Identify different parts of lumbar vertebrae. • Discuss the attachments of lumbar vertebrae. • Correlate the clinical conditions (abdominal aortic aneurysm) • Understand the preventive and curative health care measures	C1 C2 C2 C2 C2 C2 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA

	• Map Abdominal aorta, Inferior Vena cava & Portal vein on simulated patient (SP)/Model • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	P C3 C3 C3 C3		
Kidney	• Discuss the site and extent of kidneys • Differentiate right from left kidney • Understand the bio-physiological aspects of kidney • Discuss the renal capsule and its role in support of kidney. • Describe the structure of cortex and medulla • Describe peritoneal relationship of both kidneys. • Describe visceral relationship of both kidneys • Explain blood supply of both kidneys with emphasis on renal artery. • Discuss the venous drainage of both kidneys. • Correlate the clinical conditions (perinephric abscess, nephroptosis, renal cysts and renal colic) • Understand the preventive and curative health care measures • Map the kidney on the back (Morrison's Parrallelogram) on SP/Model • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C2 C2 C2 C2 C2 C2 C2 C3 C3 C3 P C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Ureter	• Discuss extent and course of ureter in abdomen and pelvis in males and females • Explain peritoneal reflections of ureter in both sexes. • Describe relations of ureter. • Describe the arterial, venous and lymphatic drainage of ureter. • Correlate the clinical conditions (ureteric colic) • Understand the preventive and curative health care measures	C2 C2 C2 C2 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA

	• Map Ureter from the back on SP/Model • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	P C3 C3 C3		
Supra renal gland	• Describe the location & visceral relations of right and left supra renal glands • Understand the bio-physiological aspects of kidney • Discuss supra renal cortex and medulla • Discuss vessels and nerves of supra renal gland • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C2 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Urinary bladder	• Interpret size and extent of urinary bladder in different ages and states. • Discuss the peritoneal and visceral relationships of urinary bladder(bladder bed) • Understand the bio-physiological aspects of kidney • Discuss the trigone of urinary bladder • Elaborate nerve supply of urinary bladder • Correlate the clinical conditions (urinary incontinence, suprapubiccystotomy and atonic bladder) • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research article	C2 C2 C2 C2 C2 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA

Urethra	• Describe different parts of male and female urethra. • Explain blood supply, innervation and lymphatics of urethra in both sexes • Discuss the clinically significant differences between male and female urethra • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 C3 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Cross Sectional Anatomy	• Identify different structures at different levels of vertebral coloumn;L2,L3,L4,L5 • Correlate the clinical conditions at the given level • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C3 C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Radiology	• Identify structures on a normal X-ray abdomen • Identify kidney and its associated structures on contrast studies. • Appreciate filling defects. • Mark anatomical landmarks. • Correlate the clinical conditions • Understand the preventive and curative health care measures • Practice the principles of Bioethics • Apply Strategic use of AI in health care • Read relevant research articles	C2 C2 C2 P P C3 C3 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA

Physiology Small Group Discussion (SGDs)

Topic	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tools
GFR & RBF	• Explain factors effecting GFR	C2	SGD	MCQ SEQ VIVA OSPE
	• Discuss determinants of RBF	C2		
	• Explain autoregulatory mechanism of GFR & RBF	C2		
Micturition	• Describe the physiological anatomy & nervous connections of urinarybladder	C1	SGD	MCQ SEQ VIVA OSPE
	• Explain Micturition reflex	C2		
	• Discuss abnormalities of Micturition	C2		
Clearancemethods	• Define Renal clearance	C1	SGD	MCQ SEQ VIVA OSPE
	• Enumerate & Explain clearance methods to quantify renal functions	C1		
	• Explain filtration fraction	C2		
Acid basebalance	• Describe mechanism of action of buffer systems of body fluid	C1	SGD	MCQ SEQ VIVA OSPE
	• Discuss buffering power of respiratory & renal system	C2		
	• Explain the acid base disorders	C2		

Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives At The End Of Tutorial Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Phenylalanine Metabolism	Explain Metabolim of phenylalanine Metabolism	C2	SGD	MCQs, SAQs & Viva
Metabolism of tryptophan, tyrosine and branched chain amino acids	Explain metabolism and related disorders of amino acids	C2	SGD	MCQs, SAQs & Viva

Hyper Amonia	Explain formation, transport and toxicity of ammonia in the body	C2	SGD	MCQs, SAQs & Viva
Acid base imbalance	Explain causes and compensation of acid base disorders	C2	SGD	MCQs, SAQs & Viva
Sodium & Chloride Metabolism	Describe causes and effects of hypo and hyper natremia, hypo and hyper kalemia	C2	SGD	MCQs, SAQs & Viva

Anatomy Self Directed Learning (SDL)

Topics	Learning Objectives Students Should Be Able To	Learning Resources
Posterior abdominal wall I (Fascia & Muscles)	• Describe the the fascia of posterior abdominal wall • Tabulate the muscles of posterior abdominal wall with reference to, origen, insertion, nerve supply and action, • Describe the relations of Psoas major muscle. • Discuss Psoas abscess • Read a relevant research article • Use digital Library	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 537- 541). ❖ **https://www.youtube.com/watch?v=5ZnlcZrC-XY**
Posterior abdominal wall II (Nerves)	• Trace the nerves present on posterior abdominal wall • Discuss the formation of nerves • Discuss the formation of lumbosacral plexus • Discuss clinical significance of Lumbar symphathectomy • Read a relevant research article	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 527-532). ❖ **https://www.youtube.com/watch?v=5ZnlcZrC-XY**
Posterior abdominal wall III (vessels) & Lumbar Vertebrae	• Enlist branches of Abdominal Aorta. • Describe the tributaries of inferior vena cava. • Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk. • Differentiate between typical and atypical lumbar vertebrae. • Identify different parts of lumbar vertebrae. • Discuss the attachments of lumbar vertebrae. • Discuss abdominal aortic aneurysm	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 541-544, 544-547). ❖ **https://www.youtube.com/watch?v=pSDYlPzNg4s**
Kidney	• Discuss the site and extent of kidneys • Differentiate right from left kidney • Understand the bio-physiological aspects of kidney	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 515-517,523-524). ❖ **https://www.youtube.com/watch?v=ZVlVquVYGDo**

	• Discuss the renal capsule and its role in support of kidney. • Describe the structure of cortex and medulla • Describe peritoneal relationship of both kidneys. • Describe visceral relationship of both kidneys • Explain blood supply of both kidneys with emphasis on renal artery. • Discuss the venous drainage of both kidneys. • Discuss related clinicals; perinephric abscess, nephroptosis, renal cysts and renal colic	
Ureter	• Discuss extent and course of ureter in abdomen and pelvis in males and females • Explain peritoneal reflections of ureter in both sexes. • Describe relations of ureter. • Describe the arterial, venous and lymphatic drainage of ureter. • Discuss the related clinicals; ureteric colic • Read a relevant research article	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 517-518,525). ❖ **https://www.youtube.com/watch?v=1P0utMb5nkg**
Supra renal gland	• Describe the location & visceral relations of right and left supra renal glands • Understand the bio-physiological aspects of kidney • Discuss supra renal cortex and medulla • Discuss vessels and nerves of supra renal gland • Discuss the related clinicals • Read a relevant research article	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 519-523). ❖ **https://www.youtube.com/watch?v=iE8nCvLaGM4**
Urinary bladder	• Interpret size and extent of urinary bladder in different ages and states. • Discuss the peritoneal and visceral relationships of urinary bladder(bladder bed) • Understand the bio-physiological aspects of kidney	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 591-595). ❖ **https://www.youtube.com/watch?v=tGouMldaQgU**

	• Discuss the trigone of urinary bladder • Elaborate nerve supply of urinary bladder • Discuss the related clinicals; urinary incontinence, suprapubiccystotomy and atonic bladder	
Urethra	• Describe different parts of male and female urethra. • Explain blood supply, innervation and lymphatics of urethra in both sexes • Discuss the clinically significant differences between male and female urethra • Read a relevant research article	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 595). ❖ **https://www.youtube.com/watch?v=EQUdo392wg0**

Physiology Self Directed Learning (SDL)

Topics Of SDL	Learning Objective	References
Body fluid compartments, Volume & osmolarity of ECF &ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality,Osmosis and Osmotic pressure	❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition andvolume Section 07 (Chapter 38, Page 695) ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 245) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiologyof Body Fluids. (Chapter 26,Page 449-459) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys.Section 05. (Chapter 25, Page 305-313)
Physiology of Renal system,Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	• Ganong's Review of Medical Physiology.25TH Edition. Renal Physiology (Chapter 37, Page 671) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 624-636) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiologyof Body Fluids. (Chapter 27, Page 460-469) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 26, Page 321-324) (Chapter 27, Page 331-332)

Abnormalities of fluid volume &regulation, Edema	• Volume and osmolarity in abnormal states • Abnormalities of fluid volume & Regulation • Hyponatremia and Hypernatremia • Edema and its Mechanism. • Fluid in potential spaces of the body	• Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 251) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 20 Page 672-677) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Regulation ofVolume and Osmolality of the Body Fluids. (Chapter 32, Page 530) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys.Section 05. (Chapter 25, Page 314-320)
B. Regulation of GFR & RBF-I(Determinants of GFR & RBF) **C.** Regulation of GFR & RBF-II,Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	❖ A. ❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition andvolume, Section 07 (Chapter 37, Page 674) ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 257,261)
RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback Mechanism • Macula-densa Feedback Mechanism	❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 28,Page 473) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 331,333,337) ❖ B. ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 337,342) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Filtration and Blood Flow. (Chapter 28,Page 476,483)
Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in • Proximal tubule • Loop of Henle • Distal tubule & collecting tubule. • Active and passive transport mechanisms	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 679) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 267) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 636,643) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 29,Page 487-497) . (Chapter 30,Page 498) . (Chapter 31,Page 508) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The

		Body Fluids And Kidneys. Section 05. (Chapter 28, Page 343,355)
Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 39, Page 709) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 276,298) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 355-360)
B. Clearance methods to quantify kidney function **C.** Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, • Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	❖ A. ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 255) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19,Page 643- 647) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. (Chapter 27, Page 469,483) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 360-364) ❖ B. ❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 691) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19,Page 648) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 26, Page 324-328)

Biochemistry Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning resources
Amino Acids Pool, Protein Turnover, Nitrogen balance & Transport of Amino Acids	• Understand protein turn-over, amino acid pool and entry of amino acid into cell • Describe positive and negative nitrogen balance	• Lippin cott Biochemistry 8th edition (chapter 19 page - 271) • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854183/
Urea cycle & its Disorders	• Describe the location, steps and regulation of Urea cycle • Describe Disorders of the urea cycle	• Lippin cott Biochemistry 8th edition (chapter 19 page - 279) • https://my.clevelandclinic.org/health/diseases/23470-

		urea-cycle-disorder
Arginine & Branched Chain Amino Acid Metabolism, Ammonia Toxicity	• Explain Metabolism of branched chain amino acids • Discuss related inherited disorders	• Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477) • https://link.springer.com/article/10.1007/BF00998474
Sodium & Chloride Metabolism	• Describe Daily requirements, sources and functions of sodium • Explain causes and effects of hyponatremia & hypernatremia • Describe Daily requirements, sources, functions & their deficiency and toxic effects on body	• Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9th edition (Chapter 02 page 46) • https://www.sciencedirect.com/topics/medicine-and-dentistry/sodium-metabolism

Histology Practicals Skill Laboratory (SKL)

Topic	At the End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
kidney	• Identify the histological slide of kidney. • Illustrate the histological structure of Kidney. • Enlist two points of identification. • Focus the slide	P C2 C1 P	Skill Lab	OSPE
Ureter	• Identify the histological slide of ureter • Illustrate the histological structure of ureter. • Enlist two points of identification. • Focus the slide	P C2 C1 P	Skill Lab	OSPE
Urinary bladder	• Identify the histological slide of urinary bladder. • Illustrate the histological structure of urinary bladder • Enlist two points of identification. • Focus the slide	P C2 C1 P	Skill Lab	OSPE

Physiology Practicals Skill Laboratory (SKL)

Practical	At the End of This Skill Lab, Student Should Be Able to Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools
Specific gravity of Urine	• Apparatus identification	C1	Skill lab	OSPE
	• Principle	C1		
	• Procedure	P, A		
	• Precautions	C1		
	• Use of urinometer	C1		
	• Recall normal values of specific gravity	C1		

Biochemistry Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Urine analysis I	Examine urine for its color, odor, pH and specific gravity Perform tests on urine to detect its normal constituents	P	Skill Lab	OSPE
Urine analysis II	Perform tests to detect abnormal constituents of urine (proteins, ketone bodies, bile salts)	P	Skill Lab	OSPE
Estimation of urea	Perform estimation of urea	P	Skill Lab	OSPE
Estimation of creatinine	Perform estimation of creatinine	P	Skill Lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **PBL**
- **Vertical Integration LGIS**

Basic and Clinical Sciences (Vertical Integration)

Case Based Learning (CBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
Anatomy	• Renal Failure	Apply basic knowledge of subject to study clinical case.	C3
	• Ureteric Colic	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Acute Glomerulo Nephritis	Apply basic knowledge of subject to study clinical case.	C3
	• Anuria	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Metabolic Acidosis	Apply basic knowledge of subject to study clinical case.	C3
	• Ammonia Toxicity	Apply basic knowledge of subject to study clinical case.	C3

Problem Base Learning (PBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
PBL	• Renal Failure	Apply basic knowledge of subject to study clinical case.	C3

Large Group Interactive Sessions (LGIS)

Surgery

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Investigations of urinary tract	• Understand the diagnostic approach and interpretation of urinary tract investigations including urinalysis, urine culture, ultrasonography, and intravenous urography.	C2	LGIS	MCQs
	• Demonstrate proficiency in recognizing common urinary tract disorders through investigative findings, facilitating accurate diagnosis and management decisions.	C2		
Hydronephrosis / Pyonephrosis	• Define hydronephrosis and pyonephrosis, including their etiology and pathophysiology.	C2	LGIS	MCQs
	• Identify clinical presentations, diagnostic modalities, and management strategies for both conditions, emphasizing the importance of early recognition and intervention to prevent renal damage.	C2		

Medicine

Topic	At The End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Acute renal failure	• Understand the etiology, pathophysiology, and clinical manifestations of ARF	C2	LGIS	MCQs
	• Recognizing the diagnostic criteria and appropriate investigations for ARF	C2	LGIS	MCQs
CRF & Rehabilitation of patient with CRF	• Understand the etiology, pathophysiology, clinical manifestations, and management options of CRF.	C2	LGIS	MCQs
	• Recognize the importance of rehabilitation strategies such as dietary modifications, medication management, dialysis, and transplantation in improving patient outcomes and quality of life.	C2	LGIS	MCQs

Potassium imbalance and its management	• Understand the physiological role of potassium in the body and recognize the clinical manifestations of hypo- and hyperkalemia.	C2	LGIS	MCQs
	• Develop competence in diagnosing and managing potassium imbalances, including appropriate treatment modalities and monitoring strategies.	C2	LGIS	MCQs

Community Medicine

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Biostatistics-1 Basic concepts and uses (Descriptive). Data and its types.	• Define biostatistics and correlate its importance in medical research.	C1	LGIS	MCQs
	• Understand data and its types	C2		
Biostatistics-2 Basic concepts and uses (Descriptive). Data and its types.	• Define biostatistics and correlate its importance in medical research.	C1	LGIS	MCQs
	• Understand data and its types	C2		

Obstetrics & Gynaecology

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Physiological changes in the renal system in pregnancy	• The anatomic and functional changes in the renal system in pregnancy	C2	LGIS	MCQs
	• The changes in indices of renal function during pregnancy	C2		

Pharmacology

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to diuretics	• Understanding the mechanism of action of diuretics in altering renal function to promote urine production.	C2	LGIS	MCQs
	• Identifying the major classes of diuretics, their pharmacokinetics, clinical indications, and potential side effects.	C2		
	• Exploring the role of diuretics in managing conditions such as hypertension, edema, and congestive heart failure	C2		

List of Renal Module Vertical Courses Lectures

Sr. #	Date/Day	Week	Department	Time	Topic Of Lectures	Teachers Name & Contact #
1.	06-05-2024 MONDAY	3rd	Surgery	10:30 am – 11:20 am	Investigations of urinary tract	Dr. Faraz Basharat Dr. Muhammad Amin
2.	06-05-2024 MONDAY	3rd	Medicine	11:20 am – 12:10 Pm	Acute renal failure	Dr. Saima Meer 0343-5761430 Dr. Mudassir
3.	07-05-2024 TUESDAY	3rd	Medicine	11:20- 12:10pm	CRF & Rehabilitation of patient with CRF	Dr. Mudassar 0321-6813249 Dr. Saima Meer 0343-5761430
4.	08-05-2024 WEDNESDAY	3rd	Surgery	10:30 am – 11:20 am	Hydronephrosis / Pyonephrosis	Dr. Muhammad Ali Dr. Ahmed Shahzad
5.	08-05-2024 WEDNESDAY	3rd	Obstetrics & Gynecology	11:20 am – 12:10 pm	Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis, stress incontinence)	Dr. Humaira Noreen Dr. Talat Farkhanda
6.	13-05-2024 MONDAY	4th	Medicine	11:20 am - 12:10 pm	Potassium imbalance and its management	Dr. Mudassar 0321-6813249 Dr. Saima Meer 0343-5761430
7.	15-05-2024 WEDNESDAY	4th	Pharmacology	11:20 am – 10:10 Am	Introduction to diuretics	Dr. Uzma 0336-5178766 (Even) Dr. Haseeba 0331-4453835 (Odd)

SECTION – IV

Spiral Courses

Content

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

Introduction to Spiral Courses

The Holy Quran Translation

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

Bioethics

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

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

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

Professionalism

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

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

Communication Skills

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

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

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

Behavioral Sceinces

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

Family Medicine

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

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

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

Artificial Intelligence

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

Integrated Undergraduate Research Curriculum

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

Entrepreneurship

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

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

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

Digital Literacy Module

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

Early Clinical Exposure (ECE)

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

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

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

The Holy Quran Translation Lecture

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Imaniat	• Describe the answers to questions of the Pagans of Arab • Describe the purpose of sending the Prophets.	C2	LGIS	SAQ
Ibadat	• Understand the concept of Hijrah in Holy Quran • Disscus the significance of consistency in religion	C2	LGIS	SAQ

Radiology & Artificial Intelligence

Topic	At The End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Prenatal Ultrasonography	• Interpret normal ultrasonography of renal system	C2	LGIS	MCQs
	• Discuss features of different congenital abnormalities of renal system	C2		
Contrast Nephropathy	• Understand the diverse manifestations of nephropathy, including diabetic nephropathy and IgA nephropathy	C2	LGIS	MCQs

Biomedical Ethics and Professionalism

Topic	At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Islam & Teachings of Bioethics	• Conceptualize the Islamic teachings of medical ethics. • Outline the main points in oath of Muslim doctor. • Correlate the 4 principles of medical ethics with principles of Islamic medical ethics	C2	LGIS	MCQs
Ethics of social media & advertising	• Delineate the principles of ethics involved in social media & advertising including. • Publishing or broadcasting information • Certificates, Reports and other documents • Teaching Photography and Consent			
Ethical principles	• Elaborate General ethical 06 basic ethical principles: autonomy, beneficence, non-maleficence & justice.			

	• Explain the process of ensuring patient autonomy, beneficence, non-maleficence, respect & justice while informing/ deciding on a treatment modality			

Integrated Undergraduate Research Curriculum (IUGRC)

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
How to Generate a Research Question	• How to generate a research question according to FINER Criteria	C3	Hands on Session	MCQs
	• Formulate the research question according to PICOT format – problem/population, intervention, comparison, outcome and time frame			
	• To understand how a properly formulated research question is related to an efficient literature review			
	• Development of research protocol including research objectives			
Session on Data Analysis	• Understand statistical methods applicable to medical data. • Mastertools for data visualization and interpretation. • Develop skills to critically evaluate research findings for their clinical significance and validity.	C3	Hands on Session	MCQs
Manuscript Writing	• Structure their manuscripts coherently. • Employ appropriate scientific language, and adhere to journal guidelines, thereby enhancing their ability to communicate research findings effectively in scholarly publications.	C3	Hands on Session	MCQs

Family Medicine

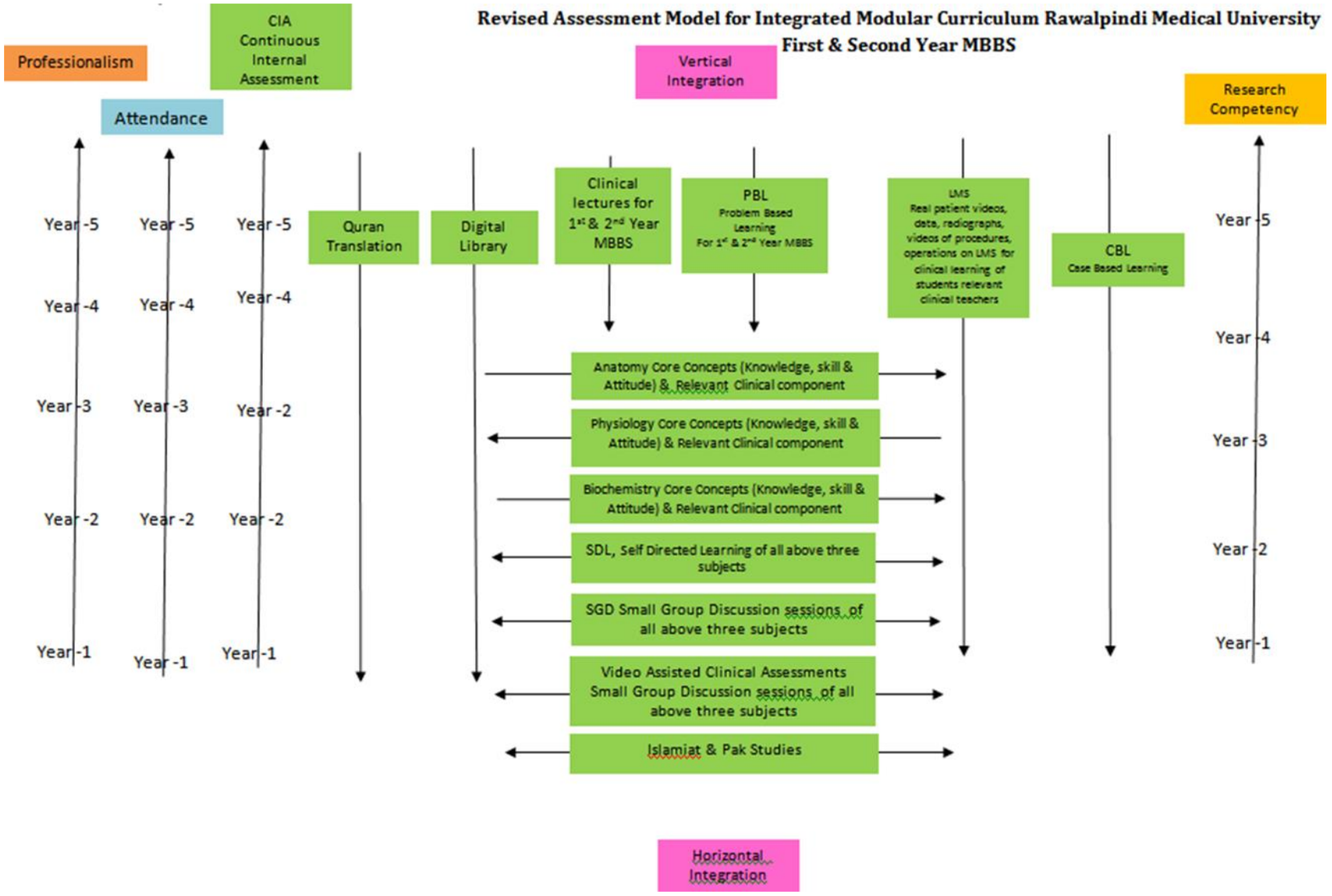
Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Renal Failure	• Describe presenting complains of patients with Renal failure	C3	LGIS-1	MCQs
	• Disscus complications of Renal failure			
	• Descirbe intial treatment of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

Entrepreneurship

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Ideate Initial Idea	• Identify healthcare challenges and develop innovative solutions.	C2	LGIS	MCQs
	• Understand the healthcare market landscape to identify opportunities and assess demand.	C2		
	• Describe the ethical implications of healthcare entrepreneurship, including patient privacy and safety.	C2		

List of Renal Module Spiral Courses Lectures

Sr. #	Date/Day	Week	Department	Time	Topic Of Lectures	Teachers Name & Contact #
1.	29-04-2024 MONDAY	2nd	Bioethics	10:30 am – 11:20 am	Ethical principles	Dr. Arsalan (0334-3911629)
2.	30-04-2024 TUESDAY	2nd	Research Practical Session II	10:30 am – 11:20 am	Questionnaire Development	Dr. Khuala Noreen Dr. Afifa Kalsoom
3.	03-05-2024 FRIDAY	2nd	Quran Translation – I	09:20 am – 10:10 am	Imaniat-3	Mufti Naeem Sherazi 0300-5580299 (Even)
					Ibadaat-3	Dr. Fahd Anwar 0300-5156800 (Odd)
4.	07-05-2024 TUESDAY	3rd	Research Practical Session III	10:30am-11:20 am	Session on data analysis	Dr. Khuala Noreen Dr. Afifa Kalsoom
5.	10-05-2024 FRIDAY	3rd	Quran Translation – II	08:00 am – 09:00 am	Ibadaat-4 Imaniat-4	Mufti Naeem Sherazi 03005580299 (Even) Dr. Fahd Anwar 03005156800 (Odd)
6.	13-05-2024 MONDAY	4th	Research Practical Session IV	10:30 am – 11:20 am	Manuscript writing	Dr. Khuala Noreen Dr. Afifa Kalsoom
7.	14-05-2024 TUESDAY	4th	Family Medicine	11:20 am – 12:10 am	Renal Failure	Dr. Sidra Hamid (03315025147) Dr. Sadia Mufti Naem Sherazi 03005580299 (Even)



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

60% and above is passing marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%	81 - 100%

90% is eligibility criteria for appearing professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular,modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given theshare according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based),modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in Renal Module I

Block	Sr #	Module – 1 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Biochemistry Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	7	Assessment of Clinical Lectures	Formative	15 Minutes				
	8	Assessment of Bioethics Lectures	Summative	2 Minutes				
	9	Assessment of IUGRC Lectures	Summative	10 Minutes				

No. of Assessments of Anatomy for Second Year MBBS

Renal Module

Block	Sr #	Module – 1 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Weekly LMS based Assessments of Anatomy	Formative	06-05-2024 & 13-05-2024 09:00PM - 09:30PM 30 Minutes	2 Hours & 40 minutes	60 Minutes	4 Formative	2 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	02-05-2024 12:00pm- 12:30pm 10 Minutes				
	3	End Module Examinations (SEQ, MCQs, SAQ & EMQ Based)	Summative	17-05-2024 08:30am - 10:30am 2 Hours				
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes				
	5	Structured & Clinically oriented Viva voce	Summative	21-05-2024 & 22-05-2024 09:00am - 01:00pm 10 Minutes/student				
	6	Assessment of Clinical Lectures	Formative	15-05-2024 09:30am- 10:00am 10 Minutes				
		Total	**3 Hours 30 minutes**			**5 Assessments**		

No. of Assessments of Physiology for Second Year MBBS
Renal Module

Block	Sr. #	Module – 1 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Date/Time/Duration	Summative Assessment Time	Formative Assessment Time		
Block - I	1	Weekly LMS based Assessments of Physiology	Formative	07-05-2024 & 14-05-2024 09:00PM -09:30PM 30 Minutes	2 Hours & 40 minutes	50 minutes	3 Formative	2 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	02-05-2024 12:00pm - 12:30pm 10 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	20-05-2024 08:30am -10:30am 2 Hours				
	4	Structured & Clinically oriented Viva voce	Summative	21-05-2024 & 22-05-2024 09:00am -01:00pm 10 Minutes/student				
	5	Assessment of Clinical Lectures	Formative	5-05-202409:30am-10:00am 10 Minutes				
		Total	**3 Hours 30 minutes**		**5 Assessments**			

No. of Assessments of Biochemistry for Second Year MBBS
Renal Module

Block	Sr. #	Module – 1 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Weekly LMS based Assessments of Biochemistry	Formative	08-05-2024 & 15-05-2024 09:00PM - 09:30PM 30 Minutes	2 Hours & 40 minutes	50 Minutes	3 Formative	2 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	02-05-2024 12:00pm - 12:30pm 10 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	18-05-2024 08:30am- 10:30am 2 Hours				
	4	Structured & Clinically oriented Viva voce	Summative	23-05-2024 10 Minutes				
	5	Assessment of Clinical Lectures	Formative	5-05-2024 08:30am- 10:30am 10 Minutes				
	Total			**3 Hours 30 minutes**			**5 Assessments**	

Learning Resources

Subject	Resources
Anatomy	**A. Gross Anatomy** 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III **B. Histology** 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. **C. Embryology** 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	**A. Textbooks** 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. **B. Reference Books** 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	**Textbooks** 1. Harper's Illustrated Biochemistry 32th edition. 2. Lehninger Principle of Biochemistry 8th edition. 3. Biochemistry by Devlin 7th edition. 4. Lippincott Illustrated Biochemistry 32th edition.
Community Medicine	**Textbooks** 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	**Textbooks** 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
Pharmacology	**Textbooks** 1. Lippincot Illustrated Pharmacology 9th edition.

	2. Basic and Clinical Pharmacology by Katzung 5th edition.

SECTION - V

Time Table

Integrated Clinically Oriented Modular Curriculum for Second Year MBBS

Renal Module Time Table

Second Year MBBS

Session 2023 - 2024

Batch- 50

Renal Module Team

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

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Sheena Tariq (Senior Demonstrator of Physiology)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Ali Raza (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Rahat Afzal (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Uzma Kiyani (Senior Demonstrator of Physiology)

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

Discipline wise Details of Modular Content

Block	Module	Embryology	Histology	Gross Anatomy
I	• Anatomy	Embryology • Kidney • Ureter • Urinary Bladder • Urethra	Histology • Kidney • Ureter • Urinary Bladder	• Posterior Abdominal Wall & Organs of Urinary System
	• Biochemistry	• Amino Acid Pool Protein Turn Over Nitrogen Balance & transport of Amino Acid, • Urea Cycle & Disorder • Amino Acid Metabolism • Ammonia Toxicity • Acid Base in Balance • Serum Electrolyte		
	• Physiology	• Body Fluid Compartments, Volume & osmolarity of ECF NICF • Physiology of Renal System, GFR • Regulation of GFR & RBF • Tubular Reabsorbtion & Scretion • Micturition Reflex & Abnomalities • Acid base balance		
	Spiral Courses			
	• The Holy Quran Translation	• Imaniat 3 • Ibadat 3 • Imaniat 4 • Ibadat 4		
	• Bioethics & Professionalism	• Ethical principles		
	• Radiology & Artificial Intelligence	• Prenatal ultrasonography • Contrast Nephropathy		
	• Research Club Activity	• Questionnaire Development (Practical Session-II) • Session on data analysis (Practical Session-III) • Manuscript writing (Practical Session-IV)		
	• Family Medicine	• Renal Failure		

	Vertical Integration	
	Clinically content relevant to Renal module • Acute renal failure (Medicine) • Potassium imbalance and its management (Medicine) • CRF & Rehabilitation of patient with CRF(Medicine) • Hydronephrosis / Pyonephrosis (Surgery) • Investigations of urinary tract (Surgery) • Renal calculi (Surgery) • Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis, stress incontinence) (Obstetrics & Gynecology) • Introduction to diuretics (Pharmacology)	
	Entrepreneurship	
	• Ideate Initial Idea	
	Early Clinical Exposure (ECE)	
	• Clinical Rotations	• Cases of Renal failure • Dialysis • Renal Transplant • Ultrasound of Kidney • Plain X-Ray • KUB Nephrotic Syndrome

Categorization of Modular Content of Anatomy

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

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

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

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	2 * 06 = 12 hours
2.	Small Group Discussions (SGD)	1.5*11=16.5 hours
4.	Practical / Skill Lab	1.5 * 15 = 22.5 hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1 * 6 = 06 hours
2.	Small Group Discussions (SGD)	2*3 + 1*9=15 hours
4.	Practical / Skill Lab	1.5 * 3 = 4.5 hours
5.	Self-Directed Learning (SDL)	1 * 7 = 7 hours

Categorization of Modular Content of Physiology

Category A*	**Category B****	**Category C*****				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
Regulation of GFR & RBF – I, (Determinants of GFR and RBF **(Prof Dr Samia Sarwar/Dr. Faizania)**	Excretion of dilute urine **(Dr. Sidra)**		Accute Glomerular Nephritis	Estimation of specific gravity of urine Examination of 9th, 10th, 11th & 12th cranial nerves Examination of 5th cranial nerves	Formation of dilute & concentrated urine Acid base balance. Volume & osmolarity of ECF & ICF, Abnormalities of fluid volume & regulation (first week,16-03-2023)	Body fluid compartments, Volume & osmolarity of ECF & ICF. Physiology of Renal system, Glomerular filtration rate Abnormalities of fluid volume & regulation, Edema **A.** Regulation of GFR & RBF-I (Determinants of GFR & RBF) **B**. Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation of GFR and RBF/Macula densa feedback mechanism Tubular reabsorption & secretion along various parts of nephrons Regulation of tubular reabsorption **A**. Clearance methods to quantify kidney function **B.** Micturition reflex & Abnormalities of micturition
Regulation of GFR & RBF – II, Physiological control of GFR and RBF and Autoregulation of GFRand RBF/ macula densa feedback mechanism **(Prof Dr Samia Sarwar/Dr. Faizania)**	Excretion of concentrated urine (counter current multiplier) **(Dr. Sidra)**					
Physiology of Renal system and Glomerularfiltration rate **(Dr. Faizania)**	Excretion of concentrated urine (counter currentexchanger)**(Dr. Sidra)**					
Tubular reabsorption & secretion along various partsof nephrons **(Dr. Faizania)**	Introduction to physiology of acid base balance & buffer systems, Respiratory and renal regulation of acid base balance**(Dr. Sidra)**					
Regulation of tubular reabsorption **(Dr. Faizania)**	Acid base disorders **(Dr. Sidra)**					
Clearance methods to quantify kidney function **(Dr. Faizania)**	Body fluid compartments, Volume & osmolarity of ECF &ICF **(Dr. Sheena)**					
Micturition reflex & Abnormalities of micturition **(Dr. Faizania)**	Abnormalities of fluid volume & regulation, Edema **(Dr. Sheena)**					
	Control of ECF osmolarity **(Dr. Sheena)**					
	Regulation of ECF K+ concentration, Regulation of Ca++,PO4-3& Mg+2concentration **(Dr. Sheena)**					
	Integration of renal mechanism for control of ECF,Nervous & hormonal factors for renal body fluid feedbackcontrol **(Dr.**					

	Sheena) Renal failure & hemodialysis **(Dr. Sheena)**					

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation of Teaching Staff / HumanResource	Total number of teaching staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01 (DME)
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	08

Contact Hours (Faculty) & Contact Hours (Students)

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

Categorization of Modular Content of Department of Biochemistry:

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

Category A*: By Assistant Professor & Senior Demonstrators with Postgraduate Qualification

Category B:** By Senior Demonstrators

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Biochemistry

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

Contact Hours (Faculty) & Contact Hours (Students)

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

Time Table for Renal Module
(15-04-2024 To 17 -04-2024)

DATE/DAY	08:00 am – 12:00 pm	12:00 pm – 01:00 pm	01:00 pm -02:00 pm
15-04-2024 MONDAY	GIT OSVE	Break	SDL
16-04-2024 TUESDAY	GIT OSVE		SDL
17-04-2024 WEDNESDAY	GIT OSVE		SDL

Time Table for Renal Module (First Week)
(18-04-2024 To 20-04-2024)

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)
18-04-2024 THURSDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		**Break**	**ANATOMY (LGIS)**		**BIOCHEMISTRY (LGIS**		**Break**	**DISSECTION/SGD**	SDL Physiology Body fluid compartments& Edema
		Body fluid compartments Volume & Osmolarity of ECF & ICF	Physiology of Renal system, Glomerular filtration rate		**Embryology**	**Histology**	Amino Acids Pool, Protein Turnover, Nitrogen balance & Chemical Reaction of Amino Acids	Glycine Phenylalanine & Tryosine Metabolism		Fascia, Muscles and Nerves of Posterior Abdominal wall Batches, Teachers & Venue Mentioned in Table No. 2	
					Development of kidney & Ureter	kidney I					
		Dr. Sheena (Even)	Dr. Faizania (Odd)		Prof. Dr. Ifra (Even)	Prof. Dr Ayesha / Ass. Prof. Dr. Maria (Odd)	Dr. Aneela / Dr. Uzma (Even)	Dr. Kashif Rauf (Odd)			
19-04-2024 FRIDAY	08:00am – 09:00am	**PHYSIOLOGY (LGIS)** 09:00am – 10:00am		**ANATOMY (LGIS)** 10:00am – 11:00am			**BIOCHEMISTRY (LGIS)** **11:00am -12:00noon**			SDL Anatomy Posterior abdominal wall	
	Practical &CBL/SGD Topics & venue mentioned at the end. **Schedule on Wednesday batch (17-04-2024)** Batches, Teachers & Venue Mentioned in Table No. 1	Physiology of Renal system, Glomerular filtration rate	Body fluid compartments Volume & Osmolarity of ECF & ICF	**Histology**		**Embryology**	Glycine Phenylalanine & Tryosine Metabolism	Amino Acids Pool, Protein Turnover, Nitrogen balance & Chemical Reaction of Amino Acids			
				Kidney-I		Development of kidney & Ureter					
		Dr. Faizania (Even)	Dr. Sheena (Odd)	Prof. Dr Ayesha / Ass. Prof. Dr. Maria (Even)		Prof. Dr. Ifra (Odd)	Dr. Kashif Rauf (Even)	Dr. Aneela / Dr. Uzma (Odd)			
20-03-2024 SATURDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		**Break**	**ANATOMY (LGIS)**		**BIOCHEMISTRY (SSDL)**		**Break**	**DISSECTION/SGD**	SDL Biochemistry Amino Acids Pool, Protein Turnover, Nitrogen balance & Transport of Amino Acids
		Abnormalities of fluid volume & regulation Edema	Regulation GFR & RBF-I (Determinats of GFR & RBF)		**Histology**	**Embryology**	Amino Acid Pool & Chemical Reaction of Amino Acid			Vessels of Posterior Abdominal Wall Lumbar Vertebra Batches, Teachers & Venue Mentioned in Table No. 2	
					Development of urinary bladder and urethra	kidney II					
		Dr. Sheena (Even)	Prof. Dr. Samia Sarwar / Dr. Faizania (Odd)		Prof. Dr. Ifra (Even)	Ass. Prof. Dr. Maria (Odd)	Dr. Aneela / Dr. Uzma (Even)	Dr. Kashif Rauf (Odd)			

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Disscusion (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

- Histology of Kidney (Anatomy/ Histology-practical) venue Histology Laboratory-Dr. Tariq Furqan
- Serum estimation of Urea & Creatinine (Biochemistry practical) venue- Biochemistry Laboratory
- Estimation of specific gravity of urine (Physiology –practical) Physiology Laboratory

Topics for SGDs / CBL with Venue

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

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-120	Dr. Sadia baqir	Anatomy Lecture Hall 03	Supervised by Prof. Dr. Ayesha Yousaf
B	121-240	Dr. Gaiti Ara	New Lecture Hall Complex # 01	
C	241 onwards	Dr. Minahil Haq	Anatomy Lecture Hall 04	

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Shazia (Demonstrator Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL Session during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Time Table for Renal Module (Second Week)
(22-04-2024 To 27-04-2024)

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)
22-04-2024 MONDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		Break	**BIOETHICS**		**BIOCHEMISTRY (LGIS)**		Break	**DISSECTION/CBL**	SDL Physiology Volume & osmolarity of ECF& ICF, Abnormalities of fluid volume & regulation
		Regulation GFR & RBF-I (Determinats of GFR & RBF)	Abnormalities of fluid volume & regulation Edema		Islam & Teachings of Bioethics		Urea cycle & its Disorders	Glutamine, Histidine, Threonine & Polyamines Metabolism		Kidney Batches, Teachers & Venue Mentioned in Table No. 1	
		Prof. Dr. Samia Sarwar / Dr. Faizania (Even)	Dr. Sheena (Odd)		Prof. Dr. Akram Randhwara		Dr. Aneela / Dr. Uzma (Even)	Dr. Kashif Rauf (Odd)			
23-04-2024 TUESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**PBL 1 (SESSION-I)**		**BIOCHEMISTRY (LGIS)**			**DISSECTION/CBL**	SDL Physiology Physiology of Renal system
		Excretion of dilute urine	Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation of GFR and RBF		PBL Team Batches, Teachers & Venue Mentioned in Table No. 3		Glutamine, Histidine, Threonine & Polyamines Metabolism	Urea cycle & its Disorders		Ureter Batches, Teachers & Venue Mentioned in Table No. 1	
		Dr. Sidra Hamid (Even)	Prof. Dr. Samia Sarwar/Dr. Faizania (Odd)				Dr. Kashif (Even)	Dr. Aneela / Dr. Uzma (Odd)			
24-04-2024 WEDNESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**BIOETHICS**			**RESEARCH PRACTICAL SESSION II**					**PBL 1 (SESSION-II)**	SDL Biochemistry Amino Acid Pool, Nitrogen Balance
		Ethics of social media & advertising			Questionnaire Development					PBL Team Batches, Teachers & Venue Mentioned in Table No. 3	
		Prof. Dr. Akram Randhwara			LTC Hall No. 1 Dr. Khuala Noreen Batch (A, B, C, D & E)		LTC Hall No. 4 Dr. Afifa Batch (F, G, H, I, J)				
25-04-2024 THURSDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**ANATOMY (LGIS)**		**PHYSIOLOGY (LGIS)**			**DISSECTION/SGD**	SDL Biochemistry Urea cycle & its Disorders
		Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation of GFR and RBF	Excretion of dilute urine		**Histology** kidney II	**Embryology** Development of urinary bladder and urethra	Excretion of Concemtrated urine (Counter Current Multiplier)	Tubular Reabsorbtion & Scretion along Various parts of nephron		Urinary bladder Batches, Teachers & Venue Mentioned in Table No. 2	
		Prof. Dr. Samia Sarwar/Dr. Faizania (Even)	Dr. Sidra Hamid (Odd)		Ass. Prof. Dr. Maria (Even)	Prof. Dr. Ifra (Odd)	Dr. Sidra Hamid (Even)	Dr. Faizania (Odd)			
26-04-2024 FRIDAY	**8:00 AM – 9:00 AM**	**9:00 AM – 10:00AM**			**10:00AM – 11:00 AM**		**11:00AM – 12:00PM**				
	RADIOLOGY	**QURAN TRANSLATION – I**			**PHYSIOLOGY (LGIS)**		**BIOCHEMISTRY (LGIS)**				
	Contrast Nephropathy	Imaniat-3	Ibadaat-3		Tubular Reabsorbtion & Scretion along Various parts of nephron	Excretion of Concemtrated urine (Counter Current Multiplier)	Ammonia Toxicity	Arginine & Branched Chain Amino Acid Metabolism		SDL Anatomy Ureter	
	Dr. Hina Hafeez (Even) Dr. Saba Binte Kashmir	Mufti Naeem Sherazi (Odd)	Dr. Fahd Anwar (Even)		Dr. Faizania (Even)	Dr. Sidra Hamid (Odd)	Dr. Aneela / Dr. Uzma (Even)	Dr. Kashif Rauf (Odd)			
27-04-2024 SATURDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		Break	**BIOCHEMISTRY (LGIS)**		**PHYSIOLOGY (LGIS)**		Break	**DISSECTION/SGD**	SDL Urinary bladder
		Excretion of concentrated urine (Counter current exchanger)	Regulation of tubular reabsorbtion		Arginine & Branched Chain Amino Acid Metabolism	Ammonia Toxicity	Regulation of tubular reabsorbtion	Excretion of concentrated urine (Counter current exchanger)		Suprarenal Gland & Urethra Batches, Teachers & Venue Mentioned in Table No. 2	
		Dr. Sidra Hamid (Even)	/Dr. Faizania (Odd)		Dr. Kashif (Even)	Dr. Aneela / Dr. Uzma (Odd)	Prof. Dr. Samia Sarwar/Dr. Faizania) (Even)	Dr. Sidra Hamid (Odd)			

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects) CBL / Small Group Disscusion (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

- Histology of Ureter (Anatomy/ Histology-practical) venue Histology Laboratory-Dr. Tariq Furqan
- Urine Analysis -I (Biochemistry practical) venue- Biochemistry Laboratory
- Examination of 5th Cranial Nerve (Physiology –practical) Physiology Laboratory

Topics for SGDs / CBL with Venue

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

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	**Roll No**	**Anatomy Teacher**	**Venue**
A	01-120	Dr. Sadia baqir	Anatomy Lecture Hall 03
B	121-240	Dr. Gaiti Ara	New Lecture Hall Complex # 01
C	241 onwards	Dr. Minahil Haq	Anatomy Lecture Hall 04

Supervised by Prof. Dr. Ayesha Yousaf

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Shazia (Demonstrator Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Sports Week	29th April – 4th May, 2024

Time Table for Renal Module (Third Week)
(06-05-2024 To 11-05-2024)

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)
06-05-2024 MONDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		Break	**SURGERY**		**MEDICINE**		Break	**DISSECTION/SGD**		SDL Physiology Excretion of dilute and Excretion of concentrated urine
		Control of ECF osmolarity	Clearence Method to Quantify kidney function		Investigations of urinary tract		Acute renal failure			Dissection/ Spottting Study of Models / Specimen Batches, Teachers & Venue Mentioned in Table No. 2		
		Dr. Sheena (Even)	Dr. Faizania (Odd)		Dr. Faraz Basharat (Even)	Dr. Muhammad Ameen (Odd)	Dr. Saima Meer (Even)	Dr. Mudassar (Odd)				
07-05-2024 TUESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**RESEARCH PRACTICAL SESSION III**		**MEDICINE**			**BIOCHEMISTRY (LGIS)**		SDL Physiology Clearance methods to quantify kidney function.
		Clearence Method to Quantify kidney function	Control of ECF osmolarity		Session on data analysis		CRF & Rehabilitation of patient with CRF			Acid Base Imbalance I	Sodium & Chloride Metabolism	
		Dr. Faizania (Even)	Dr. Sheena (Odd)		LTC Hall No. 1 Dr. Khuala Noreen Batch (A, B, C, D, E)	LTC Hall No. 4 Dr. Afifa Batch (F, G, H, I, J)	Dr. Saima Meer (Even)	Dr. Mudassar (Odd)		Dr. Aneela (Even)	Dr Nayab (Odd)	
08-05-2024 WEDNESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**SURGERY**		**OBSTETRIC & GYNAECOLOGY**			**DISSECTION/SGD**		SDL Biochemistry Arginine & Branched Chain Amino Acid Metabolism, Ammonia Toxicity
		Regulation of ECF K^+ &Regulation of ECF Ca^{++}, PO_4^{-3}& Mg^{+2}concentration	Micturition Reflex & Abnormalities of Micturition		Hydronephrosis / Pyonephrosis		Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis, stress incontinence)			Surface Marking Batches, Teachers & Venue Mentioned in Table No. 2		
		Dr. Sheena (Even)	Dr. Faizania (Odd)		Dr. Muhammad Ali (Even)	Dr. Ahmed Sajjad (Odd)	Dr. Humaira Noureen (Even)	Prof. Tallat Farkanda (Odd)				
09-05-2024 THURSDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**ANATOMY**		**BIOCHEMISTRY (LGIS)**			**DISSECTION/SGD**		SDL Biochemistry Sodium & Chloride Metabolism
		Micturition Reflex & Abnormalities of Micturition	Regulation of ECF K^+ &Regulation of ECF Ca^{++}, PO_4^{-3}& Mg^{+2}concentration		**Histology** Ureter, Bladder & Urethra	**Histology** Ureter, Bladder & Urethra	Sodium & Chloride Metabolism	Acid Base Imbalance I		Dissection/ Spottting (Kidney, ureter & Unrinary Bladdar) Batches, Teachers & Venue Mentioned in Table No. 2		
		Dr. Faizania (Even)	Dr. Sheena (Odd)		Prof. Dr. Ifra (Even)	Prof. Dr. Ayesha /Asst. Prof. Dr. Maria (Odd)	Dr Nayab (Even)	Dr. Aneela (Odd)				
10-05-2024 FRIDAY	**8:00 AM – 9:00 AM** **QURAN TRANSLATION – II**		**9:00 AM – 10:00AM** **PHYSIOLOGY (LGIS)**		**10:00AM – 11:00 AM** **PBL 2 (SESSION – I)**		**11:00AM – 12:00PM** **BIOCHEMISTRY (LGIS)**			SDL Anatomy Suprarenal gland & Urethra		
	Imaniat-3	Ibadaat-3	Renal Machanism for control of ECF, Nervous & hormonal factors for body Fluid	Physiology of acid base balance respiratory & renal regulation of acid base balance	PBL Team Batches, Teachers & Venue Mentioned in Table No. 3		Acid Base Imbalance II	Potassium Metabolism				
	Mufti Naeem Sherazi (Odd)	Dr. Fahd Anwar (Even)	Dr. Sheena (Even)	Dr. Sidra Hamid (Odd)			Dr. Aneela (Even)	Dr. Nayab (Odd)				
11-05-2024 SATURDAY	Early Clinicaly Exposure											

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Disscusion (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

- Histology of Urinary Bladder (Anatomy/ Histology-practical) venue Histology Laboratory-Dr. Tariq Furqan
- Urine Analysis-II (Biochemistry practical) venue- Biochemistry Laboratory
- Examination of 7th cranial nerve (Physiology –practical) Physiology Laboratory

Topics for SGDs / CBL with Venue

- Biochemistry CBL: Metabolic acidosis (Venue/: Lecture Hall No 2)
- Physiology SGD- Micturition Reflex & Abnormalities of Micturition (Venue: Lecture Hall No 5)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-120	Dr. Sadia baqir	Anatomy Lecture Hall 03	Supervised by Prof. Dr. Ayesha Yousaf
B	121-240	Dr. Gaiti Ara	New Lecture Hall Complex # 01	
C	241 onwards	Dr. Minahil Haq	Anatomy Lecture Hall 04	

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Shazia (Demonstrator Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Time Table for Renal Module (Fourth Week)
(13-05-2024 To 18-05-2024)

<table>
<tr><th>DATE/DAY</th><th>8:00am-9:20am</th><th colspan="2">9:20am – 10:10am</th><th>10:10am – 10:30am</th><th colspan="2">10:30am-11:20am</th><th colspan="2">11:20am-12:10pm</th><th>12:10pm-12:30pm</th><th>12:30pm – 2:00pm</th><th>Home Assignments(2HRS)</th></tr>
<tr><td rowspan="4">13-05-2024
MONDAY</td><td rowspan="4">Practical &CBL/SGD
(Scheduled om Monday 15-04-2024)
Topic and venue metioned in 1st week of renal module
Batches, Teachers & Venue Mentioned in Table No. 1</td><td colspan="2">PHYSIOLOGY (LGIS)</td><td rowspan="8">Break</td><td colspan="2">RESEARCH PRACTICAL SESSION IV</td><td colspan="2">MEDICINE</td><td rowspan="8">Break</td><td>DISSECTION/SGD</td><td rowspan="4">SDL Anatomy
Lumbar Vertebra</td></tr>
<tr><td>Physiology of acid base balanced respiratory & renal regulation of acid base balance</td><td>Renal Machanism for control of ECF, Nervous & hormonal factors for body Fluid</td><td colspan="2">Manuscript writing</td><td colspan="2" rowspan="2">Potassium imbalance and its management</td><td rowspan="3">Radiographs Lumbar Region / Cross Sectional Anatomy
Batches, Teachers & Venue Mentioned in Table No. 2</td></tr>
<tr><td colspan="2">LTC Hall No. 1 | LTC Hall No. 4
Dr. Khuala Noreen Batch (A, B, C, D, E) | Dr. Afifa Batch (F, G, H, I, J)</td></tr>
<tr><td>Dr. Sidra Hamid (Even)</td><td>Dr. Sheena (Odd)</td><td>Dr. Saima Meer (Even)</td><td>Dr. Mudassar (Odd)</td></tr>
<tr><td rowspan="4">14-05-2024
TUESDAY</td><td rowspan="4">Practical &CBL/SGD
(Scheduled om Tuesday 16-04-2024)
Topic and venue metioned in 1st week of renal module
Batches, Teachers & Venue Mentioned in Table No. 1</td><td colspan="2">PHYSIOLOGY (LGIS)</td><td colspan="2">ENTREPRENEURSHIP (LGIS)</td><td colspan="2">FAMILY MEDICINE</td><td>PBL 2 (SESSION – II)</td><td rowspan="4">SDL
Biochemistry
Sodium & Chloride Metabolism</td></tr>
<tr><td>Renal failure & hemodialysis</td><td>Acid base disorders</td><td colspan="2">Ideate Initial Idea</td><td colspan="2">Renal Failure</td><td rowspan="3">PBL Team
Batches, Teachers & Venue Mentioned in Table No. 3</td></tr>
<tr><td>Dr. Sheena (Even)</td><td>Dr. Sidra Hamid (Odd)</td><td colspan="2">Dr. Asif</td><td>Dr. Sidra Hamid (Even)</td><td>Dr Sadia (Odd)</td></tr>
<tr><td rowspan="4">15-05-2024
WEDNESDAY</td><td rowspan="4">Practical &CBL/SGD
(Scheduled om Saturday 11-05-2024)
Topic and venue metioned in 3rd week of renal module
Batches, Teachers & Venue Mentioned in Table No. 1</td><td colspan="2">PHYSIOLOGY (LGIS)</td><td colspan="2">BIOCHEMISTRY</td><td colspan="2">PHARMACOLOGY</td><td>DISSECTION/SGD</td><td rowspan="4">SDL Physiology Exam Preparation
Online Clinical Evaluation</td></tr>
<tr><td>Acid base disorders</td><td>Renal failure & hemodialysis Diuretics</td><td>Potassium Metabolism</td><td>Acid Base Imbalance II</td><td colspan="2">Introduction to diuretics</td><td rowspan="3">Dissection / Spotting
(Muscles and Fascia of Posterior Abdominal Wall)
Batches, Teachers & Venue Mentioned in Table No. 2</td></tr>
<tr><td>Dr. Sidra Hamid (Even)</td><td>Dr. Sheena (Odd)</td><td>Dr. Nayab (Even)</td><td>Dr Aneela (Odd)</td><td>Dr. Uzma (Even)</td><td>Dr. Haseeba (Odd)</td></tr>
<tr><td>16-05-2024
THURDAY</td><td colspan="11">SDL</td></tr>
<tr><td>17-05-2024
FRIDAY</td><td colspan="11" rowspan="2">Module Exam</td></tr>
<tr><td>18-05-2024
SATURDAY</td></tr>
</table>

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects) CBL / Small Group Disscusion (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

- Histology of Kidney, Ureter Bladder (Anatomy Histology Practical) Venue- Histology lab-Dr Minahil Haq
- Urine Report (Biochemistry Practical) Venue- Biochemistry laboratory
- Sense of Smell (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Acid Base Balance & disorders, Venue: Lecture Hall No 5)
- Biochemistry SDG: Serum Electrolytes (Sodium & Potassium) (Venue: Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-120	Dr. Sadia baqir	Anatomy Lecture Hall 03	Supervised by Prof. Dr. Ayesha Yousaf
B	121-240	Dr. Gaiti Ara	New Lecture Hall Complex # 01	
C	241 onwards	Dr. Minahil Haq	Anatomy Lecture Hall 04	

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Shazia (Demonstrator Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Tentative Date Sheet for End of Renal Module Assessment
(17-05-2024 To 23-05-2024)

Date / Day	8:00 AM – 02:00 PM
17-05-2024 FRIDAY	Anatomy Written & AV OSPE
18-05-2024 SATURDAY	Biochemistry Written & AV OSPE & Quran Translation
20-05-2024 MONDAY	Physiology Written & AV OSPE
21-05-2024 TUESDAY	OSVE
22-05-2024 WEDNESDAY	OSVE
23-05-2024 THURSDAY	OSVE

Tentative Date Sheet for End of Block-I (GIT & Renal Module) Assessment
(24-05-2024 To 28-05-2024)

Date / Day	8:00 AM – 02:00 PM
24-05-2024 FRIDAY	LMS Based Block Assessment (MCQs)
25-05-2024 SATURDAY	OSPE
27-05-2024 MONDAY	OSPE
28-05-2024 TUESDAY	OSPE

Note: Timetable Subject to Change

(Logistic details of Assessments will be notified separately)

SECTION-VI

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

Blue Print of Assessment for First Year & Second Year MBBS

Table of Specification

Tools of Asssessment: Cognitive: MCQ- Multiple Choice Questions, EMQs- Extended Matching Questions, SAQ- Short Answer Questions, SEQ- Short Essay Questions Psychomotor: AvOSPE- Audio Visual Assisted Objective Structured Pactical Examination, labOSPE- Laboratory Based Objective Structured Practical Examination, IOSPE- Integrated Objective Structured Practical Examination, COSPE- Clinically Oriented Objective Structed Practical Examination Affect: AED Reflective Writing- Artificial Intelligence, Entraprenureship, Digital Literacy based reflective writing, OSVE- Objective Structured Viva Assessment

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

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

Block	Subjects	LMS Based Assessment					OSPE						Grand Total	Total Block Time
		MCQs					LabOSPE	IOSPE	COSPE	Total	Marks	Time		
		C	HV	S	Total	Time	C	HV	S					
BLOCK	Anatomy	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS
	Physiology	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS
	Biochemistry	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS

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

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

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

Marks per Item

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

OSPE Time=1 Round of 40 Students =80 min

3 Round of 40 Students =240 min

OSVE=Time per student=5mins

Table of Specification for Integrated OSPE

Anatomy					
Sr. #	**Topics**	**Knowledge**	**Skill**	**Attitude**	**Marks**
Block 1 – GIT & Renal					
1	Deveplopment of Gastrointestinal Tract	30%	50%	20%	3
2	Development of Renal System				3
3	Microscopic Anatomy of Gastrointestinal tract				3
5	Microscopic Anatomy of Renal System				3
6	Practical Copy				3
Physiology					
1	Examination of Semse of Taste	30%	50%	20%	3
2	Examination of Sense of Smell				3
3	Examination of Superficial Reflexes				3
4	Examination of Deep Reflexes				3
5	Examination of Specific gravity of Urine				3
6	Practical Note Book / Sketch Copy				3
Biochemistry					
1	Bile	100%			2
2	Introduction to Instruments				
3	Quamtitaive Estimation of Serum Alkaline Phosphotase (ALP) by Spectrophotometer	100%			2
4	Quantitative Estimation of Serum Alanine Transminase (ALT) by Spectrophotometer				
5	Urine Analysis		90%	10%	2
6	Urine Report				
7	Quantitative Estimation of Serum Urea	100%			2
8	Qurantitative Estimation of Serum Creatinine				
9	Practical Notebook		80%	20%	2

Table Of Specification for Gross Anatomy OSPE

Sr. #	Topics	Knowledge	Skill	Attitude	Marks
Block 2- Pelvis and Brain					
1	Bones of pelvis	30%	50%	20%	3
2	Structures of Male pelvis				3
3	Structures of Female pelvis				3
4	External genitalia				3
5	Radiology of Pelvis				3
6	Meningies				3
7	Brain Stem and cerebellum				3
8	Diencephalon and telencephalon				3
9	Cranial fossae				3
10	Radiology of Skull (cranial fossae)				3

Annexure-I

(Sample MCQ, SEQ Papers, OSPE & Video Assisted OSPE)

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

RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT (MCQs)
2nd Year MBBS Module Exam (Renal)

1. A 12-year-old boy was presented to Emergency with severe pain in his right loin. Ultrasound examination revealed a stone lying 6 inches from the pelvi-ureteric junction. The most probable site of ureteric constriction is.
    a. Pelvic brim
    b. Oblique passage through wall of bladder
    c. Pelvi-ureteric junction
    d. Lateral angle of trigone
    e. Crossing of root of mesentery

2. Which of the following factors is taken into consideration while placing transplanted kidney in pelvis?
    a. Lack of inferior support in lumbar region
    b. Non-availability of major blood vessels in pelvis
    c. To decrease the size of ureter
    d. Less traction to blood vessels
    e. More space in pelvis

3. A 70-year-old post-menopausal woman presented to OPD with complaints of burning micturition. After investigation she was diagnosed as a case of cystitis as females do not possess
    a. Internal urethral sphincter
    b. External urethral sphincter
    c. No adipose tissue
    d. Ligamentous structures
    e. Skeletal muscle

4. The least dilatable part of male urethra is
    a. Prostatic
    b. Membranous
    c. Penile
    d. Bulbous
    e. Glans

5. A 56-year-old woman comes to the physician because of a 2-year history of recurrent urinary tract infections accompanied by left flank pain. Physical examination shows no abnormalities. Renal ultrasonography shows left-sided hydronephrosis. A T2-weighted coronal MRI of the abdomen is shown; the arrow indicates the hydronephrosis. The leftrenal collecting system is most likely obstructed at which of the following anatomic locations in this patient? (USMLE Pattern)

    a. Bladder neck
    b Mid ureter
    c. Renal calyx
    d. Ureteropelvic junction
    e. Ureterovesical junction

RAWALPINDI MEDICAL UNIVERSITY
RENAL MODULE EXAM 2ND YEAR MBBS
ANATOMY SEQS

Note: Attempt all questions. All questions carry equal marks. Draw diagram where necessary.

1. A male newborn was delivered vaginally at 38 weeks. Pregnancy was uneventful, and no fetal anomalies were detected at prenatal ultrasound controls. The neonate presented at birth with exposed, everted bladder that was clearly visible immediately below umbilical stump, a completely dorsally opened urethra. The scrotum was normally developed, but caudally displaced.
   a. What is the most probable diagnosis? (1)
   b. Give embryological basis of this congenital anomaly (4)

2. a. Draw and label histological structure of urinary bladder in relaxed and distended state. (3)

   b. Briefly describe microscopic features of Filtration Apparatus of Kidney (2)

RAWALPINDI MEDICAL UNIVERSITY
DEPARTMENT OF PHYSIOLOGY
SECOND YEAR MBBS EXAMINATION (MCQs)
(RENAL MODULE)

1. The enzyme secreted by kidneys for regulation of blood pressure is:
    a. Angiotensinogen
    b. Angiotensin I
    c. Renin
    d. Angiotensin II
    e. Angiotensin converting enzyme
2. ^{125}I-albumin is used for the measurement of:
    a. Total body water
    b. Plasma volume
    c. Extracellular fluid
    d. Blood volume
    e. Intracellular fluid
3. Peritubular capillary fluid reabsorption is increased by:
    a. Increased blood pressure
    b. Decreased filtration fraction.
    c. Increased efferent arteriolar resistance.
    d. Decreased angiotensin II.
    e. Increased renal blood flow
4. Value of Glomerular Filtration Rate is:
    a. 1100 ml/min
    b. 125 ml/min
    c. 180 ml/min
    e. 125 L/day
    d. 22 percent of cardiac output
5. A 40-year-old obese woman presented to medical specialist with complaints of edema. She was on a weight losing diet since last 3 months. Her detailed plasma investigations revealed hypoalbuminemia. The major cause of her edema was:
    a. Increased plasma colloid pressure
    b. Increased capillary hydrostatic pressure
    c. Decreased plasma colloid pressure.
    d. Decreased interstitial fluid hydrostatic pressure.
    e. Increased interstitial fluid hydrostatic pressure

RAWALPINDI MEDICAL UNIVERSITY
DEPARTMENT OF PHYSIOLOGY
SECOND YEAR MBBS EXAMINATION (SEQs)
(RENAL MODULE)

Q.1 Briefly outline the physiological role of kidney in maintenance of homeostasis. (5)

Q.2 a) Differentiate between cortical and juxtamedullary nephrons (2)

b) Summarize the safety factors that prevent edema (3)

Q.3 a) Name the abnormalities of micturition and their causes. (3)

b) How does the higher centers of brain control the micturit on reflex? (2)

Q. 4 a) Define GFR and write its normal value. (2)

b) Enlist the factors that increase and decrease GFR. (3)

Q.5 a) Draw and label the juxtaglomerular apparatus. (3)

b) How does a high protein intake affect the GFR? (2)

RAWALPINDI MEDICAL UNIVERSITY DEPARTMENT OF BIOCHEMISTRY
2ND YEAR MBBS (MCQs)
RENAL MODULE

1. Deficiency of which one of the following enzymes is responsible for most toxic hyper ammonemia:

a. Arginino succinase
b. Arginase
c. Alanine Transaminase
d. Glutaminase
e. Carbamoyl phosphate synthetase

2. Following is true about Potassium:

a Is extra cellular cation
b. Is not required for nerve transmission
c. Is mainly excreted through sweat
d. Level increase in renal failure.
e. Level is not regulated by aldosterone.

3. Phenylalanine:

a. Is the simplest amino acid.
b. Is non-essential amino acid.
c. Is normally acted upon by phenylalanine transaminase.
d. Is glycogenic as well as ketogenic.
e. By kyneurine pathway is converted into glucose and acetate

4. Following is the cause of Respiratory acidosis:

a. Respiratory center depression
b. Fever
c. High altitudes
d. Salicylate poisoning
e. Excess mechanical ventilation

5. A 60-year-old woman is brought to the emergency department because of a 4-day history of fever, joint aches, and rash. Three weeks ago, she was admitted to the hospital for treatment of Staphylococcal aureus endocarditis. She has received 21 days out of a prescribed 42-day course of intravenous oxacillin. Currently, she appears to be in mild distress. Temperature is 38.0°C (100.4°F), pulse is 115/min, respirations are 24/min, and blood pressure is 120/70 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 97%. Physical examination shows a diffuse maculopapular rash over the trunk and upper and lower extremities. There is no pus or erythema at the skin insertion site of the peripherallyinserted central catheter line initially placed on the day of hospital discharge.

Results of laboratory studies are shown:
Hemoglobin 11.1 g/dL
Hematocrit 33%
Leukocyte count 12,100/mm3.
Segmented neutrophils 78%
Eosinophils 9%

Lymphocytes 7%
Monocytes 6%
Platelet count 341,000/mm3.
Serum
Na+ 133 mEq/L
K+ 6.5 mEq/L
Cl− 100 mEq/L
HCO3
− 15 mEq/L
Urea nitrogen 65 mg/dL
Glucose 96 mg/dL
Creatinine 5.7 mg/dL

Urine microscopy shows eosinophils and WBC casts. Which of the following is the most likely underlying cause of this patient's condition?
a. Collapsing focal segmental glomerulosclerosis.
b. Glomerular hypertrophy with hemorrhage and necrosis
c. Interstitial inflammatory infiltrate
d. Mesangial expansion with glomerular basement membrane thickening
e. Proximal tubular dilation with loss of brush border

SEQ

Q. a. Explain steps of urea cycle with enzymes. 03

b. Discuss causes of metabolic acidosis. 02

RAWALPINDI MEDICAL UNIVERSITY
DEPARTMENT OF BIOMEDICAL ETHICS (MCQs)
2ND YEAR MBBS
RENAL MODULE

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
   a. Bio-piracy
   b. Biosafety
   c. Bioethics
   d. Bio-patents
   e. Bio-logistic

2. The right of patients having self-decision is called.
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

3. Following is not code of ethics.
   a. Integrity
   b. Objectivity
   c. Confidentiality
   d. Behaviour
   e. Autonomy

4. -------in the context of medical ethics, if it's fair and balanced
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

5. ------Principle requiring that physicians provide, positive benefits
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

OSPE BLOCK - I
DEPARTMENT OF ANATOMY

Station No. 1 Time Allowed: 1 Min 30secs.

Histology sketch copy will be assessed for

a. Complete index (1)
b. Complete and signed diagrams (1)
c. 2 ID points mentioned with each diagram (1)

Station No. 2 Time Allowed: 1 Min 30secs.

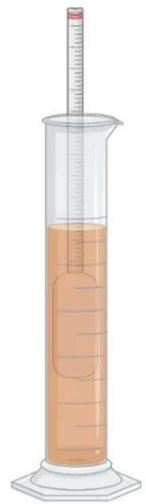
a. Identify slide A (1)
b. Identify slide B (1)
c. Give one histological feature to distinguish between colon and rectum (1)

OSPE BLOCK - I
DEPARTMENT OF PHYSIOLOGY

Observed Station

Time Allowed: 2 minutes.

1. Check the specific gravity of given sample. **2**
2. How will use interprete the result. **1**



OSPE BLOCK - I
DEPARTMENT OF PHYSIOLOGY

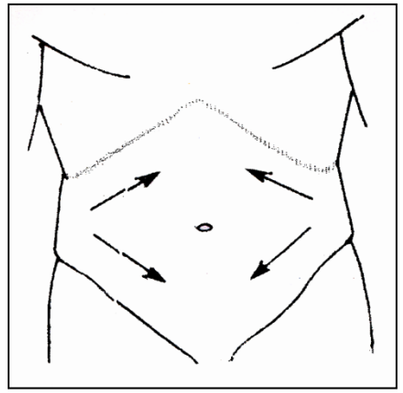
Unobserved Station

Time Allowed: 2 minutes.

Task:

Carefully read and answer the following questions:

1. Name the reflex being performed in the given figure. **1**
2. Give two causes of absence of the given reflex **1**
3. Name the instrument used for performing this reflex? **1**



OSPE BLOCK - I
DEPARTMENT OF BIOCHEMISTRY

Station No. 1 Time Allowed: 2 Mins

Observed Station.

Perform Benedict's Test on given urine sample. 03

Station No. 2 Time Allowed: 2 Mins

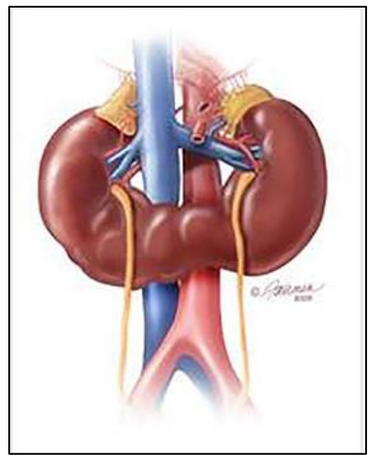
Observed Station.

Perform Rothera's test on urine sample. 03

AV OSPE BLOCK - I
DEPARTMENT OF ANATOMY

Q.1 Write name of congenital abnormality

Q,2 Give embryological basis of this anomaly.



AV OSPE BLOCK - I
DEPARTMENT OF PHYSIOLOGY

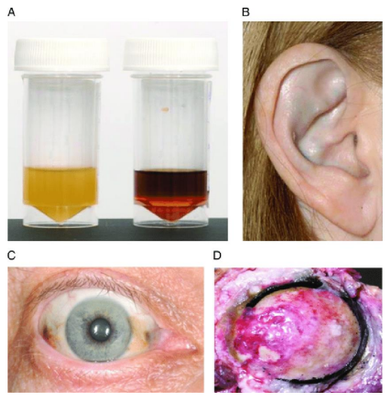
Q.1 A 5-year-old child is brought to primary physician with a history of on and off generalized body swelling for the past 6 months. He had a history of fever, cold, cough, and frothy micturition for the past 4 days. Laboratory investigations showed protein in urine and reduced serum albumin levels.

a) Give the probable diagnosis. 2.5

b) What is the physiological basis of edema in this condition. 2.5



AV OSPE BLOCK - I
DEPARTMENT OF BIOCHEMISTRY



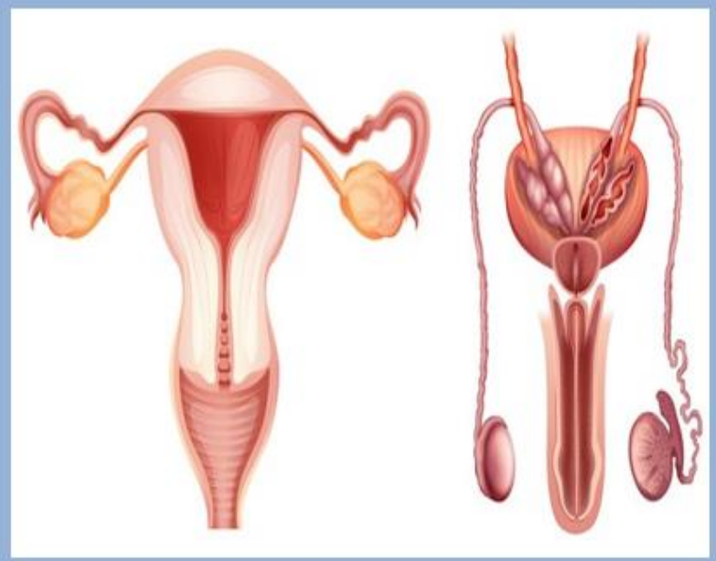
Q1. Which Clinical condition is shown in the above image? 1.5

Q2. What is the basic enzyme defect? 1.5

Q3. What is the biochemical basis of clinical features? 02

Rawalpindi Medical University
Department of Medical Education (DME)

Study Guide
Reproduction Module 2024



Procedure For Control of Documented Information

In-Compliance with

ISO 9001:2015

Clause 7.5

Copyright

The copyright of this procedure, together with all confidential information contained herein is the sole property of Rawalpindi Medical University

It may be copied in full or in parts only by the Management/personnel and only for Company-related activities. Disclosure of any information contained within this procedure to any person (s) outside the employee of the institute without written permission of the Vice Chancellor or Principal or ISO Committee Head is strictly prohibited.

Document Information

Category	**Reproduction Module Study Guide**
Document	Procedure for Control of Documented Information
Issue	1
Rev	00
Identifier	RMU-MR-SOP-58
Status	Final Document
Author(s)	Director Medical Education, Asst. Director Medical Education,
Reviewer(s)	Curriculum Committee.
Approver(s)	Vice Chancellor
Creation Date	24-04-2024
Effective Date	24-04-2024
Control Status	**Controlled**
Distribution	VC, Principal, ISO Committee
Disclaimer	This document contains confidential information. Do not distribute this document without prior approval from higher management of **Rawalpindi Medical University.**

Document Approval

Prepared By	Reviewed By	Approved By
Director Medical Education, Asst. Director Medical Education,	Curriculum Committee	Vice Chancellor

Document Revision History

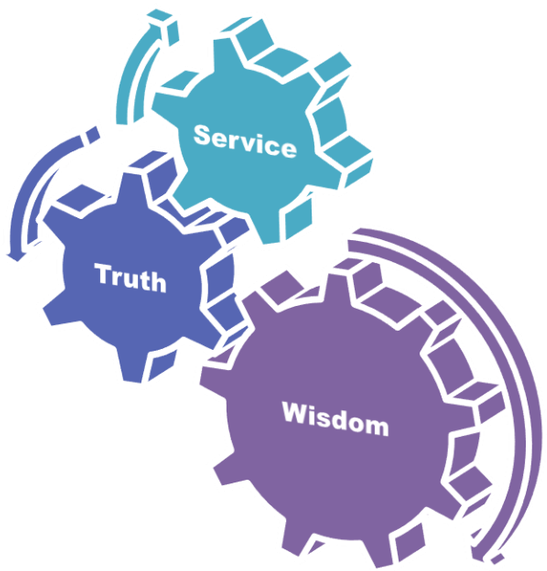
Author(s)	Date	Version	Description
Prof Naeem Akhtar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Sidra Hamid, Dr Tehmina Qamar	2017-2018	1st	Developed for Second Year MBBS. Composed of Horizontally and vertically Integrated Reproductive System
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2019-2020	2nd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated
Dr Tehzeeb, Dr Samia Sarwar, , Dr Ifra Saeed, Dr Ayesha Yousaf , Dr Tehmina Qamar, Dr Sidra Hamid	2021-2022	3rd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum incorporated
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2022-2023	4th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research, Bioethics, Family Medicine curriculum incorporated along with Professionalism
Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr Aneela Jamil, Dr Sidra Hamid	2023-2024	5th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum revamped Bioethics, Family Medicine curriculum incorporated along with Professionalism. Entrepreneurship curriculum incorporated

List of Copy Holders

Document Code	Issue # /Rev.#	Copy #	Copy Holders	Distribution Mode	Signature
RMU-MR-SOP-58	**01/00**	**01**	**V.C**	**Email**	
RMU-MR-SOP-58	**01/00**	**02**	**HODs**	**Email**	
RMU-MR-SOP-58	**01/00**	**03**	**IC**	**Hard Copy**	

University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

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

Vision and Values

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

Goals of the Undergraduate Integrated Modular Curriculum

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

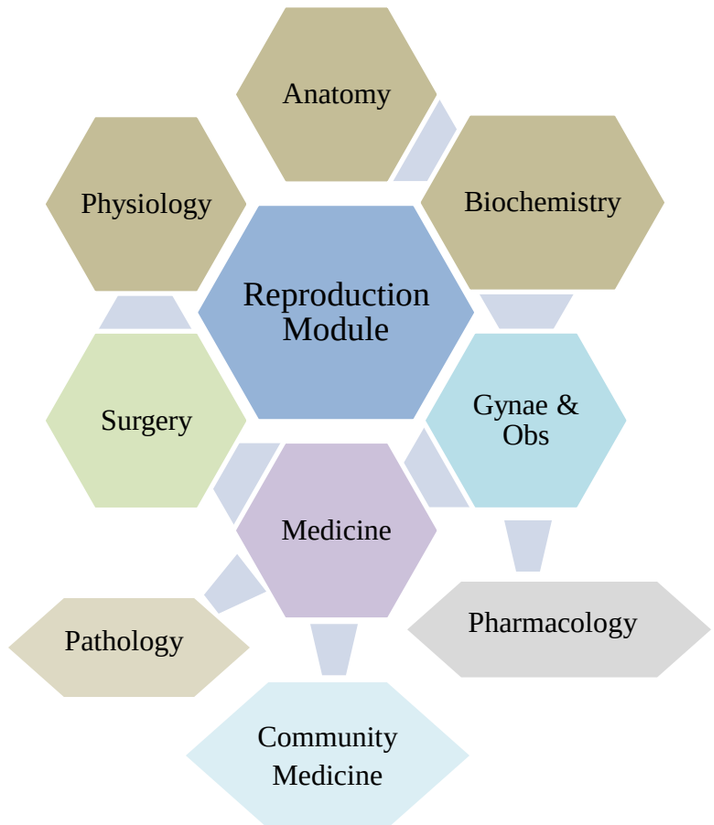
- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional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

Second Year MBBS 2024

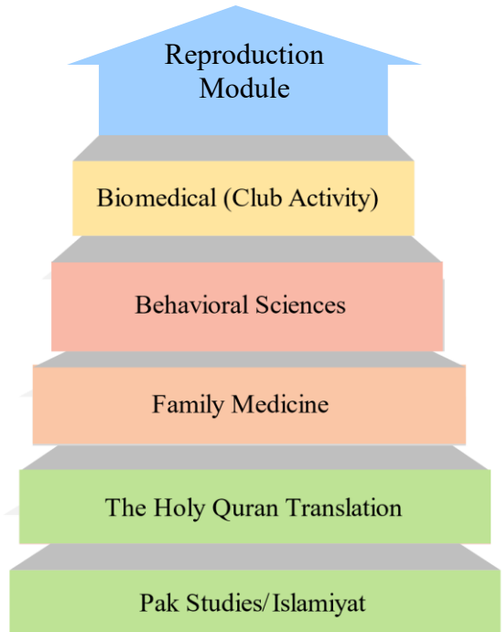
Study Guide

Reproduction Module

Integration of Disciplines in Reproduction Module



Spiral / General Education Cluster Courses



Discipline Wise Details of Modular Contents

Block	Subjects	Embryology	Histology	Gross Anatomy
II	• Anatomy	Embryology/Development • Testis • Genital Ducts • Prostate & Accessory Glands • Uterus & Uterine tubes • Ovary & Vagina	Histology • Testis • Genital Ducts • Prostate & Accessory Glands • Uterus & Uterine Tubes • Ovary & Vagina	• Sacrum • Bony Pelvis & Joints of Pelvis • Pelvic Fascia, Pelvic Diaphragm, & Pelvic Peritoneum • Male External Genitalia, Scrotum, & Testis • Prostate Vas Deferens, Seminal Vesicles & Ejaculatory Ducts • Female External Genitalia, Ovaries, Fallopian Tubes • Uterus, Cervix & Vagina • Ischioanal Fossa • Urogenital Diaphragm • Perineum, Superficial Perineal Pouch and its contents • Deep Perineal Pouch and its contents • Blood Supply & Lymphatic Drainage of Pelvis & Perineum • Sacral and Coccygeal Plexus • Radiology, Surface Marking
	• Biochemistry	• Digestion of nucleic acid & biosynthesis of purines • Purine catabolism and related disorders • Pyrimidine metabolism • Regulation of gene expression • Male Gonadal Hormones • Female Gonadal Hormones		
	• Physiology	• Physiological anatomy of male reproductive • system & spermatogenesis • Physiological anatomy female reproductive system • Semen, capacitation & acrosome reaction • Monthly Ovarian Cycle, ovulation • Male sex hormones, Abnormalities of male sexual • function and spermatogenesis • Monthly Endometrial Cycle and Menstruation • Response of mother's body to pregnancy and parturition • Female sex hormones (oestrogen and progesterone) • Lactation, Milk composition, breast feeding		

		• Puberty, menarche, menopause, postmenopausal symptoms & anovulatory cycles, Abnormalities of • secretion by ovaries • Growth &functional development of fetus, Adjustments of infant to extrauterine life, Growth • & development in child • Fertilization of ovum, transport, implantation, Functions of placenta • Hormonal factors in pregnancy, Special functional • problems in neonate. Prematurity and its problems
	Spiral Courses	
	• Biomedical (Club Activity)	• Ethical dilemmas Involving breech in Autonomy. • Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence. • Ethical dilemmas practice involving breach in principle of justice
	• Behavioural Sciences	• Emotion
	• Family Medicine	• AIDS
	• The Holy Quran Translation	• Imaniat-5 • Akhlaqiat-1
	• Pak Studies/Islamiyat	• Kaamyab logu ki sifaat • Nehru report, Quaid e Azam k 14 nukaat
	Vertical Integration	
	• Gynae & Obs	• Early Pregnancy Complications • Menstrual irregularities • Subfertily
	• Pharmacology	• Hormonal Contraceptives
	• Surgery	• Male hypogonadism, Acute Scrotum
	• Pathology	• BPH/Prostatitis / Sexually Transmitted Diseases • Polycystic Ovaries
	• Community Medicine	• Sexually Transmitted Diseases (STDs) • Acquired Immunodeficiency Syndromes/ Sexually Transmitted Diseases
	Early Clinical Exposure	
	• Clinical Rotations	• Ovarian Tumors • Uterine Tumors • Polycystic Ovaries • Menstrual Irregularities **(Gynecology)**

		• Important points in History of pregnant lady • Obstetrics Trimesters • Fetal heart sounds	**(Obstetrics)**
		• Testicular Tumors • Hydrocele • Undescended Testis • Hypospadias/ Epispadias	**(Surgery)**

Table of Contents

University Moto, Vision, Values & Goals 7
Discipline Wise Details of Modular Contents 10
Reproduction Module Team 16
Module III – Reproduction Module 17
Module Outcomes 17
Knowledge 17
Skills 17
Attitude 17
SECTION - I 18
Terms & Abbreviations 18
Teaching and Learning Methodologies / Strategies 20
Large Group Interactive Session (LGIS) 20
Small Group Discussion (SGD) 21
Self-Directed Learning (SDL) 23
Case Based Learning (CBL) 23
Problem Based Learning (PBL) 23
Practical Sessions/Skill Lab (SKL) 24
SECTION – II 25
Learning Objectives, Teaching Strategies & Assessments 25
Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry) 26
Anatomy Large Group Interactive Session (LGIS) 26
Physiology Large Group Interactive Session (LGIS) 30
Biochemistry Large Group Interactive Session (LGIS) 36
Anatomy Small Group Discussion (SGDs) 37

Physiology Small Group Discussion (SGDs) 43
Biochemistry Small Group Discussion (SGDs) 43
Anatomy Self Directed Learning (SDL) 44
Physiology Self Directed Learning (SDL) 48
Biochemistry Self Directed Learning (SDL) 49
Histology Practicals Skill Laboratory (SKL) 51
Physiology Practicals Skill Laboratory (SKL) 52
Biochemistry Practicals Skill Laboratory (SKL) 52
SECTION - III 53
Basic and Clinical Sciences (Vertical Integration) 53
Case Based Learning Objectives (CBL) 54
Problem Base Learning (PBL) 54
Vertical Integration LGIS 54
Pathology 54
Community Medicine 55
Surgery 56
Obstetrics & Gynaecology 56
List of Reproduction Module Vertical Courses Lectures 57
SECTION – IV 58
Spiral Courses 58
The Holy Quran Translation Lecture 59
Pak Studies/Islamiyat 59
Family Medicine 59
Behavioural Sciences 60

Biomedical (Club Activity) 60
Introduction to Spiral Courses 62
List of Reproduction Module Spiral Courses Lectures 66
SECTION - V 67
Assessment Policies 67
Assessment plan 68
Types of Assessment: 69
Modular Assessment 69
Block Assessment 69
Table 4-Assessment Frequency & Time in Reproduction Module 70
Learning Resources 71
SECTION - VI 74
Time Table 74
Reproduction Module Team 76
Categorization of Modular Contents 80
Anatomy 80
Teaching Staff / Human Resource of Department of Anatomy 81
Physiology 82
Teaching Staff / Human Resource of Department of Physiology 83
Biochemistry 84
SECTION-VII 94
Table of Specification (TOS) For Reproduction Module Examination 94
Annexure I 95
(Sample MCQ, SEQ Papers, OSPE & Video Assisted OSPE) 95

Reproduction Module Team

Module Name	:	Reproduction Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Uzma Zafar
Co-coordinator	:	Dr. Romessa Naeem
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Uzma Zafar (APWMO Demonstrator of Biochemistry)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Tariq Furqan (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Romessa Naeem (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Nazia (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Module III – Reproduction Module

Rationale: Reproductive system plays an important role in person life although it does not contribute to homeostasis and is not essential for the survival of individual e.g. the manner in which people relate as sexual beings contributes in significant ways to psycosocial behavior and has an important influence on how people view themselves and how they interact with others. Reproductive function also has profound effect on society. The universal organization of societies into family units provide a stable environment that is condusive for perpetuating our species.

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 reproductive system.
- Used technology based Medical Education including
  Artificial Intelligence
- Appreciate concept and importance of
  - **Family Medicine**
  - **Biomedical Ethics**
  - **Research**

Skills

- Demonstrate effective skill for performing and interpreting various laboratory tests like pregnancy test.
- Demostrate awareness of ethical, legal and social implecation 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 4 weeks duration. Instructional strategies are given in the time table and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning Methodologies/Strategies
    - 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

Table1. Domains of Learning According to Blooms Taxonomy

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

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

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

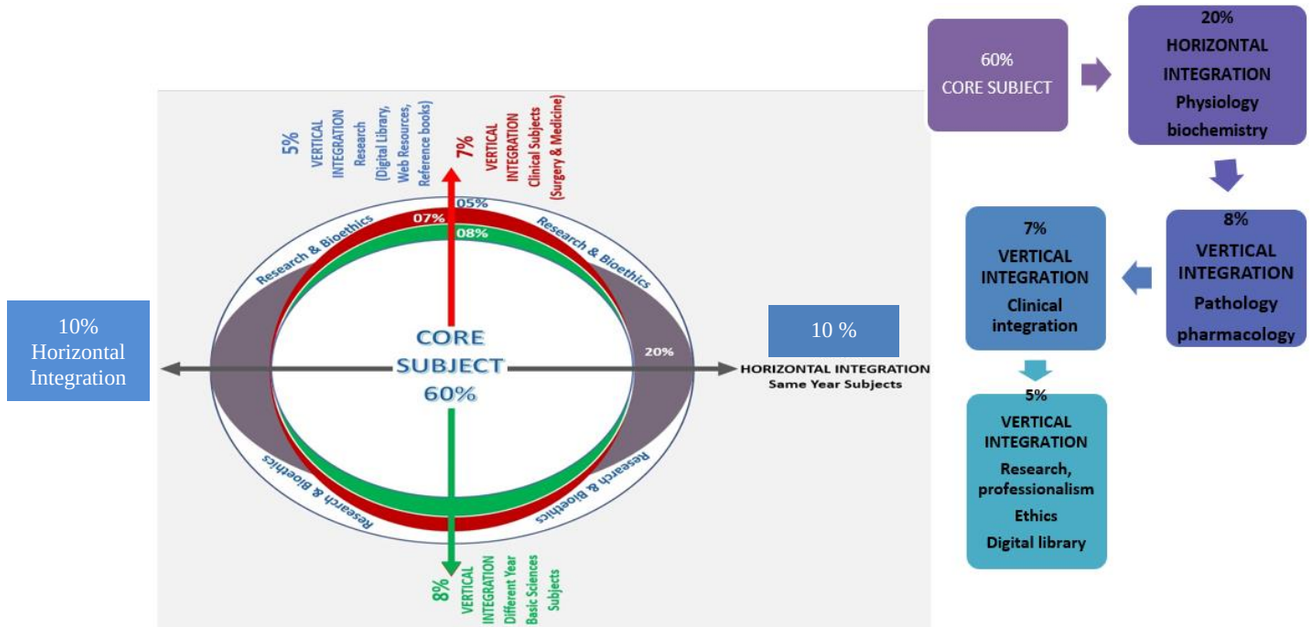


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementation of Small Group Discussions

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

Self-Directed Learning (SDL)

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

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

  ii.OSPE station

Case Based Learning (CBL)

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

Problem Based Learning (PBL)

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

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

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

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

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- 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

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topics	At The End Of Lecture Students Should Be Able To:	Learning Domains	Teaching Strategy	Assessment Tools
Development of testis	• Recall the time of early sex differentiation and genes involved in it. • Explain the development of male gonads and formation of testis. • Describe the descent of testis. • Describe the concepts of chromosomal determination of sex, primordial germ cells and indifferent gonads. • Describe histogenesis of interstitial cells of leydig and seminiferous tubules. • Correlate with the clinical conditions. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C1 C2 C2 C2 C2 C3 C3 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Histology of Testis	• Discuss germ cells at different steps of spermatogenesis in the seminiferous tubule. • Describe histology of Sertoli cells and Leydig cells. • Explain their roles in the production of sperm and regulation of the male reproductive system. • Understand the bio-physiological aspects of spermatogenesis. • Discuss the related clinicals like orchitis, male infertility, testicular cancers, cryptorchidism. • Correlate with the clinical conditions • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article	C2 C2 C2 C2 C3 C3 C3 C3 C3 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Histology of male genital ducts	• Describe the histological organization of epididymis, ductus deferens and ejaculatory ducts.	C2 C2		• MCQS

	• Describe the epithelium and microscopic features of epididymis, ductus deferens and ejaculatory ducts. • Understand the bio-physiological aspects of epithelium of ducts. • Discuss the related clinicals like vasectomy, epididymitis. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article	C3 C3 C3 C3 C3 C3	LGIS	• SAQS • VIVA
Development of male genital ducts, Seminal vesicles and prostate	• Describe the development of male genital ducts during indifferent stage. • Discuss development of male genital ducts at advanced stage • Describe the molecular regulation of male genital ducts. • Describe the development of seminal vehicles. • Discuss the development of prostate. • Discuss the remnants of mesonephric and paramesonephric ducts in males and their clinical significance. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C2 C2 C2 C2 C2 C3 C3 C3 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Histology of accessory male reproductive glands	• Describe the histological organization of prostate gland, seminal vesicles and bulbourethral glands. • Describe microscopic features of these glands. • Discuss the related clinicals like prostatitis. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C2 C2 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Development of male external genitalia	• Explain the different stages and further development of external genitalia. • Discuss the related clinical like ambiguous genitalia, Androgen insensitivity syndrome, hypospadias, epispadias, bifid penis, micropenis • Understand curative and preventive heath care measures. • Practice the principles of bioethics.	C2 C2 C3 C3	LGIS	• MCQS • SAQS • VIVA

	• Apply strategic use of A.I in health care. • Read relevant research article.	C3 C3		
Histology of uterus and uterine tubes	• Recollect knowledge of histological features of endometrium in various phases • Discuss microanatomy of layers of uterus • Describe parts of uterine tubes • Explain microscopic features of all parts of uterine tubes. • Dicuss the related clinicals like endometriosis, tubal ligation, salpingitis, and cervical cancers • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article.	C1 C2 C2 C2 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Development of uterus and uterine tubes	• Describe role of paramesonephric ducts, uterovaginal primordium in development of uterine tubes • Discuss the role of paramesonephric ducts and uterovaginal primordium in the development of uterus. • Discuss the related clinicals like bicornuate uterus, unicornuate uterus, double uterus. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article	C2 C2 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Histology of Ovary and Vagina	• Discuss the stages of follicular growth (primordial, primary, secondary, tertiary), as well as the changes that occur in the follicular wall. • Discuss ovarian cycle and menstrual cycle. • Describe the histological features of corpus luteum of mensuration and pregnancy. • Discuss the related clinicals like PCOS, Follicular cyst, hemorrhagic cyst. • Discuss histological structure of vagina. • Understand the bio-physiological aspects of vaginal epithelial cells.	C2 C2 C2 C2 C2 C2 C3	LGIS	• MCQS • SAQS • VIVA

	• Discuss the related clinical like vaginitis, squamous cell carcinoma of vagina. • Understand curative and preventive heath care measures. • Practice the principles of bioethics. • Apply strategic use of A.I in health care. • Read relevant research article	C3 C3 C3 C3		
Development of Ovary	• Recall the process of oogenesis in female. • Explain the different steps involved in early oogenesis. • Explain the ovarian and menstrual cycle and phases. • Explain the hormonal changes occurring during reproductive cycle. • Describe role of paramesonephric ducts, uterovaginal primordium in development of ovary • Describe the descent of ovaries. • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 C2 C2 C2 C2 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA
Development of Vagina	• Discuss the developmental stages of vagina and female external genitalia • Enlist different congenital anomalies of female reproductive system. • Describe different syndromes and gene defects associated with congenital anomalies • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C1 C2 C3 C3 C3 C3	LGIS	• MCQS • SAQS • VIVA

Physiology Large Group Interactive Session (LGIS)

Topics	At the end of lecture students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools		
Physiological anatomy of male reproductivesystem & spermatogenesis	• DescribePhysiological anatomy of male reproductive system • Explainthestepsof spermatogenesis • Identifytheprocessof meiosis • Describethehormonal factors that stimulate spermatogenesis • Describefunctionsof seminal vesicles	C2 C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Function of Male reproductive system (Chapter 23, Page 417) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 466) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Reproduction and Development (Chapter 26 Page 843,847) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Reproductive and hormonal Functions of the Male..Section 14. (Chapter 81, Page 1011)	1. https://teachmephysiology.com/reproductive-system/embryology/ 2. https://www.annualreviews.org/doi/abs/10.1146/annurev.ph.36.030174.001515?journalCode=physiol
Physiological anatomy female reproductive system	• Describe oogenesis & follicular development in ovaries • Discussfemalehormonal system	C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 389) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 470) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Reproduction and Development (Chapter 26 Page 852) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Female Physiology before pregnancy and female hormones. Section 14. (Chapter 82, Page 1027)	**1.**https://teachmephysiology.com/reproductive-system/ **2.** https://youtu.be/2_owp8kNMus **3.** https://youtu.be/rYVGjbzmAtg

Semen,capacitation& acrosome reaction	• Explain capacitation • Describe acrosomal reaction • Summarize the abnormalities related to spermatogenesis: ➢ Bilateral orchitis ➢ Effects of temperature ➢ Cryptorchidism	C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Function of Male reproductive system (Chapter 23, Page 420) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 466) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Fertilization, Pregnancy and Lactation. (Chapter 59, Page 977) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Reproductive and hormonal Functions of the Male..Section 14. (Chapter 81, Page 1014)	1. https://www.sciencedirect.com/science/article/abs/pii/S0093691X02009536 2. https://www.ibbiotech.com/en/info/sperm-capacitation/
MonthlyOvarian Cycle,ovulation	• Describe gonadotropic hormones & their effects on ovaries • Explain follicular phase of ovarian cycle • Explain ovulation hormones • Explain LH surge • Describe luteinizing function of Luteinizing	C2 C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ OSPE VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 399) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.The Female Reproductive System (Chapter 58, Page 959) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female hormones.Section 14.(Chapter 82, Page 1028)	1. https://courses.lumenlearning.com/wm-biology2/chapter/the-ovarian-cycle-the-menstrual-cycle-and-menopause/ 2. https://youtu.be/V9a2AQSJIMc **(Dr Najeeb Lectures)**
Male sex hormones, Abnormalitiesofmale sexual function and spermatogenesis system	• Describe male sex hormone's (secretion, metabolism, chemistry, degradation and excretion) • Explain functions of testosterone in detail • Describe: ➢ Hypogonadism in males ➢ Interstitial Leydig cell tumors	C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Function of Male reproductive system (Chapter 23, Page 421-426) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 467) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Reproductive and hormonal	1. https://youtu.be/VS72mR5aMyo**(Male reproductive system)** 2. https://www.annualreviews.org/doi/abs/10.1146/annurev.ph.36.030174.00151

	➢ Erectiledysfunctionin males				Functions of the Male..Section 14. (Chapter 81, Page 101)	5?journalCode=physiol
MonthlyEndometrial Cycle and Menstruation	• Explain monthly endometrial cycle • Explain menstruation & physiological changes in endometrium	C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 399) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 475) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Reproduction and Development (Chapter 26 Page 853) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female hormones.Section 14.(Chapter 82, Page 1036)	1. https://courses.lumenlearning.com/wm-biology2/chapter/the-ovarian-cycle-the-menstrual-cycle-and-menopause/
Responseofmother's body to pregnancy, Parturition	• Explain: ➢ Anterior pituitarygland secretion ➢ Increased corticosteroid secretion ➢ Increased thyroidgland secretion ➢ Increasedparathyroid gland secretion • Explainincreaseduterine excitability near term • Explainhormonalfactors increasing uterine contractility • Discuss mechanical factorsincreasinguterine contractility	C2 C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 410,413) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 478,479) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Reproduction and Development (Chapter 26 Page 863) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Fertilization, Pregnancy and Lactation. (Chapter 59, Page 994) • Textbook of Medical Physiology by Guyton & Hall.14th Edition.Pregnancy and	1. https://teachmephysiology.com/reproductive-system/ 2. https://zerotofinals.com/obgyn/reproductivesystem/physiologyinpregnancy/ 3. https://www.sciencedirect.com/science/article/abs/pii/S001502822200485X

	• Explainthephysiological mechanism of labour				Lactation.Section 14.(Chapter 82, Page 1045,1052)	
Female sex hormones (estrogen and progesterone)	• Explain: ➢ Functions of estradiol & progesterone ➢ Chemistry of sex hormones ➢ Synthesis of estrogen & progesterone	C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 404) • Physiology by Linda S. Costanzo 6th Edition. Reproductive Physiology (Chapter 10. Page 472) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female hormones.Section 14.(Chapter 82, Page 1032)	1. https://youtu.be/hW4XpW7LfIM 2. https://teachmephysiology.com/endocrine-system/hypothalamus-pituitary/anterior-pituitary/hypothalamic-pituitary-gonadal-axis/
Lactation, Milk composition,breast feeding	• Explaindevelopmentof breasts • Explainhormonalcontrol of breast development • Describe the role of prolactininlactation • Explain: ➢ Milkletdown reflex ➢ Milk composition ➢ Metabolicdrainin mother caused by lactation	C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	• Ganong's Review of Medical Physiology.26TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 414) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female hormones.Section 14.(Chapter 82, Page 1056-1059)	1. https://rupress.org/jgp/article/5/4/441/30794/THE-RATE-OF-DECLINE-OF-MILK-SECRETION-WITH-THE 2. https://www.annualreviews.org/doi/abs/10.1146/annurev.nutr.20.1.249
Puberty, menarche, menopause, postmenopausal symptoms & anovulatory cycles, Abnormalities of secretion by ovaries	• Discussthephysiology of: ➢Puberty ➢Menarche ➢ Menopause Explainhypogonadism • Describeamenorrhea • Describehypersecretion by ovaries	C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ OSPE VIVA	• Ganong's Review of Medical Physiology.26TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 396,398,408) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Female Physiology before pregnancy and female hormones.Section 14.(Chapter 82, Page 1040)	1. https://journals.lww.com/clinicalobgyn/Citation/1977/09000/PUBERTY_AND_MENARCHE.11.aspx 2. https://www.glowm.com/section-view/heading/Physiology%20of%20Pu

					•	berty/item/285#.ZCKTtXZBzIU
Fertilization of ovum, transport, implantation Functions of placenta	• Describe: ➢ Entry of ovum into fallopian tube ➢ Transport of fertilized ovum ➢ Implantation of blastocyst ➢ Early nutrition of embryo • Describe physiological anatomy of placenta • Explain placental permeability • Explain diffusion of gases & excretion of waste products	C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	❖ Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 410) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Fertilization, Pregnancy and Lactation. (Chapter 59, Page 975) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Pregnancy and Lactation .Section 14. (Chapter 83, Page 1045)	1. https://teachmephysiology.com/reproductive-system/ 2. https://my.clevelandclinic.org/health/articles/11585-conception
Growth &functional developmentoffetus, Adjustmentsofinfant to extrauterine life, Growth & development in child	• Describedevelopmentof organ system in fetus • Explainfetalmetabolism	C2 C2	LGIS	MCQ SEQ SAQ EMQ VIVA	❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Physiology of Pregnancy (Chapter 60, Page 998) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. Fetal and Neonatal Physiology. Section 14. (Chapter 84 , Page 1061-1065)	1. https://youtu.be/rYVGjbzmAtg 2. https://www.msdmanuals.com/home/women-s-health-issues/normal-pregnancy/stages-of-development-of-the-fetus
Hormonal factors in pregnancy, Special functionalproblemsin neonate. Prematurity and its problems	• ExplainfunctinsofB- HCG • Describesecretionof estrogens by the placenta • Summarizefunctionof estrogen in pregnancy • Summarizefunctionof progesterone in pregnancy • Explainonsetof breathing	C2 C2 C2 C2 C2 C2 C2 C2	LGIS	MCQ SEQ SAQ EMQ OSPE VIVA	Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Physiology of Pregnancy (Chapter 60, Page 998) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Fetal and Neonatal Physiology. Section 14. (Chapter 84 , Page 1066-1070)	1. https://teachmephysiology.com/reproductive-system/ 2. https://patient.info/pregnancy/premature-babies

	• Describethecauseof breathing at birth • Explain delayed / abnormalbreathingat birth • Describechangesto hypoxia					

Biochemistry Large Group Interactive Session (LGIS)

Topics	At the end of lecture students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Male gonadal hormones	• Synthesis mechanism of action and functions of male gonadal hormones	C2	LGIS	MCQ SEQ VIVA
Female gonadal hormones	• Synthesis mechanism of action and functions of female gonadal hormones	C2	LGIS	MCQ SEQ VIVA
Digestion of nucleic acid and purine synthesis	• Explain digestion of nucleoprotein • Describe purine biosynthesis (Denovosynthesis and salvage pathway)	C2 C2	LGIS	MCQ SEQ VIVA
Purine catabolism and related disorders	• Explain purine catabolism • Discuss related disorders	C2 C3	LGIS	MCQ SEQ VIVA
Pyrimidine metabolism	• Explain Pyrimidine catabolism • Related disorders	C2 C3	LGIS	MCQ SEQ VIVA
Regulation of gene expression	• Explain the regulation of gene expression	C2	LGIS	MCQ SEQ VIVA

Anatomy Small Group Discussion (SGDs)

Topics	At The End Of Demonstration Student Should Be Able To	Learning Domains	Teaching Strategy	Assessment Tools
Sacrum	• Identify the bone • Place the bone in anatomical position • Demonstrate anatomical features on bone • Discuss attachments and relations on bone • Discuss important clinical anatomy of bone • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P P C2 C3 C3 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA
Bony pelvis	• Identify type of pelvis • Place pelvis in anatomical position • Demonstrate different diameters of each type • Differentiate bony features of each type • Clinical importance of each type • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P P C1 C3 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA
Pelvic Peritoneum and its contents	• Identify visceras present in pelvis • Demonstrate peritoneal reflections on pelvic visceras • Discuss pouches formed by peritoneum • Discuss clinical anatomy of pelvic peritoneum and pelvic visceras • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C2 C3 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA

Pelvic diaphragm	• Identify the muscles forming pelvic diaphragm • Demonstrate the attachments and nerve supply of muscles of pelvic diaphragm • Locate the structures piercing the pelvic diaphragm • Discuss clinical anatomy of pelvic diaphragm • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C2 C2 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA
Male external genitalia	• Identify the anatomical structures of external genitalia • Demonstrate anatomical position of testis • Enlist layers of scrotum with its neurovasculature • Discuss clinical anatomy of scrotum • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C1 C3 C3 C3 C3 C3	Skill Lab	• MCQS • SAQS • OSPE • VIVA
Testis	• Identify the structure • Demonstrate anatomical position of testis • Discuss layers and structure of testis • Discuss important clinical anatomy related to testis • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Male genital ducts	• Describe the anatomical position of vas deferens, seminal vesicles, ejaculatory ducts on model • Discuss the anatomical relations of vas deferens, seminal vesicles, ejaculatory ducts • Discuss clinical anatomy • Understand curative and preventive heath care measures	C2 C2 C3 C3	Skill Lab	• MCQs • SAQs • OSPE

	• Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C3 C3 C3		• VIVA
Prostate	• Identify the position of prostate • Demonstrate the anatomical features and relations of prostate • Discuss clinical anatomy • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 P C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Ovaries	• Identify the site of ovarian fossa • Discuss anatomical relations of ovary • Discuss neurovasculature and hormonal effects of ovaries • Discuss important clinical anatomy of ovary • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 C2 C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Fallopian tubes, Uterus	• Identify the location of structures in pelvis • Demonstrate anatomical relations of these structures • Discuss normal positions of uterus with its ligaments • Discuss its neurovasculature • Discuss important clinical anatomy of fallopian tubes, uterus and uterine tube • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 P C2 C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA

Cervix	• Discuss anatomy of cervix • Describe anatomical relations of cervix • Describe its neurovasculature • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C2 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Ischio-anal fossa	• Discuss the dimensions, boundaries and recesses • Describe the contents of Ischio anal fossa • Describe pudendal canal and its contents • Discuss important clinical anatomy of structures • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C2 C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Urogenital diaphragm	• Discuss the formation of diaphragm • Identify the relations and contents of diaphragm • Discuss organs piercing urogenital diaphragm • Discuss important clinical anatomy related to diaphragm • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C1 C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Perineum & Superficial perineal pouches	• Identify boundaries and divisions of perineum • Discuss formation of perineal pouches • Discuss in detail the contents of superficial perineal pouches in male and female • Discuss important clinical anatomy related to superficial perineal pouches • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 C2 C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA

		C3		
Deep perineal pouches	• Discuss in detail the contents of deep perineal pouches in male and female • Discuss important clinical anatomy related to deep perineal pouches. • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Blood supply of pelvis and perineum	• Identify major blood vessels & nerves of pelvis and perineum • Demonstrate anatomical relationships • Describe important clinical anatomy related to blood vessels of pelvis and perineum • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 P C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Lymphatic drainage of pelvis and perineum	• Identify major lymphatic vessels of pelvis and perineum • Discuss lymphatic drainage of pelvis and perineum • Discuss important clinical anatomy • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 C2 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Sacral and Coccygeal plexus	• Identify various branches of sacral and coccygeal plexus • Discuss anatomical relations • Describe root values of each branch of plexus and its related applied • Understand curative and preventive heath care measures • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C1 C2 C2 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA

Radiology	➢ Describe the radiological appearance of pelvis and perineum on ➢ Interpret normal radiographs ➢ Read ultrasound uterus for gestation/feotus ➢ Describe Hysterosalpangigraphy ➢ Understand curative and preventive heath care measures ➢ Practice the principles of bioethics. ➢ Apply strategic use of A.I in health care ➢ Read a relevant research article	C2 C3 C3 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA
Cross Sectional Anatomy	• Identify different structures of male pelvis at different levels; S5, coccyx, Symphysis pubis, ischial tuberosity, anal verge • Identify different structures of female pelvis at different levels; S5, coccyx, Symphysis pubis, ischial tuberosity, anal verge • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article	C2 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • OSPE • VIVA

Physiology Small Group Discussion (SGDs)

Topics	At the end of discussion students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Infertility	• Correlate basic knowledge with clinical application	C3	CBL	MCQ SEQ VIVA
Menorrhagia	• Correlate basic knowledge with clinical application	C3	CBL	MCQ SEQ VIVA
Neonatal problems of Prematurity	• Correlate basic knowledge with clinical application	C3	SGD	MCQ SEQ VIVA

Biochemistry Small Group Discussion (SGDs)

Topics	At the end of tutorial students should be able to	Learning Domains	Teaching Strategy	Assessment Tools
Purine metabolism	• Purine denovo synthesis and describe salvage pathway • Read a relevant research article • Use digital library	C2 C3 C3	SGD	MCQ SEQ VIVA
Male female sex hormones	• Synthesis, mechanism of action and functions of male female gonadal hormones • Read a relevant research article • Use digital library	C2 C3 C3	SGD	MCQ SEQ VIVA

Anatomy Self Directed Learning (SDL)

Topics	Learning objectives	Learning Resources
Sacrum	• Identify the bone • Place the bone in anatomical position • Demonstrate anatomical features on bone • Discuss attachments and relations on bone • Discuss important clinical anatomy of bone • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 4, Page 451). • https://www.youtube.com/watch?v=93c9nlxbMUw • https://www.youtube.com/watch?v=PuOE-PI1eps
Bony pelvis	• Identify type of pelvis • Place pelvis in anatomical position • Demonstrate different diameters of each type • Differentiate bony features of each type • Clinical importance of each type • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 327-337). • https://www.youtube.com/watch?v=yK-8ZwLFarc • https://www.youtube.com/watch?v=3v5AsAESg1Q • https://www.youtube.com/watch?v=3Z0XBCyXb3Y
Pelvic Peritoneum and its contents	• Identify visceras present in pelvis • Demonstrate peritoneal reflections on pelvic visceras • Discuss pouches formed by peritoneum • Discuss clinical anatomy of pelvic peritoneum and pelvic visceras • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 338-349). • https://www.youtube.com/watch?v=F2-5tX_CMlQ • https://www.youtube.com/watch?v=3Z0XBCyXb3Y
Pelvic diaphragm	• Identify the muscles forming pelvic diaphragm • Demonstrate the attachments and nerve supply of muscles of pelvic diaphragm • Locate the structures piercing the pelvic diaphragm • Discuss clinical anatomy of pelvic diaphragm • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 338-349). • https://www.youtube.com/watch?v=P3BBAMWm2Eo • https://www.youtube.com/watch?v=3Z0XBCyXb3Y

Male external genitalia	• Identify the anatomical structures of external genitalia • Demonstrate anatomical position of testis • Enlist layers of scrotum with its neurovasculature • Discuss clinical anatomy of scrotum • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 418-419). • https://www.youtube.com/watch?v=ai7MjQvenKs • https://www.youtube.com/watch?v=5eHvZ2gyR1Y • https://www.youtube.com/watch?v=N66sAZH1VA8
Testis	• Identify the structure • Demonstrate anatomical position of testis • Discuss layers and structure of testis • Discuss important clinical anatomy related to testis • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 2, Page 208-215). • https://www.youtube.com/watch?v=ai7MjQvenKs • https://www.youtube.com/watch?v=5eHvZ2gyR1Y • https://www.youtube.com/watch?v=N66sAZH1VA8
Male genital ducts	• Describe the anatomical position of vas deferens, seminal vesicles, ejaculatory ducts on model • Discuss the anatomical relations of vas deferens, seminal vesicles, ejaculatory ducts • Discuss clinical anatomy • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 376 -381). • https://www.youtube.com/watch?v=N66sAZH1VA8 • https://www.youtube.com/watch?v=ai7MjQvenKs
Prostate	• Identify the position of prostate • Demonstrate the anatomical features and relations of prostate • Discuss clinical anatomy • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 376 -381). • https://www.youtube.com/watch?v=93Ayq248u_8 • https://www.youtube.com/watch?v=ai7MjQvenKs
Ovaries	• Identify the site of ovarian fossa • Discuss anatomical relations of ovary • Discuss neurovasculature and hormonal effects on ovaries • Discuss important clinical anatomy of ovary • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 391-392). • https://www.youtube.com/watch?v=AREHaMls9Y4 • https://www.youtube.com/watch?v=2tOtIqSNqbc

Fallopian tubes, Uterus	• Identify the location of structures in pelvis • Demonstrate anatomical relations of these structures • Discuss normal positions of uterus with its ligaments • Discuss its neurovasculature • Discuss important clinical anatomy of fallopian tubes, uterus and uterine tube • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 385-390, 392-399). • https://www.youtube.com/watch?v=AREHaMls9Y4 • https://www.youtube.com/watch?v=PMI-iJwNt3Y • https://www.youtube.com/watch?v=2tOtIqSNqbc
Cervix	• Discuss anatomy of cervix • Describe anatomical relations of cervix • Describe its neurovasculature blood • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 385-390, 392-399). • https://www.youtube.com/watch?v=AREHaMls9Y4 • https://www.youtube.com/watch?v=PMI-iJwNt3Y
Ischio-anal fossa	• Discuss the dimensions, boundaries and recesses • Describe the contents of Ischio anal fossa • Describe pudendal canal and its contents • Discuss important clinical anatomy of structures • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 409-411, 416). • https://www.youtube.com/watch?v=SFq0hA3PwK4 • https://www.youtube.com/watch?v=K4K3a8UnS5M
Urogenital diaphragm	• Discuss the formation of diaphragm • Identify the relations and contents of diaphragm • Discuss organs piercing urogenital diaphragm • Discuss important clinical anatomy related to diaphragm • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 406-408). • https://www.youtube.com/watch?v=edI7knFSu_k • https://www.youtube.com/watch?v=ZaIRPhXavVg
Perineum & Superficial perineal pouches	• Identify boundaries and divisions of perineum • Discuss formation of perineal pouches • Discuss in detail the contents of superficial perineal pouches in male and female • Discuss important clinical anatomy related to superficial perineal pouches • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 402-405). • https://www.youtube.com/watch?v=GegidLpxW9A • https://www.youtube.com/watch?v=OwWk6tqsW8o

Deep perineal pouches	• Discuss in detail the contents of deep perineal pouches in male and female • Discuss important clinical anatomy related to deep perineal pouches. • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 406-409, 414). • https://www.youtube.com/watch?v=q0Ax3rLFc6M • https://www.youtube.com/watch?v=OwWk6tqsW8o
Blood supply of pelvis and perineum	• Identify major blood vessels & nerves of pelvis and perineum • Demonstrate anatomical relationships • Describe important clinical anatomy related to blood vessels of pelvis and perineum • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 350-357, 361). • https://www.youtube.com/watch?v=xYu56Luwdls • https://www.youtube.com/watch?v=o4TplbDDcj8
Lymphatic drainage of pelvis and perineum	• Identify major lymphatic vessels of pelvis and perineum • Discuss lymphatic drainage of pelvis and perineum • Discuss important clinical anatomy • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 400-402). • https://www.youtube.com/watch?v=F-Ba96V0R-c • https://www.youtube.com/watch?v=o4TplbDDcj8
Sacral and Coccygeal plexus	• Identify various branches of sacral and coccygeal plexus • Discuss anatomical relations • Describe root values of each branch of plexus and its related applied • Read a relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 3, Page 357-361). • https://www.youtube.com/watch?v=DZ0IL1tHNxo • https://www.youtube.com/watch?v=f7Zig8eBCqY • https://www.youtube.com/watch?v=JqUleDnXuEI

Physiology Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning resources
Fertilization of ovum, transport, implantation, Functions of placenta	• Maturation and fertilization of ovum • Transport and Implantation • Early nutrition of the Embryo • Functions of Placenta	• Ganong's Review of Medical Physiology.25TH Edition. Reproductive development and Function of female reproductive system (Chapter 22, Page 410) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Fertilization, Pregnancy and Lactation. (Chapter 59, Page 975) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. ▪ Pregnancy and Lactation. Section 14. (Chapter 83, Page 1045) ○ https://teachmephysiology.com/reproductive- system/ ○ https://my.clevelandclinic.org/health/articles/11585- conception
Growth &functional development of fetus, Adjustments of infant to extrauterine life, Growth & development in child	• Growth & functional development of fetus • Fetal Metabolism • Changes in Fetal circulation at Birth Adjustment of the Infant to the Extrauterine life	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Physiology of Pregnancy (Chapter 60, Page 998) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Fetal and Neonatal Physiology. Section 14. (Chapter 84, Page 1061-1065) ○ https://youtu.be/rYVGjbzmAtg ○ https://www.msdmanuals.com/home/women-s- health-issues/normal-pregnancy/stages-of-development- of-the-fetus
Hormonal factors in pregnancy, Special functional problems in neonate. Prematurity and its problems.	• Special functional problems in neonate • Prematurity • Immature development of the premature Infant • Instability of Homeostasis in Premature Infant Instability of body temperature in Infants	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Physiology of Pregnancy (Chapter 60, Page 998) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Fetal and Neonatal Physiology. Section 14. (Chapter 84, Page 1066-1070) ○ https://teachmephysiology.com/reproductive- system/ ○ https://patient.info/pregnancy/premature-babies

Biochemistry Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning resources
Male gonadal hormones	• Synthesis mechanism of action and functions of male gonadal hormones	• Text Book of Harper,32 edition (chapter 41 page – 487-488) • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-function • https://www.youtube.com/watch?v=A5u_TY1A0t8 • Use digital library • https://www.ncbi.nlm.nih.gov/books/NBK29/
Female gonadal hormones	• Synthesis mechanism of action and functions of female gonadal hormones	• Text Book of Harper,32 edition (chapter 41 page – 487-488) • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-functionn • https://www.youtube.com/watch?v=A5u_TY1A0t8 • Use digital library • https://www.ncbi.nlm.nih.gov/books/NBK29/
Introduction to nucleic acid and purine synthesis	• Digestion of nucleoprotein • Understand whole purine synthesis (Denovo and salvage pathway)	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 22, page 292-295) • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/purine-synthesis • https://www.youtube.com/watch?v=VXWyWzbigrg • Use digital library • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3243375/
Purine catabolism	• Explain purine catabolism • Discuss related disorder	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 22, page 298-301) • https://www.sciencedirect.com/topics/medicine-and-dentistry/purine-metabolism-disorder • https://www.youtube.com/watch?v=e2KFVvI8Akk • Use digital library • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4215161/

Pyrimidine metabolism	• Explain Pyrimidine catabolism and related disorders	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 22, page 302-304) • https://www.cliffsnotes.com/study-guides/biology/biochemistry-ii/purines-and-pyrimidines/pyrimidine-metabolism • https://www.youtube.com/watch?v=n7Uec8Jtr4E • Use digital library • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC378357/
Regulation of gene expression	• Explain the regulation of gene expression	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 22, page 465-477) • https://www.healio.com/hematology-oncology/learn-genomics/genomics-primer/regulation-of-gene-expression-in-eukaryotes • https://www.youtube.com/watch?v=J9jhg90A7Lw • Use digital library • https://www.nature.com/scitable/topicpage/regulation-of-transcription-and-gene-expression-in-1086/

Histology Practicals Skill Laboratory (SKL)

Topics	At The End of Demonstration Student Should Be Able To	Learning Domains	Teaching Strategy	Assessment Tools
Testis, epididymis, ductus deferens	• Identify the histological slide of testis, ductus deferens and epididymis • Illustrate the microscopic picture of testis, ductus deferens and epididymis • Enlist two points of identification of each • Read relevant research article • Use digital library	P C2 C1 C3 C3	Skill Lab	OSPE
Seminal vesicles, prostate	• Identify the histological slide of seminal vesicles and prostate • Illustrate the microscopic picture of seminal vesicles and prostate • Enlist two points of identification of each • Read relevant research article • Use digital library	P C2 C1 C3 C3	Skill Lab	OSPE
Ovary	• Identify the histological slide of ovary • Illustrate the microscopic picture of ovary • Enlist two points of identification • Read relevant research article • Use digital library	P C2 C1 C3 C3	Skill Lab	OSPE
Uterus, uterine tubes	• Identify the histological slide of Uterus and uterine tubes • Illustrate the microscopic picture of Uterus and uterine tubes • Enlist two points of identification of each • Read relevant research article • Use digital library	P C2 C1 C3 C3	Skill Lab	OSPE

Physiology Practicals Skill Laboratory (SKL)

Practicals	At The End Of This Skill Lab, Student Should Be Able To Illustrate:	Learning Domains	Teaching Strategy	Assessment Tools
Examination of 7^{th} Cranial nerve	• Principle • Procedure • Clinical correlation • Overview of Cranial nerves • Performance of student	C1 P3 C3 C1 P3	Skill lab	OSPE
Pregnancy Test	• Apparatus identification • Principle • Procedure • Precautions • Recall types of pregnancy test • Performance of student	P3/A3 C1 P3 C1 C1 P3	Skill lab	OSPE
Examination of 3^{rd},4th,6^{th} cranial nerves	• Principle • Procedure • Clinical correlation of reflexes • Overview of cranial nerves	C1 P3 C3 C1	Skill lab	OSPE

Biochemistry Practicals Skill Laboratory (SKL)

Topics	At the End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Estimation of uric acid	Perform estimation of uric acid by spectrophometer	P	Skill Lab	OSPE
Estimation of Cholestrol	Estimation of cholesterol by spectrophometer	P	Skill Lab	OSPE
Milk analysis	Protein, carbohydrates, lipid detection	P	Skill Lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **PBLs**
- **Vertical Integration LGIS**

Case Based Learning Objectives (CBL)

Subjects	Topics	At the end of the session the student should be able to	Learning Domains
Anatomy	• Prostatic Hyperplasia	Apply basic knowledge of subject to study clinical case.	C3
	• Ovarian Cyst	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Infertility	Apply basic knowledge of subject to study clinical case.	C3
	• Menorrhagia	Apply basic knowledge of subject to study clinical case.	C3
	• Neonatal problems of Prematurity	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Gout	Apply basic knowledge of subject to study clinical case.	C3

Problem Base Learning (PBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
PBL	• Pregnancy	Apply basic knowledge of subject to study clinical case.	C3
	• PCOS	Apply basic knowledge of subject to study clinical case.	C3

Vertical Integration LGIS

Pathology

Topics	At the end of lecture students of should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Sexually transmitted diseases	• Enumerate the STDs • Describe the pathogenesis of syphilis and gonorrhea	C1 C2	LGIS	MCQ's
BPH/Prostatitis	• Define benign prostatic hyperplasia • Briefly discuss the morphological features of BPH & prostatitis	C1 C2	LGIS	MCQ's
Polycystic ovaries	• Define the polycystic ovaries Describe the pathophysiology of polycystic ovaries	C1 C2	LGIS	MCQ's

Community Medicine

Topics	At the end of lecture students of should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Sexually Transmitted Diseases				
Definition	• Define STD and its various factors	C1	LGIS	MCQ,
Problem statement	• Discuss the problem statement of STD worldwide.	C2		
Types of STDs	• Enumerate different types of STDs	C1		
Host factors related to STDs	• Discuss all host factors responsible for STDs	C2		
Demographic factors	• Discuss in detail role of demographic factors in STD spread.	C2		
Social factors role	• Role of social factors in STDs	C2		
Intervention strategies.	• Role of intervene on strategies and planning in control of STDs	C2		
AIDS	• Discuss In detail the definition of AIDS	C2	LGIS	MCQ
Problem statement of AIDS and HIV	• Discuss in detail the problem statement of HIV n AIDs. • Its impact on underdeveloped eloped world. • understanding the gravity of the situation.	C2		
Risk factors	• Discuss the key risk factors in HIV responsible.	C2		
Agent and other biological determinants	• Explain agent details • Describe the effect of agent stability and its biological determinants	C2		
Host, reservoir of infection and transmission details	• Detailed discussion on the host factors, reservoir of infection and transmission factors responsible.	C2		
Symtomology, treatment and prevention of AIDs and HIV	• Discuss in detail the symptomology, treatment and prevention of AIDS and HIV .	C2		

Surgery

Topics	At The End Of Lecture, Students Should Be Able To:	Learning Domains	Teaching Strategy	Assessment Tools
Male hypogonadism	• Discuss pathophysiology, signs and symptoms of male hypogonadism • Describe altered hormonal levels in male hypogonadism • Outline treatment plan for breast tumors	C2 C2 C1	LGIS	MCQ
Undescended Testes	• Define UDT • Define Retractile Testes • Define Ectopic Testes • Causes of UDT/Ectopic Testes • Differentiate between UDT and Retractile Testes • Management plan	C1 C1 C1 C2 C2 C2	LGIS	MCQ
Acute Scrotum	• Enumerate the causes of acute scrotum • Describe Torsion, orchitis, epididymorchitisetc • Differentiate between Torsion and Epididymorchitis • Describe the approach towards diagnosis of acute scrotum	C1 C2 C2 C2	LGIS	MCQ

Obstetrics & Gynaecology

Topics	At the end of lecture students should be able to:	Learning Domains	Teaching Strategy	Assessment Tool
Menstrual irregularity due to anovulation	• Understand ovarian and endometrial changes during normal menstrual cycle • Describe the process of ovulation under the effect of LH • Describe causes of anovulation • Describe effects of anovulation • Enumerate the tests for confirmation of ovulation	C2 C2 C2 C2 C1	LGIS	MCQs

List of Reproduction Module Vertical Courses Lectures

Sr. #	Date/Day	Week	Department	Time	Topic Of Lectures	Facilitators Names And Contact Numbers
1.	30-05-2024 Thursday	1st	Gynae And Obs	11:20am – 12:10 Pm	Early Pregnancy Complications	
2.	31-05-2024 Friday	1st	Pharmacology	11:00am – 12:00pm	Hormonal Contraceptives	
3.	03-06-2024 Monday	2nd	Surgery	11:20am – 12:10pm	Male hypogonadism Acute Scrotum	Dr. Mariyam (Even) Dr. Faraz (Odd
4.	04-06-2024 Tuesday	2nd	Pathology	11:20am – 12:10pm	Sexually transmitted diseases BPH/Prostatitis	Dr Abid Hassan (Even) Dr Rabbiya Khalid (Odd)
5.	05-06-2024 Wednesday	2nd	Pathology	11:20am – 12:10pm	BPH/ Prostatitis Sexually transmitted diseases	Dr Abid Hassan (Odd) Dr Rabbiya Khalid (Even)
6.	06-06-2024 Thursday	2nd	Surgery	11:20am – 12:10pm	Undescended Testes	Dr. Rameez (Even) Dr. Ameen (Odd)
7.	10-06-2024 Monday	3rd	Pathology	10:30am – 11:20am	Polycystic ovaries	Dr Tayaba Ali (Even) Dr. Aasiya Niazi (Odd)
8.	11-06-2024 Tuesday	3rd	Community Medicine	10:30am – 11:20am	Sexually Transmitted Diseases (STDs) Acquired immunodeficiency syndromes (AIDs)	Dr. Rizwan (Even) Dr. Asif (Odd)
9.	11-06-2024 Tuesday	3rd	Gynae And Obs	11:20am – 12:10pm	Menstrual irregularities	Dr Shama Bashir (Even) Dr. Saira Ahmed (Odd)
10.	12-06-2024 Wednesday	3rd	Community Medicine	11:20am – 12:10pm	Acquired immunodeficiency syndromes (AIDs) Sexually Transmitted Diseases (STDs)	Dr. Asif (Even) Dr. Rizwan (Odd)
11.	15-06-2024 Saturday	3rd	Gynae And Obs	10:30am – 11:20am	Subfertility	

SECTION – IV

Spiral Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Pak Studies/Islamiyat Biomedical (Club Activity)**
    - **Family Medicine**
    - **Behavioral Sciences**
    - **Early Clinical Exposure (ECE)**

The Holy Quran Translation Lecture

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Imaniat-5	• Quate Example of Shrik from Surrah Ul Hajj	C1	LGIS	MCQs
Akhlaqiat-1	• Define Truth and Righteousness	C1	LGIS	MCQs
	• Describe Truth and Righteousness with help of Quranic Verses	C2	LGIS	MCQs

Pak Studies/Islamiyat

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Kaamyab Logu Ki Sifaat	• Describe Qualities of Successful People with the help of Quranic Verses and Sunnah	C2	LGIS	MCQs
Nehru report, Quaid e Azam k 14 nukaat	• Descirbe Nehru Report and fourteen points of Quaid e Azam	C2	LGIS	MCQs

Family Medicine

Topic	At The End Of Lecture, Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
AIDS	• Discuss pathophysiology, signs and symptoms of patients with HIV • Discuss the diagnostic criteria • Discuss the complications • Discuss the management of disease and its complications.	C1 C2 C2 C2	LGIS	MCQs

Behavioural Sciences

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Emotion	• To define emotions. • To explain the neuroanatomy and neurochemistry of emotion • To handle situations with heightened emotions encountered in • daily life and clinical practice	C3	LGIS	MCQs

Biomedical (Club Activity)

Topics	At the end of session students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Ethical dilemmas in healthcare practice involving breach in principle of autonomy	• Analyze ethical dilemmas in healthcare practice involving breach in principle of autonomy. • Explain what procedures adopted to maintain patient autonomy. • Identify situations in which doctor may have to take decisions in the best interest of the patients	C3 C2 C1	Short video demonstration on violation of Ethical principle of autonomy from suit CBEC Video resources	• Assignment based assessment involving real life case scenarios under aggregate Marks. (Internal Assessment) • Assignment to be uploaded on LMS
Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence	• Analyze ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence. • Explain what procedures adopted to maintain the principle of beneficence and non-maleficence in challenging situations. • Identify situations in which a doctor may have to take decisions in the best interests of the patient considering the principle of beneficence and non-maleficence	C3 C2 C1	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources Students deliberations and reflections Reflective writing	• Assignment based assessment involving real life case scenarios under aggregate Marks (Internal Assessment) • Assignment to be uploaded on LMS

Ethical dilemmas practice involving breach in principle of justice	• Analyze ethical dilemmas in healthcare practice involving breach in principle of justice. • Explain what procedures adopted to maintain the principle of justice in challenging situations. • Identify situations in which a doctor may have to take decisions in the best interests of the patient considering the principle of justice	C3 C2 C1	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources Students deliberations and reflections Reflective writing	• Assignment based assessment involving real life case scenarios under aggregate Marks (Internal Assessment) • Assignment to be uploaded on LMS

Introduction to Spiral Courses

The Holy Quran Translation

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

Bioethics

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

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

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

Professionalism

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

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

Communication Skills

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

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

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

Behavioral Sceinces

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

Family Medicine

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

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

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

Artificial Intelligence

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

Integrated Undergraduate Research Curriculum

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

Entrepreneurship

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

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

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

Digital Literacy Module

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

Early Clinical Exposure (ECE)

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

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

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

List of Reproduction Module Spiral Courses Lectures

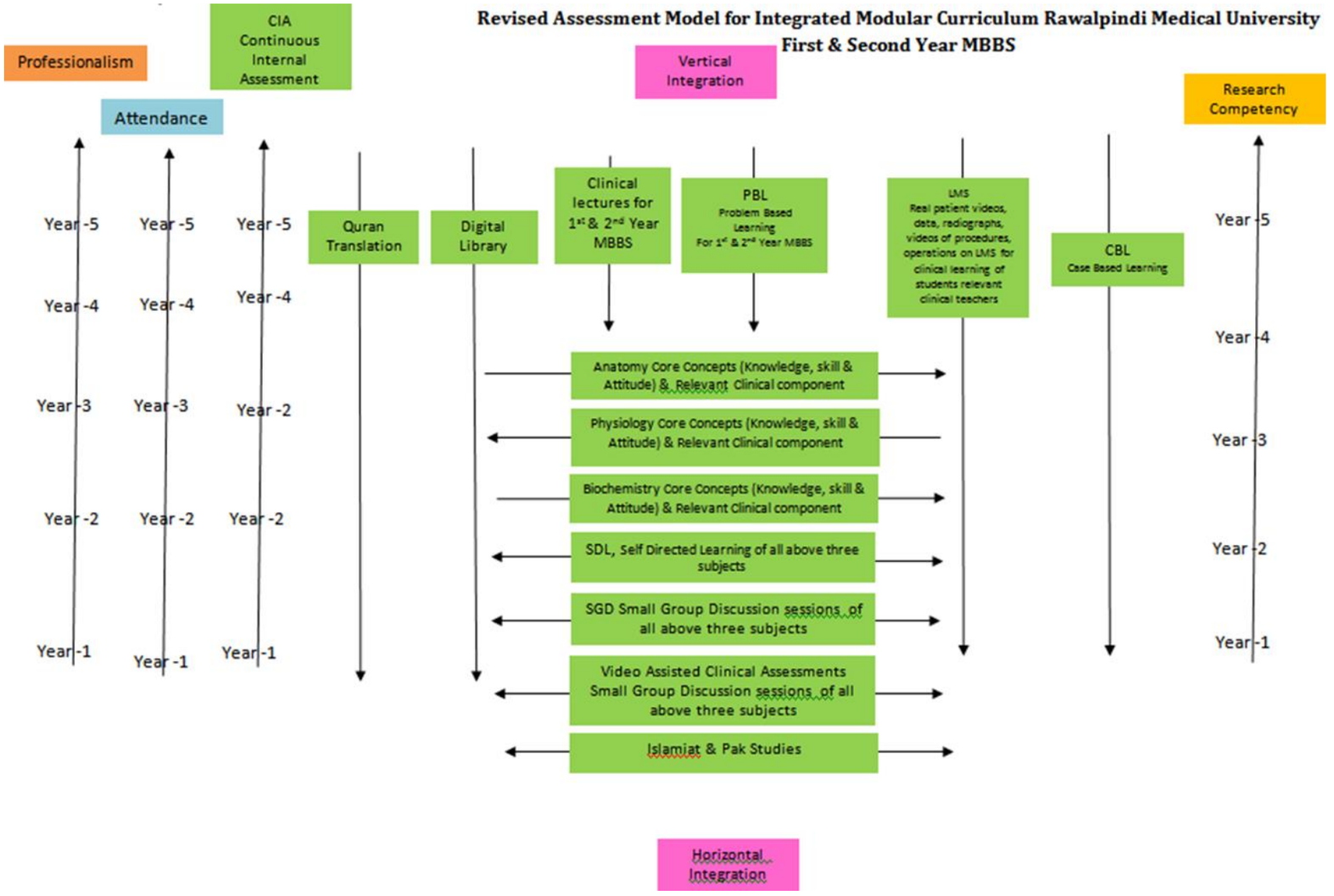
Sr. #	Date/Day	Week	Department	Time	Topic Of Lectures	Facilitators Names And Contact Numbers
1.	31-05-2024 Friday	1st	Quran Translation - I	08:00am – 09:00 Am	Imaniat-5/ Akhlaqiat-1	Mufti Naeem (0300-5580299) Dr. Fahd (0300-5156800)
2.	31-05-2024 Friday	1st	Pak Studies/Islamiyat	09:00am – 10:00am	Kaamyab Logu Ki Sifaat / Nehru Report, Quaid E Azam K 14 Nukaat	Mufti Naeem (0300-5580299) Qari Aman (0346-7598528)
3.	07-06-2024 Friday	2nd	Biomedical (Club Activity)	10:00am – 12:00pm	Ethical Dilemmas Involving Breech In Autonomy	
4.	10-06-2024 Monday	3rd	Behavioural Sciences	11:20am – 12:10pm	Emotion	
5.	12-06-2024 Wednesday	3rd	Biomedical Ethics	10:30am – 11:20am	Ethical Dilemmas In Healthcare Practice Involving Breach In Principle Of Beneficence And Non-Maleficence	
6.	13-06-2024 Thursday	3rd	Biomedical Ethics	10:30am – 11:20am	Ethical dilemmas practice involving breach in principle of justice	
7.	14-06-2024 Friday	3rd	Quran Translation – II	08:00am – 09:00am	Imaniat-6 Akhlaqiat-2	Dr. Fahd Anwar (Odd) Mufti Naeem Sherazi (Even
8.	14-06-2024 Friday	3rd	Pak Studies/Islamiyat	09:00am – 10:00am	Nehru Report, Quaid E Azam K 14 Nukaat/ Kaamyab Logu Ki Sifaat	Qari Aman (0346-7598528) Mufti Naeem (0300-5580299)
9.	15-06-2024 Saturday	3rd	Family Medicine	11:20am – 12:10pm	AIDS	Dr Shaheer(Even) Dr Shabaz Ashraf (Odd)

SECTION - V

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in Reproduction Module**



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

60% and above is passing marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%	81 - 100%

90% is eligibility criteria for appearing professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular,modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given theshare according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based),modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in Reproduction Module

Block	Sr #	Module – 1 Reproduction Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-II	1	Weekly LMS Based Assessments (Anatomy, Physiology & Biochemistry)	Formative	2 Hours	3 Hours 45 Minutes	3 Hours	2 Formative	6 Summative
	2	End Module Examinations (SEQ, SAQ, EMQ & MCQs Based)	Summative	2 Hours				
	3	Audio Visual (AV) OSPE (10 slides) 5 minutes per slide	Summative	50 Minutes				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures & Spiral Curriculums	Formative	60 Minutes				

Learning Resources

Subject	Resources
Anatomy	**A. Gross Anatomy** 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III **B. Histology** 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. **C. Embryology** 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition. **D. Website** 1. https://my.clevelandclinic.org/health/articles/9117-male-reproductive-system 2. https://teachmeanatomy.info/pelvis/female-reproductive-tract/ 3. https://www.kenhub.com/en/start/pelvis-and-perineum **E. Youtube** 1. https://www.youtube.com/watch?v=G0ZuCilCu3E 2. https://www.youtube.com/watch?v=50iuBgTQCrQ **F. HEC Digital Library** 1. https://www.sciencedirect.com/science/article/pii/S0015028220304350 2. https://link.springer.com/article/10.1007/s11356-021-16581-9 3. https://link.springer.com/chapter/10.1007/978-3-030-30766-0_25 4. https://onlinelibrary.wiley.com/doi/abs/10.1111/and.13712
Physiology	**A. Textbooks** 1. Textbook of Medical Physiology by Guyton and Hall 14th edition. 2. Ganong 'S Review of Medical Physiology 26th edition. **B. Reference Books** 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition. **C. Website** **1.** https://teachmephysiology.com/reproductive-system/ (Reproductive physiology)

	2. https://courses.lumenlearning.com/wm-biology2/chapter/the-ovarian-cycle-the-menstrual-cycle-and-menopause/ 3. https://zerotofinals.com/obgyn/reproductivesystem/physiologyinpregnancy/ https://www.ibbiotech.com/en/info/sperm-capacitation/ **D. Youtube** 1. https://youtu.be/2_owp8kNMus (Female Reproductive system) 2. https://youtu.be/V9a2AQSJIMc (Dr Najeeb Lectures) https://youtu.be/rYVGjbzmAtg (Dr Najeeb lectures) **E. HEC Digital Library** 1. https://www.sciencedirect.com/science/article/abs/pii/S1532045621000296 2. https://www.sciencedirect.com/science/article/abs/pii/S001502822200485X **F. Physiology Journals** 1. https://rupress.org/jgp/article/5/4/441/30794/THE-RATE-OF-DECLINE-OF-MILK-SECRETION-WITH-THE 2. https://www.annualreviews.org/doi/abs/10.1146/annurev.ph.36.030174.001515?journalCode=physiol 3. https://zerotofinals.com/obgyn/reproductivesystem/physiologyinpregnancy/ https://www.msdmanuals.com/home/women-s-health-issues/normal-pregnancy/stages-of-development-of-the-fetus
Biochemistry	**Textbooks** 1. Harper's Illustrated Biochemistry 32th edition. 2. Lipponcott biochemistry 8th edition **B. Reference Books** 1.Lehninger Principle of Biochemistry 8th edition. 2. Biochemistry by Devlin 7th edition. **C. Website** • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-function • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-functionn • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/purine-synthesis • https://www.sciencedirect.com/topics/medicine-and-dentistry/purine-metabolism-disorder • https://www.cliffsnotes.com/study-guides/biology/biochemistry-ii/purines-and- • https://www.healio.com/hematology-oncology/learn-genomics/genomics-primer/regulation-of-gene-expression-in-eukaryote **D. Youtube**

	• https://www.youtube.com/watch?v=A5u_TY1A0t8 • https://www.youtube.com/watch?v=A5u_TY1A0t8 • https://www.youtube.com/watch?v=VXWyWzbigrg • https://www.youtube.com/watch?v=e2KFVvI8Akk • https://www.youtube.com/watch?v=n7Uec8Jtr4E • https://www.youtube.com/watch?v=J9jhg90A7Lw **E. HEC Digital Library** • https://www.ncbi.nlm.nih.gov/books/NBK29/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3243375/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4215161/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC378357/ • https://www.nature.com/scitable/topicpage/regulation-of-transcription-and-gene-expression-in-1086/ **F. Biochemistry Journals** • https://academic.oup.com/bmb/article/11/2/126/256755 • https://www.sciencedirect.com/topics/medicine-and-dentistry/gonadal-hormone

SECTION - VI

Time Table

Integrated Clinically Oriented Modular Curriculum for Second Year MBBS

Reproduction Module Time Table

Second Year MBBS

Session 2023-2024

Batch- 50

Reproduction Module Team

Module Name	:	Reproduction Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Uzma Zafar
Co-coordinator	:	Dr. Romessa Naeem
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Uzma Zafar (APWMO Demonstrator of Biochemistry)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Tariq Furqan (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Romessa Naeem (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Nazia (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Discipline wise Details of Modular Contents

Block	Subjects	Embryology	Histology	Gross Anatomy
II	• Anatomy	Embryology/Development • Testis • Genital Ducts • Prostate & Accessory Glands • Uterus & Uterine tubes • Ovary & Vagina	Histology • Testis • Genital Ducts • Prostate & Accessory Glands • Uterus & Uterine Tubes • Ovary & Vagina	• Sacrum • Bony Pelvis & Joints of Pelvis • Pelvic Fascia, Pelvic Diaphragm, & Pelvic Peritoneum • Male External Genitalia, Scrotum, & Testis • Prostate Vas Deferens, Seminal Vesicles & Ejaculatory Ducts • Female External Genitalia, Ovaries, Fallopian Tubes • Uterus, Cervix & Vagina • Ischioanal Fossa • Urogenital Diaphragm • Perineum, Superficial Perineal Pouch and its contents • Deep Perineal Pouch and its contents • Blood Supply & Lymphatic Drainage of Pelvis & Perineum • Sacral and Coccygeal Plexus • Radiology, Surface Marking, Cross Sectional Anatomy
	• Biochemistry	• Digestion of nucleic acid & biosynthesis of purines • Purine catabolism and related disorders • Pyrimidine metabolism • Regulation of gene expression • Male Gonadal Hormones • Female Gonadal Hormones		
	• Physiology	• Physiological anatomy of male reproductive • system & spermatogenesis • Physiological anatomy female reproductive system • Semen, capacitation & acrosome reaction • Monthly Ovarian Cycle, ovulation • Male sex hormones, Abnormalities of male sexual • function and spermatogenesis • Monthly Endometrial Cycle and Menstruation • Response of mother's body to pregnancy and parturition • Female sex hormones (oestrogen and progesterone) • Lactation, Milk composition, breast feeding		

		• Puberty, menarche, menopause, postmenopausal symptoms & anovulatory cycles, Abnormalities of • secretion by ovaries • Growth &functional development of fetus, Adjustments of infant to extrauterine life, Growth • & development in child • Fertilization of ovum, transport, implantation, Functions of placenta • Hormonal factors in pregnancy, Special functional • problems in neonate. Prematurity and its problems
	Spiral Courses	
	• Biomedical (Club Activity)	• Ethical dilemmas Involving breech in Autonomy. • Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence. • Ethical dilemmas practice involving breach in principle of justice
	• Behavioural Sciences	• Emotion
	• Family Medicine	• AIDS
	• The Holy Quran Translation	• Imaniat-5 • Akhlaqiat-1
	• Pak Studies/Islamiyat	• Kaamyab logu ki sifaat • Nehru report, Quaid e Azam k 14 nukaat
	Vertical Integration	
	• Gynae & Obs	• Early Pregnancy Complications • Menstrual irregularities • Subfertily
	• Pharmacology	• Hormonal Contraceptives
	• Surgery	• Male hypogonadism, Acute Scrotum
	• Pathology	• BPH/Prostatitis / Sexually Transmitted Diseases • Polycystic Ovaries
	• Community Medicine	• Sexually Transmitted Diseases (STDs) • Acquired Immunodeficiency Syndromes/ Sexually Transmitted Diseases
	Early Clinical Exposure	
	• Clinical Rotations	• Ovarian Tumors • Uterine Tumors • Polycystic Ovaries • Menstrual Irregularities **(Gynecology)**

		• Important points in History of pregnant lady • Obstetrics Trimesters • Fetal heart sounds	**(Obstetrics)**
		• Testicular Tumors • Hydrocele • Undescended Testis • Hypospadias/ Epispadias	**(Surgery)**

Categorization of Modular Contents

Anatomy

Category A*	Category B**	Category C***			
Special Embryology	**Special Histology**	**Demonstrations / SGD**	**CBL**	**Practical's**	**Self-Directed Learning (SDL)**
• Testis • Genital Ducts • Prostate & Accessory Glands • Uterus & Uterine Tubes • Ovary & Vagina	• Testis • Genital Ducts • Prostate & Accessory Glands • Uterus & Uterine Tubes • Ovary & Vagina	• Sacrum • Bony Pelvis & Joints of Pelvis • Pelvic Fascia, Pelvic Diaphragm, & Pelvic Peritoneum • Male External Genitalia, Scrotum, & Testis • Female External Genitalia, Ovaries, Fallopian Tubes • Uterus, Cervix & Vagina • Prostate Vas Deferens, Seminal Vesicles & Ejaculatory Ducts • Ischioanal Fossa • Urogenital Diaphragm • Perineum, superficial Perineal Pouch and its contents • Deep Perineal Pouch and its contents • Blood Supply & Lymphatic Drainage of Pelvis & Perineum • Sacral and Coccygeal Plexus • Radiology, Surface Marking	• Prostate (Benign prostate hyperplasia) • Ovary (ovarian cyst)	• Testis, Epididymis, Ductus Deferens • Seminal Vesicles, Prostate • Ovary, Uterus, Uterine Tubes	• Sacrum • Bony Pelvis & Joints of Pelvis • Pelvic Fascia, Pelvic Diaphragm, & Pelvic Peritoneum • Male External Genitalia, Scrotum, & Testis • Prostate Vas Deferens, Seminal Vesicles & Ejaculatory Ducts • Female External Genitalia, Ovaries, Fallopian Tubes • Uterus, Cervix & Vagina • Ischioanal Fossa • Urogenital Diaphragm • Perineum, superficial Perineal Pouch and its contents • Deep Perineal Pouch and its contents • Blood Supply & Lymphatic Drainage of Pelvis & Perineum • Sacral and Coccygeal Plexus

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy department	01
2.	Assistant professor of Anatomy department (AP)	01
3.	Demonstrators of Anatomy department	03

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	2 * 05 = 10 hours
2.	Small Group Discussions (SGD)	2*12 + 1*2=26 hours
3.	Practical / Skill Lab	1.5 * 15 = 22.5 hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1 * 5 = 05 hours
2.	Small Group Discussions (SGD)	2*12+ 1*2=26 hours
3.	Practical / Skill Lab	1.5 * 3 = 4.5 hours
4.	Self-Directed Learning (SDL)	1 * 5 = 10 hours

Physiology

Category A*	Category B**	Category C***				
LGIS	**LGIS**	**PBL**	**CBL**	**Practical's**	**SGD**	**SDL**
• Monthly Ovarian Cycle, ovulation • (Monthly Endometrial Cycle and Menstruation	• Physiological anatomy of male reproductive system & spermatogenesis • Physiological anatomy female reproductive system • Semen, capacitation & acrosome reaction • Male sex hormones, abnormalities of male sexual function and spermatogenesis • Response of mother's body to pregnancy, Parturition • Female sex hormones (oestrogen and progesterone) • Lactation, milk composition, breast feeding • Puberty, menarche, menopause, postmenopausal symptoms & anovulatory cycles, abnormalities of secretion by ovaries • Fertilization of ovum, transport, implantation, functions of placenta • Hormonal factors in pregnancy, special functional problems in neonate. Prematurity and its problems.		1. Menorrhagia 2. Infertility 3. Neonatal problems of Prematurity	1. Pregnancy test 2. Examination of 7th Cranial nerve 3. Examination of 3rd,4th,6th Cranial nerves		1. Fertilization of ovum, transport, implantation, Functions of placenta 2. Growth &functional development of fetus, Adjustments of infant to extrauterine life, Growth & development in child 3. Special functional problems in neonate. Prematurity and its problems

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / Human Resource	Total Number Of Teaching Staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01
4.	Demonstrators of physiology department	10
5.	Residents of physiology department (PGTs)	09

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	13 x 2= 26 x 1 hour = 26 hours
2.	Small Group Discussions (SGD)/CBL	15 x 1.5 hour = 22.5 hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	15 x 1.5 hour = 22.5 hours
5.	Self-Directed Learning (SDL)	3 x 1 hour = 3 hours

Biochemistry

Category A*	Category B**	Category C***			
LGIS	**LGIS**	**PBL**	**CBL**	**Practical's**	**SGD**
• Regulation of gene expression	• Male gonadal hormones • Female gonadal hormones • Introduction to nucleic acid and purine synthesis • Purine catabolism and related disorders • Pyrimidine metabolism and related disorders		• Gout	• Estimation of Uric acid by spectrophometer • Estimation of cholesterol by spectrophometer • Analysis of Milk	• Purine synthesis and describe salvage pathway • Synthesis, mechanism of action and functions of male and female sex hormones

Category A*: Assistant Professor (HOD) and APMO (With Postgraduate Qualification)

Category B:** (Senior Demonstrators & APWMO)

Category C*:** (By All Demonstrators, Senior Demonstrators and APWMO)

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation Of Teaching Staff / Human Resource	Total Number Of Teaching Staff
1	Assistant professor of biochemistry department (AP)	01
2	Demonstrators of biochemistry department	05

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	2 * 6 = 12 hours	06
2.	Small Group Discussions (SGD)	1.5 * 5= 22.5 hours	4.5
3.	Problem Based Learning (PBL)	Zero	zero
4.	Practical / Skill Lab	1.5 * 5= 22.5 hours	4.5
5.	Self-Directed Learning (SDL)	----------	05

Reproduction Module (First Week)
(27-05-2024 To 01-06-2024)

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)
27-05-2024 Monday	**Practical & SGD/CBL** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			LMS Based Assessment of Block - I						SDL Physiology Physiological anatomy of female reproductive system, Monthly Ovarian Cycle
		Physiological anatomy of female reproductive system,	Physiological anatomy of male reproductive system & spermatogenesis,								
		Prof Dr. Samia Sarwar/ Dr Sheena (Even)	Dr Fareed (Odd)								
28-05-2024 Tuesday	**Practical & SGD/CBL** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		B r e a k	**ANATOMY (LGIS)**		**BIOCHEMISTRY (LGIS)**		B r e a k	**SGD/DISSECTION**	SDL Anatomy Sacrum, Bony Pelvis & Joints of Pelvis**,** Pelvic Fascia, Pelvic Peritoneum, Pelvic Diaphragm & Contents of Pelvic Cavity
		Physiological anatomy of male reproductive system & spermatogenesis,	Physiological anatomy of female reproductive system		Special Embryology	Special Histology	Gene Expression	Nucleic Acid & purine synthesis		Sacrum, Bony Pelvis & Joints of Pelvis Batches, Teachers & Venue Mentioned in Table No. 2	
		Dr Fareed (Even)	Prof. Dr Samia Sarwar/ Dr Sheena (Odd)		Testis	Testis					
					Prof. Dr. Ifra (Even)	Assis. Prof. Dr. Maria (Odd)	Dr. Aneela (Even)	Dr. Uzma (Odd)			
29-05-2024 Wednesday	**Practical & SGD/CBL** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**ANATOMY (LGIS)**			**BIOCHEMISTRY (LGIS)**		**PBL 1 (SESSION -I)**			**SGD/DISSECTION**	SDL Anatomy External Male Genitalia, Testis & Scrotum
		Special Histology	Special Embryology		Nucleic Acid & purine synthesis	Gene Expression	PBL Team			Pelvic Fascia, Pelvic Peritoneum, Pelvic Diaphragm Contents of Pelvic Cavity Dissection Batches, Teachers & Venue Mentioned in Table No. 2	
		Testis	Testis								
		Assis. Prof. Dr. Maria (Even)	Prof. Dr Ifra (Odd)		Dr. Uzma (Even)	Dr. Aneela (Odd)					
30-05-2024 Thursday	**Practical & SGD/CBL** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**ANATOMY (LGIS)**		**GYNAE AND OBS (LGIS)**			**SGD/DISSECTION**	SDL Biochemistry Constituents of Purine synthesis and Salvage Pathway of Purine Metabolism
		Monthly Ovarian Cycle, ovulation Monthly Endometrial Cycle and Menstruation	Semen, Capacitation & acrosome reaction Male sex hormones, Abnormalities of male sexual function and spermatogenesis		Special Histology (Genital Ducts and (Prostate & Seminal vesicles)	Special Embryology (Genital Ducts Prostate & Accessory gland)	Early Pregnancy Complications			External Male Genitalia, Testis & Scrotum (Dissection '& Spotting) Batches, Teachers & Venue Mentioned in Table No. 2	
		Prof. Dr Samia Sarwar/ Dr Sheena (Even)	Dr. Fareed (Odd)		Assis. Prof. Dr. Maria (Even)	Prof. Dr Ifra (Odd)	Dr. Shama Bashir (Even)	Dr. Masooda (Odd)			
Date/Day	**8:00 AM – 09:00 AM**	**09:00AM – 10:00 AM**			**10:00 AM – 11:00 AM**		**11:00 AM – 12:00 PM**				
31-05-2024 Friday	**QURAN TRANSLATION - I**		**PAK STUDIES/ISLAMIYAT**		**ANATOMY (LGIS)**		**PHARMACOLOGY (LIGIS)**				SDL Biochemistry Gene Expression
	Imaniat-5	Akhlaqiat-1	Kaamyab logu ki sifaat	Nehru report, Quaid e Azam k 14 nukaat	Special Embryology (Genital Ducts Prostate & Accessory gland)	Special Histology (Genital Ducts and (Prostate & Seminal vesicles)	Hormonal Contraceptives				
	Mufti Naeem (Even)	Dr. Fahd (Odd)	Mufti Naem (Even)	Qari Aman Ullah (Odd)	Prof. Dr Ifra (Even)	Assis. Prof. Dr. Maria (Odd)	Dr. Mehmoona Kanwal				
01-06-2024 Saturday	**Practical & SGD/CBL** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		B r e a k	**PBL 1 (SESSION -II)**		**ANATOMY (LGIS)**		B r e a k	**CBL/DISSECTION**	SDL Physiology
		Monthly Ovarian Cycle, ovulation Monthly Endometrial Cycle and Menstruation	Semen, Capacitation & acrosome reaction Male sex hormones, Abnormalities of male sexual function and spermatogenesis		PBL Team		Special Histology	Special Embryology		Prostate (Vas deferens, seminal vesicles & Ejaculatory Ducts) Batches, Teachers & Venue Mentioned in Table No. 2	
		Prof. Dr Samia Sarwar /Dr. Sheena (Odd)	Dr. Fareed (Even)				Uterus & Uterine Tubes	Uterus & Uterine Tubes			
							Assis. Prof. Dr. Maria (Even)	Prof. Dr. Ifra (Odd)			

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects)
CBL / Small Group Disscusion (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

- Histology of Testis, epididymis, ductus deferens (Anatomy Histology Practical) Venue-Histology laboratory (Dr..Minahil Haq)
- Estimation of serum Uric acid by Spectrophotometer (Biochemistry Practical) Venue- Biochemistry laboratory
- Pregnancy test (Physiology Practical) Venue – Physiology Lecture Hall No 5

Topics for SGDs / CBL with Venue

- Anatomy CBL: Prostate (Benign prostate hyperplasia)
- Physiology CBL: Menorrhagia (Venue: Physiology Demo Room (Basement))
- Biochemistry tutorial: Deno synthesis of purine, describe salvage pathway (Purine Metabolism)
- (Venue: Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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. Kamil	A	Dr. Aneela	Supervised by HOD	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-90	Dr. Minahil Haq	New Lecture Hall Complex # 04	Supervised by Prof. Dr. Ayesha Yousaf
B	91-180	Dr. Tariq Furqan	Anatomy Lecture Hall 04	
C	181-270	Dr. Sadia Baqir	Anatomy Lecture Hall 03	
D	271 onwards	Dr. Gaiti Ara	New Lecture Hall Complex # 01	

Table No. 3 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. Farhat Jabeen (PGT Physiology)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Prof. Dr. Ifra Saeed (Professor of Anatomy)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Afsheen Batool (PGT Physiology)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Shazia (Demonstrator Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

(Reproduction Module Second Week)
(03-06-2024 To 08-06-2024)

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)
03-06-2024 Monday	**Practical & SGD/CBL** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS** Response of mother's body to pregnancy, Parturition / Female sex hormones (oestrogen and progesterone) / Dr. Sheena (Even) / Dr. Shazia (Odd	B r e a k	**ANATOMY (LGIS)** Special Embryology / Special Histology; Uterus & Uterine Tubes / Uterus & Uterine Tubes; Prof. Dr. Ifra(Even) / Assis. Prof. Dr. Maria (Odd)	**PBL 2 (SESSION -I)** PBL Team	B r e a k	**SGD/DISSECTION** Male Internal Genital Organs Batches, Teachers & Venue Mentioned in Table No. 2	SDL Biochemistry Mechanism of action of Steroid Hormones and Synthesis of Sex Hormones
04-06-2024 Tuesday	**Practical & SGD/CBL** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS))** Female sex hormones (oestrogen and progesterone) / Female sex hormones (oestrogen and progesterone); Dr. Shazia (Even) / Dr. Shazia (Even))		**BIOCHEMISTRY (LGIS)** Purine catabolism / Male & Female Sex Hormones; Dr. Uzma / Dr.Aneela(Even) / Dr. Almas(Odd)	**PATHOLOGY (LGIS)** Sexually transmitted diseases / BPH/Prostatitis; Dr Sara (Even) / Dr Rabbiya Khalid (Odd)		**SGD/DISSECTION** Dissection & Spotting Batches, Teachers & Venue Mentioned in Table No. 2	SDL Physiology Male Reproductive Physiology
05-06-2024 Wednesday	**Practical & SGD/CBL** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)** Lactation, Milk composition, breast feeding / Puberty, menarche, menopause PMS & anovulatory cycles, Abnormalities of secretion by ovaries; Dr. Sheena (Even) / Dr. Shazia (Odd)		**BIOCHEMISTRY (LGIS)** Male & Female Sex Hormones / Purine catabolism; Dr. Almas (Even) / Dr. Uzma/ Dr. Aneela(Odd)	**PATHOLOGY (LGIS)** BPH/ Prostatitis / Sexually transmitted diseases; Dr Rabbiya Khalid (Even) / Dr Sara (Odd)		**CBL/DISSECTION** Female Internal Genital Organs (Ovaries, Fallopian Tubes) Uterus & cervix) Batches, Teachers & Venue Mentioned in Table No. 2	SDL Biochemistry Purine Catabolism & Related Disorders
06-06-2024 Thursday	**Practical & SGD/CBL** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)** Puberty, menarche, menopausePMS&a novulatorycycles, Abnormalities of secretion by ovaries / Puberty, menarche, menopausePMS &anovulatorycyc les, Abnormalities of secretion by ovaries; Dr. Shazia (Even) / Dr. Shazia (Even)		**PBL 2 (SESSION -II)** PBL Team	**SURGERY (LGIS)** Undescended Testes; Dr. Raneez (Even) / Dr. Ameen (Odd)		**SGD/DISSECTION** Ischioanal Fossa Urogenital Diaphragm Batches, Teachers & Venue Mentioned in Table No. 2	SDL Anatomy Female Internal Genital Organs Uterus cervix, (Ovaries, Fallopian Tubes)

Date/Day	8:00 AM – 09:00 AM		09:00AM– 10:00 AM		10:00AM– 11:00 AM		11:00 AM – 12:00 PM			
07-06-2024 Friday	QURAN TRANSLATION – II		**ANATOMY (LGIS)**		**PHYSIOLOGY (LGIS)**		**BIOMEDICAL (CLUB ACTIVITY)**		SDL Anatomy Male Internal Genital Organs (Prostate Vas deferens, seminal vesicles & ejaculatory ducts)	
	Akhlaqiat-1	Imaniat-5	Special Histology Ovary&Vagina	Special Embryology Ovary&Vagina	Fertilization of ovum, transport, implantation, Functions of placenta	Growth & functional development of fetus, Adjustments of infant to extrauterine life, Growth & development in child	Ethical dilemmas Involving breech in Autonomy			
	Dr. Fahd Anwar (Even)	Mufti Naeem Sherazi(Odd)	Assis. Prof. Dr. Maria (Even)	Prof. Dr. Ifra (Odd)	Dr. Shazia (Even)	Dr. Usman (odd)	Biomedical ethics PBL/ SGD team detail given on next page			
08-06-2024 Saturday	**Practical & SGD/CBL** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1		Early Clinical Exposure							SDL Physiology Female Reproductive Physiology Online Clinical Evaluation

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects) CBL / Small Group Disscusion (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

- Histology of Seminal Vesicles & Prostate (Anatomy Histology Practical) Venue-Histology Laboratory (Dr..Sadia Baqir)
- Estimation of Cholestrol by Spectrophotometer (Biochemistry Practical) Venue- Biochemistry Laboratory
- Examination of VII Cranial Nerves (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Anatomy CBL: Ovarian Cysts
- Physiology CBL: Infertility (Venue: Lecture Hall No 5)
- Biochemistry CBL: Gout: (Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Physiology Practical		Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name	Batch	Teacher Name
Monday	C	Supervised by HOD	B	Dr. Rahat	E	Dr. Kamil	A	Dr. Aneela	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab	A	Dr. Aneela	B	Dr. Shazia	E	Dr. Almas
Wednesday	E		D	Dr. Uzma	B	Dr. Shazia	C	Dr. Nayab	A	Dr. Romessa
Thursday	B		A	Dr. Almas	D	Dr. Iqra	E	Dr. Iqra	C	Dr. Nayab
Saturday	A		E	Dr. Romessa	C	Dr. Nayab	D	Dr. Kamil	B	Dr. Rahat

Supervised by HOD (Biochemistry Practical)

Supervised by HOD (Biochemistry SGD)

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-90	Dr. Minahil Haq	New Lecture Hall Complex # 04
B	91-180	Dr. Tariq Furqan	Anatomy Lecture Hall 04
C	181-270	Dr. Sadia Baqir	Anatomy Lecture Hall 03
D	271 onwards	Dr. Gaiti Ara	New Lecture Hall Complex # 01

Supervised by Prof. Dr. Ayesha Yousaf

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Rahima PGT (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Prof. Dr. Ayesha Yousaf (Professor of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Reproduction Module (Third Week)
(10-06-2024 To 15-06-2024)

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)
10-06-2024 Monday	**Practical & SGD/CBL** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		B r e a k	**FAMILY MEDICINE(LGIS)**		**BEHAVIOURAL SCIENCES**		B r e a k	**SGD/DISSECTION**	SDL Anatomy Ischioanal Fossa Urogenital Diaphragm
		Growth &functional development of fetus, Adjustments of infant to extrauterine life, Growth & development in child	Fertilization of ovum, transport, implantation, Functions of placenta		AIDS		Emotion			Perineum, Superficial Perineal Pouch & Contents Deep Perineal Pouch & Contents Batches, Teachers & Venue Mentioned in Table No. 2	
		Dr. Usman (Even)	Dr. Shazia (Odd)		Dr. Sadia Khan (Even)	Dr. Amna Rauf (Odd)					
11-06-2024 Tuesday	**Practical & SGD/CBL** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**COMMUNITY MEDICINE (LGIS)**		**GYNAE AND OBS (LGIS)**			**SGD/DISSECTION**	SDL Biochemistry Pyrimidine Metabolism & Related Disorde
		Special functional problems in neonate. Prematurity and its problems	Hormonal factors in pregnancy		Sexually Transmitted Diseases (STDs)	Acquired immunodeficiency syndromes (AIDs)	Menstrual irregularities			Blood Supply, Venous Drainage & Lymphatic Drainage of Pelvis & Perineum Batches, Teachers & Venue Mentioned in Table No. 2	
		Dr. Usman (Even)	Dr. Sheena (Odd)		Dr. Abdul Qadous (Even)	Dr. Asif (Odd)	Dr Saima Khan (Even)	Dr. Zainab (Odd)			
12-06-2024 Wednesday	**Practical & SGD/CBL** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**BIOCHEMISTRY (LGIS)**		**COMMUNITY MEDICINE (LGIS)**			**SGD/DISSECTION**	SDL Physiology Neonatal physiology
		Hormonal factors in pregnancy	Special functional problems in neonate. Prematurity and its problems		Sex hormones-II	Pyrimidine Metabolism	Acquired immunodeficiency syndromes (AIDs)	Sexually Transmitted Diseases (STDs)		Sacral & Coccygeal Plexus Dissection &Spotiing Batches, Teachers & Venue Mentioned in Table No. 2	
		Dr. Sheena (Even)	Dr. Usman (Odd)		Dr. Almas (Even)	Dr. Uzma / Dr. Aneela (Odd)	Dr. Asif (Even)	Dr. Abdul Qadous (Odd)			
13-06-2024 Thursday	**Practical & SGD/CBL** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**ANATOMY (LGIS)**			**BIOMEDICAL EHTICS**		**BIOCHEMISTRY (LGIS)**			**SGD/DISSECTION**	SDL Biochemistry Pyrimidine Metabolism & Related Disorde
		Special Embryology Ovary&Vagina	Special Histology Ovary&Vagina		Ethical dilemmas practice involving breach in principle of justice		Pyrimidine Metabolism	Sex hormones-II		Cross-Sectional Anatomy Batches, Teachers & Venue Mentioned in Table No. 2	
		Prof. Dr. Ifra (Even)	Assis. Prof. Dr. Maria (Odd)		Biomedical ethics PBL/ SGD team detail given on next page		Dr. Uzma/ Dr. Aneela (Even)	Dr. Almas (Odd)			
Date/Day	**8:00 AM – 09:00 AM**	**09:00AM – 10:00 AM**			**10:00 AM – 12:00 PM**						
14-06-2024 Friday	**QURAN TRANSLATION - III**	**PAK STUDIES/ISLAMIYAT**			**BIOMEDICAL EHTICS**						
	Imaniat-6 / Mufti Naeem Sherazi (Even)	Akhlaqiat-2 / Dr. Fahd Anwar (Odd)	Haqook Ul Ebad / Mufti Naem (Odd)	Tareek e Ali Garh / Qari Aman Ullah (Even)	Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence						
					Biomedical Ethics PBL/ SGD team detail given on next page						
15-06-2024 Saturday	**Practical & SGD/CBL** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**SURGERY (LGIS)**		B r e a k	**GYNAE AND OBS (LGIS)**		**PATHOLOGY(LGIS)**			**SGD/DISSECTION**	SDL Anatomy SDL AnatomyPerineum, Superficial Perineal Pouch & Contents Deep Perineal Pouch & Contents Blood Supply, Venous Drainage & Lymphatic Drainage of Pelvis & Perineum Sacral & Coccygeal Plexus Online Clinical Evaluation
		Male hypogonadism Acute Scrotum			Subfertily		Polycystic ovaries				
		Dr. Faraz (Even)	Dr. Faraz Butt (Odd)		Dr. Farah (Even)	Dr. Saira Ahmed (Odd)	Dr Rabbiya Khalid (Even)	Dr Sara (Odd)		Radiology Batches, Teachers & Venue Mentioned in Table No. 2	

Table No. 1 (Time: 12:20pm – 02:00pm)

Batch Distribution for Practical Skills (all subjects) CBL / Small Group Disscusion (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

- Histology of uterus, uterine tube and ovary (Anatomy Histology Practical) Venue-Histology Laboratory (Dr..Gaiti Ara)
- Milk Analysis (Biochemistry Practical) Venue- Biochemistry Laboratory
- Examination of III, IV & VI Cranial Nerves (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Special Problems of Prematurity (In Neonate) (Venue: Lecture Hall No 5)
- Biochemistry SGD: Synthesis mechanism of action and funtions of sex hormones: Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-90	Dr. Minahil Haq	New Lecture Hall Complex # 04
B	91-180	Dr. Tariq Furqan	Anatomy Lecture Hall 04
C	181-270	Dr. Sadia Baqir	Anatomy Lecture Hall 03
D	271 onwards	Dr. Gaiti Ara	New Lecture Hall Complex # 01

Supervised by Prof. Dr. Ayesha Yousaf

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Rohina Khalid (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Zeneara Saqib (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL Session during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Schedule for LMS Based Weekly Online Assessments for Second Year MBBS (Reproduction Module) Batch 50

The online assessment for Reproduction Module for Second Year MBBS will be as per following schedule:

Class	Module	Day & Date	Time of Assessment	Focal person	Department Responsible
Second Year MBBS	Reproduction Module	Monday 3rd June,2024	9:00 pm-9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 4th June,2024	9:00 pm-9:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 5th June,2024	9:00 pm-9:30pm	Dr Aneela Jamil	Biochemistry
		Monday 10th June,2024	9:00 pm-9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 11th June,2024	9:00 pm-9:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 12th June,2024	9:00 pm-9:30pm	Dr Aneela Jamil	Biochemistry

Reproduction Module (Fourth Week)
(17-06-2024 To 26-06-2024)

Date/time	9:00am - 12:00pm	12:00-02:00pm
17-06-2024 Monday	Eid Ul Adha Holidays	
18-06-2024 Tuesday		
19-06-2024 Wednesday		
20-06-2024 Thursday	Assessment Week	
21-06-2024 Friday		
22-06-2024 Saturday		
24-06-2024 Monday		
25-06-2024 Tuesday		
26-06-2024 Wednesday		

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

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

SECTION-VII

Table of Specification (TOS) For Reproduction Module Examination

Blue Print of Assessment for First Year & Second Year MBBS

Table of Specification

Tools of Asssessment: Cognitive: MCQ- Multiple Choice Questions, EMQs- Extended Matching Questions, SAQ- Short Answer Questions, SEQ- Short Essay Questions Psychomotor: AvOSPE- Audio Visual Assisted Objective Structured Pactical Examination, labOSPE- Laboratory Based Objective Structured Practical Examination, IOSPE- Integrated Objective Structured Practical Examination, COSPE- Clinically Oriented Objective Structed Practical Examination Affect: AED Reflective Writing- Artificial Intelligence, Entraprenureship, Digital Literacy based reflective writing, OSVE- Objective Structured Viva Assessment

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

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

Block	Subjects	LMS Based Assessment					OSPE						Grand Total	Total Block Time
		MCQs					LabOSPE	IOSPE	COSPE	Total	Marks	Time		
		C	HV	S	Total	Time	C	HV	S					
BLOCK	Anatomy	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS
	Physiology	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS
	Biochemistry	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS

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

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

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

Marks per Item

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

OSPE Time=1 Round of 40 Students =80 min

3 Round of 40 Students =240 min

OSVE=Time per student=5mins

Annexure I

(Sample MCQ, SEQ Papers, OSPE, AV OSPE & Video Assisted OSPE)

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

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
2nd Year MBBS Module Exam (Reproduction)

1. A 30 year old male having mumps came to emergency with high grade fever with feeling of heaviness, pain and swelling of scrotum. What is the most likely diagnosis
    a. Orchitis
    b. Cryptorchidism
    c. Prostatitis
    d. Salpingitis
    e. Urethritis

2. A 70-year-old male presented to OPD with severe dull backache, loss of weight and severe fatigue. His Prostate Specific Antigen were raised. On Direct Rectal Examination a hard, immobile and irregular mass was confirmed anteriorly. Most likely diagnosis is
    a. BPH
    b. Sciatica
    c. PID
    d. Prostatic Cancer
    e. Prostatitis

3. A baby was brought to a GP Clinic with the opening of the urethra on the downward curve of penis. The baby has
    a. Epispadias
    b. Bladder exstrophy
    c. Omphalocele
    d. Rectocele
    e. Hypospadias

4. While crossing road an elder woman was run over by a speeding car. She was taken to the emergency department by the police where an X-ray examination of the pelvis revealed the disruption of the sacroiliac joint and fracture of the body of the pubis.
    Which viscera are the most vulnerable to injury during pelvic fracture?
    a. Urinary bladder and urethra.
    b. sigmoid colon.
    c. appendix
    d. cecum
    e. anal canal

5. A woman came to gynae OPD with pain lower abdomen and pelvis. Medical officer suspected rupture of ovarian cyst which was confirmed on Ultrasound of pelvis as there was a collection of fluid in the rectouterine pouch. Culdocentesis was decided via syringe, the needle would be introduced through:
    a. Anterior fornix of vagina .
    b. Posterior fornix of vagina .
    c. Anal canal
    d. Rectum
    e. Urethra.

RAWALPINDI MEDICAL UNIVERSITY
REPRODUCTION MODULE EXAM 2ND YEAR MBBS
ANATOMY SEQS

Note: Attempt all questions. All questions carry equal marks. Draw diagram where necessary

Q1 a. Draw and label microscopic structure of fallopian tubes. 03

b. Briefly describe blood testis barrier. 02

Q2. 30 years female presented in gynae OPD with complaint of repeated miscarriages. On ultrasonography she was diagnosed as a case of uterus didelphys (double uterus).

a. Give embryological basis of this condition. 02
b. Tabulate the adult derivatives and remnants of mesonephric and paramesonephric ducts in males and females. 03

RAWALPINDI MEDICAL UNIVERSITY

DEPARTMENT OF PHYSIOLOGY

REPRODUCTION MODULE FOR SECOND YEAR MBBS

1. Testosterone is secreted by:

   a. Anterior pituitary gland
   b. Posterior pituitary gland
   c. Leyding cells of testis
   d. Adrenal gland
   e. Thyroid gland

2. The enzyme present in acrosome responsible for the opening pathways between the granulosa cells so that sperm can reach the ovum, is:

   a. Lipase
   b. Sucrase
   c. Amylase
   d. Lactase
   e. Hyaluronidase

3. The normal stimulus that causes the test is to descend into the scrotum from abdomen is:

   a. Testosterone secreted by fetal testes
   b. Aldosterone
   c. ADH
   d. Fetal cortisol
   e. Growth hormone

4. The function of testosterone in male includes:

   a. It increases protein formation & muscle development
   b. It decreases thickness of skin
   c. It decreases red blood cells
   d. It decreases basal metabolic rate
   e. It decreases reabsorption of sodium in distal tubule

5. Increased secretion by the fallopian tubules is promoted by:

   a. Estrogen
   b. Prolactin
   c. Progesterone
   d. Oxytocin
   e. Testosterone

RAWALPINDI MEDICAL UNIVERSITY
DEPARTMENT OF PHYSIOLOGY
REPRODUCTION MODULE SEQs SECOND YEAR MBBS

Q.1 A 35-year-old male known athlete, used testosterone to improve work performance and muscle mass.

a. How is testosterone secreted in males? (2)
b. Explain the feedback regulation of hypothalamic-pituitary testicular axis. (3)

Q.2 Explain the hormonal changes during normal female monthly cycle with the help of graph. (2,3)

Q.3 A 25-year-old obese female married for 2 years, presented with complaints of primary infertility. Her labs were performed. Hormonal profile showed raised LH and reduced FSH levels. Scan revealed multiple cysts in ovaries confirming the diagnosis of polycystic ovarian syndrome.

a. Explain the mechanism of ovulation. (2)
b. Briefly explain the phases of ovarian cycle. (3)

Q.4 A 55 years old female presented to OPD with complaints of hot flashes, insomnia and mood disturbances. The examining doctor counseled her about her menopause and related symptoms.

a. What are the effects of estrogen on primary and secondary sexual characteristics? (2)
b. Enlist the effects of deficiency of estrogen. (3)

Q.5 A 26 years old female presented with complaints of missed periods. Her pregnancy test came out be positive.

a. Name the hormone detected in urine pregnancy test. (1)
b. Explain the functions of this hormone. (2.5)
c. Enlist the hormones secreted by the placenta. (1.5)

RAWALPINDI MEDICAL UNIVERSITY DEPARTMENT OF BIOCHEMISTRY
2ND YEAR MBBS
REPRODUCTION MODULE

1. Which one of the following Nitrogenous base is absent in DNA?
   a. Adenine
   b. Guanine
   c. Uracil
   d. Thymine
   e. Cytosine

2. End product of Purine degradation is:
   a. Urea
   b. Uric acid
   c. Ammonia
   d. Allantoin
   e. Pyruvate

3. Following is the cause main clinical feature of Gout:
   a. Photosensitivity
   b. Arthritis
   c. Immunodeficiency
   d. Jaundice
   e. Anemia

4. Following statement is true regarding Testosterone:
   a. It is produced by Ovaries
   b. Acts on the liver and adipose tissue
   c. Receptors are present on the cell surface
   d. It is a steroid hormone
   e. Transported as free hormone in the plasma

SEQ

Q. a. Explain steps of synthesis of estrogen. 2.5

b. Discuss causes of hyperuricemia. 2.5

RAWALPINDI MEDICAL UNIVERSITY DEPARTMENT OF BIOETHICS
2ND YEAR MBBS
REPRODUCTION MODULE

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
   a. Bio-piracy
   b. Biosafety
   c. Bioethics
   d. Bio-patents
   e. Bio-logistic

2. The right of patients having self-decision is called.
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

3. Following is not code of ethics.
   a. Integrity
   b. Objectivity
   c. Confidentiality
   d. Behaviour
   e. Autonomy

4. -------in the context of medical ethics, if it's fair and balanced
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

5. ------Principle requiring that physicians provide, positive benefits
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

OSPE
DEPARTMENT OF ANATOMY

A. Core Concept with Vertical Integration

Gross Anatomy

Station No. 1 **Time Allowed: 3 mins**

I. Identify **Red** on Specimen/ Model.(C2,P) (1)

II. Identify **Yellow** on Specimen/ Model (C2,P) (1)

III. Identify **Green** on Specimen/ Model. (C2,P) (1)

IV. Identify **Blue** on Specimen/ Model.(C2,P) (1)

V. On Per Rectal (PR) examination discontinuity in the wall of green was noticed. Name the associated clinical condition. (C3) (1)

Station No. 1 Key

I. Ligamentum Teres (1)

II. Lesser Omentum (1)

III. Anal Column (1)

IV. Major Calyx (1)

V. Anal fissure (1)

OSPE
DEPARTMENT OF BIOCHEMISTRY

Station 1 (Core Concept - Skill Based)

Prepare Sample solution for Estimation of Serum Uric acid using Spectrophotometer. 03

Key Station 1 (3 Marks)

Procedure 03

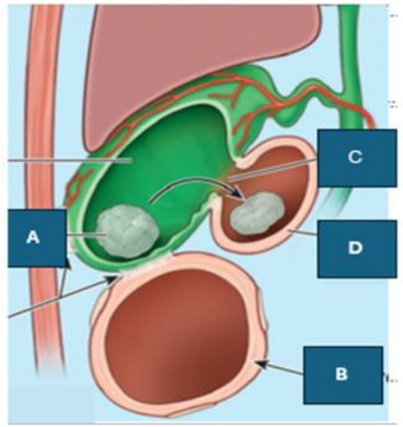
- Take a clean dry cuvette
- Label it as Sample cuvette
- Add 1ml of working reagent in cuvette
- Pipette out 25uL of sample solution in cuvette

Slide 1
Gross Anatomy

I. Label **A & B** in figure **(2)**

II. What is clinical condition **C.(1)**

III. What is clinical significance of Hartmann's pouch in relation to structure **D** **(2)**

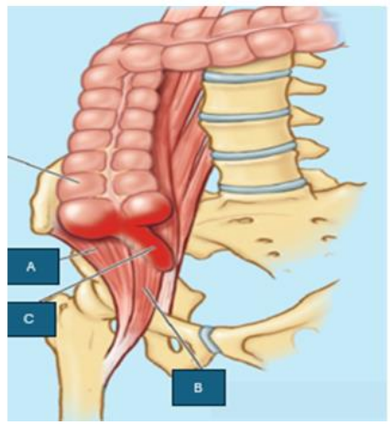


Slide 2
Gross Anatomy

I. Label A & B in figure. **(2)**

II. What is clinical condition C. **(1)**

III. What clinical sign is observed due to condition in C in relation to B. **(2)**

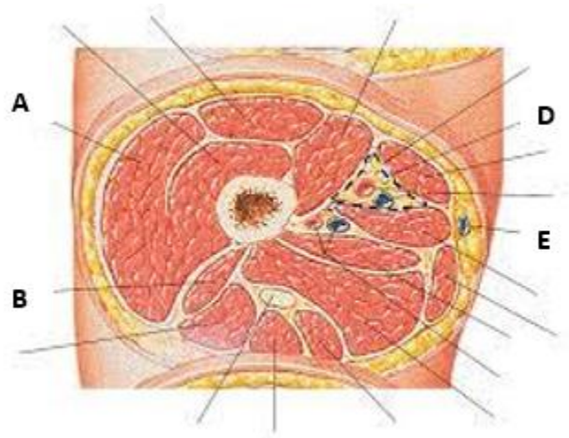


AV OSPE
DEPARTMENT OF ANATOMY

Cross Sectional Anatomy

Q.1) Identify A, B, C, D & E 2.5

Q.2) Give Nerve Supply of A & B 2.5



AV OSPE
DEPARTMENT OF BIOCHEMISTRY

A 36 years old male presented in ER with severe pain in right big toe. Examination showed red tender right big toe.

Q1. What is the likely diagnosis? 01

Q2. Write the causes of this disorder? (4)



Rawalpindi Medical University
Department of Medical Education (DME)

Study Guide
Central Nervous System Module 2024



Procedure For Control of Documented Information

In-Compliance with

ISO 9001:2015

Clause 7.5

Copyright

The copyright of this procedure, together with all confidential information contained herein is the sole property of Rawalpindi Medical University

It may be copied in full or in parts only by the Management/personnel and only for Company-related activities. Disclosure of any information contained within this procedure to any person (s) outside the employee of the institute without written permission of the Vice Chancellor or Principal or ISO Committee Head is strictly prohibited.

Document Information

Category	**CNS Module Study Guide**
Document	Procedure for Control of Documented Information
Issue	1
Rev	00
Identifier	RMU-MR-SOP-59
Status	Final Document
Author(s)	Director Medical Education, Asst. Director Medical Education,
Reviewer(s)	Curriculum Committee.
Approver(s)	Vice Chancellor
Creation Date	05-05-2024
Effective Date	05-05-2024
Control Status	**Controlled**
Distribution	VC, Principal, ISO Committee
Disclaimer	This document contains confidential information. Do not distribute this document without prior approval from higher management of **Rawalpindi Medical University.**

Document Approval

Prepared By	Reviewed By	Approved By
Director Medical Education, Asst. Director Medical Education,	Curriculum Committee	Vice Chancellor

Document Revision History

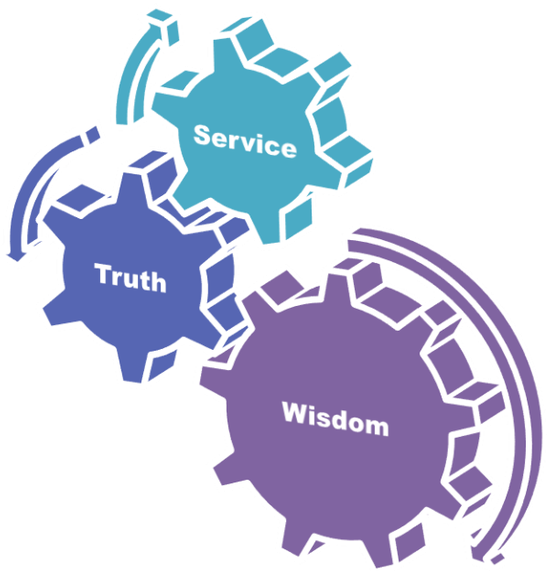
Author(s)	Date	Version	Description
Prof Naeem Akhtar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Sidra Hamid, Dr Tehmina Qamar	2017-2018	1st	Developed for Second Year MBBS. Composed of Horizontally and vertically Integrated Central Nervous System (CNS).
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2019-2020	2nd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated
Dr Tehzeeb, Dr Samia Sarwar, , Dr Ifra Saeed, Dr Ayesha Yousaf , Dr Tehmina Qamar, Dr Sidra Hamid	2021-2022	3rd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum incorporated
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2022-2023	4th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research, Bioethics, Family Medicine curriculum incorporated along with Professionalism
Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr. Aneela Jamil, Dr Sidra Hamid	2023-2024	5th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum revamped Bioethics, Family Medicine curriculum incorporated along with Professionalism. Entrepreneurship curriculum incorporated

List of Copy Holders

Document Code	Issue # /Rev.#	Copy #	Copy Holders	Distribution Mode	Signature
RMU-MR-SOP-59	**01/00**	**01**	**V.C**	**Email**	
RMU-MR-SOP-59	**01/00**	**02**	**HODs**	**Email**	
RMU-MR-SOP-59	**01/00**	**03**	**IC**	**Hard Copy**	

University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

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

Vision and Values

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

Goals of the Undergraduate Integrated Modular Curriculum

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

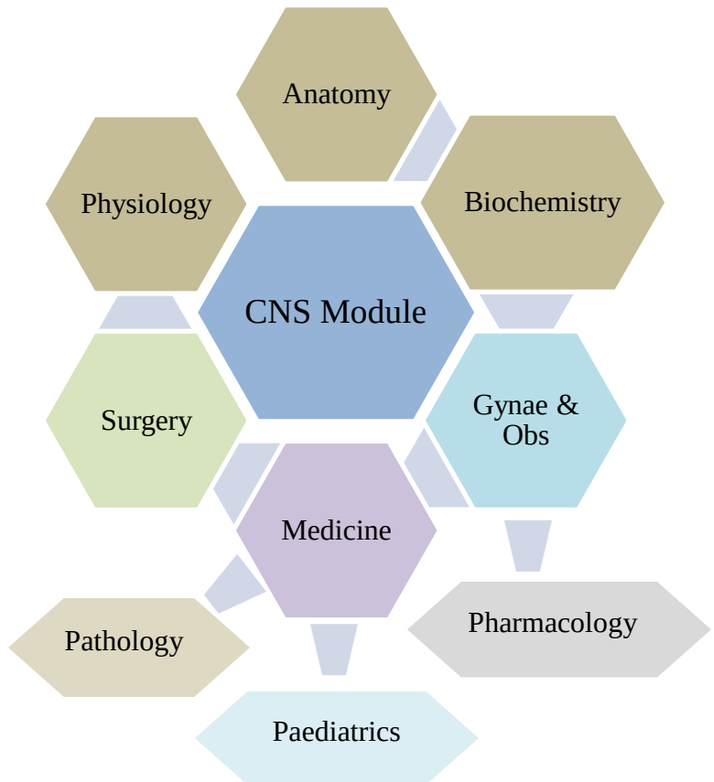
- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional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

Second Year MBBS 2024

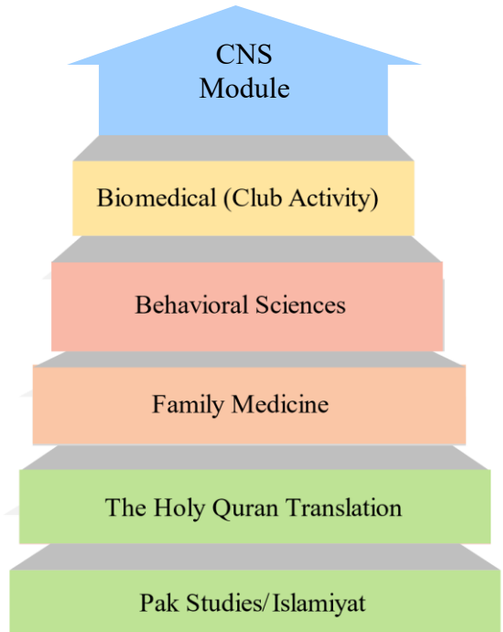
Study Guide

CNS Module

Integration of Disciplines in CNS Module



Spiral / General Education Cluster Courses



Discipline Wise Details of Modular Contents

Subjects	Embryology	Histology	General Anatomy	Gross Anatomy
• Anatomy	• Early CNS Development • Spinal Cord • Hindbrain & Cerebellum • Midbrain • Forebrain • Peripheral Nervous System	• Ganglia • Peripheral Nerves • Spinal Cord • Cerebellum • Cerebrum	• General Anatomy of Nervous System • General Anatomy of Autonomic Nervous System.	• Anterior, Middle & Posterior cranial fossae • Meninges, Dural venous sinuses, and intracranial hemorrhages • Spinal cord & Tracts • Brain stem (Medulla oblongata, Pons, cerebellum & Midbrain) • Diencephalon • Cerebrum • CSF and Ventricular System • Cranial nerves • Basal ganglia • Limbic system & Reticular formation • Blood Supply of Brain • Radiological Imaging of CNS • Cross Sectional Anatomy of CNS
• Biochemistry	• Fatty acid metabolism • Cholesterol Metabolism • Ketone bodies metabolism • Lipoproteins and Phospholipids • Fatty Liver and hyper Lipidemias. • Glycerophospholipid & Sphimgo phospholipid			
• Physiology	• Organization of nervous system, Mechanism of synaptic transmission • Classification of sensory receptors, Properties of sensory receptors • Properties of synaptic transmission • Physiology of pain, Dual pathway for transmission of pain, Analgesia System and Thermal sensations • Sensory pathways for transmitting somatic signals • Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function • Somatosensory cortex & lesions of Somatosensory cortex • Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation • CSF, Blood brain barrier, Blood CSF Barrier, Lumber puncture			

	• Concept of Association areas, • Concept of Dominant and non-dominant cerebral hemispheres • Limbic system, • Functions of hypothalamus • Speech and aphasia • Learning and memory • Reticular activating system and sleep • EEG and epilepsy • Introduction to motor nervous system & Reflex action, Conditioned reflexes & Properties of reflex action, Control of spinal cord reflexes by higher centers • Introduction to cerebellum, Neuronal circuits of cerebellum, and its motor functions • Muscle spindle & Golgi tendon organ, Role of muscle spindle and Golgi tendon organ in voluntary motor activity
Spiral Courses	
• The Holy Quran Translation	• Imaniyaat-5 • Imaniyaat-6 • Momalat-I • Momalat-II
• Pak Studies / Islammiyat	• Musawat • Tehreek-e-Pakistan (1940-1947) • Khwateen k hakook • Qayam e Pakistan, Ibtidai Mushkilaat
• Bioethics & Professionalism	• Ethical dilemmas in healthcare practice involving breach in principle of autonomy • Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence • Ethical dilemmas practice involving breach in principle of justice
• Radiology & Artificial Intelligence	• Skull radiograph • CT Scan & MRI
• Family Medicine	• Approach to a patient with headache
• Behavioral Sciences	• Emotions • Memory
Vertical Integration	
• Pharmacology	• Introduction to CNS
• Pathology	• Patterns of injury in nervous system • Meningitis
• Pediatrics	• Meningitis

	• Cerebral palsy, Polio
• Surgery	• Spinal injury and head injury • Management of hydrocephalus • Brain abscess • Polytrauma patient
• Medicine	• Spinal cord and peripheral nervous system • Encephalitis • Cerebellar disorders • Epilepsy and other convulsive disorders • Stroke
• Gynecology & Obs	• Seizures during pregnancy (eclampsia/ epilepsy)
Early Clinical Exposure (ECE)	
• Medicine	• Cases of stroke • Paraplegia • Vegetative state
• Surgery/ Neurosurgery	• Head injury. • Nerve injuries
• Radiology	• CT scan • Brain • Normal • Stroke • Hemorrhage • Infarction Hydrocephalus • Brain atrophy • Brain Edema • Skull/ spine Fractures • MRI Brain/ Spine

Table of Contents

University Moto, Vision, Values & Goals 7
Discipline Wise Details of Modular Contents 10
CNS Module Team 17
Module IV – CNS Module 18
Module Outcomes 18
Knowledge 18
Skills 19
Attitude 19
SECTION - I 20
Terms & Abbreviations 20
Teaching and Learning Methodologies / Strategies 22
Large Group Interactive Session (LGIS) 22
Small Group Discussion (SGD) 23
Self-Directed Learning (SDL) 25
Case Based Learning (CBL) 25
Problem Based Learning (PBL) 25
Practical Sessions/Skill Lab (SKL) 26
SECTION – II 27
Learning Objectives, Teaching Strategies & Assessments 27
Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry) 28
Anatomy Large Group Interactive Session (LGIS) 28
Physiology Large Group Interactive Session (LGIS) 31
Biochemistry Large Group Interactive Session (LGIS) 40

Anatomy Small Group Discussion (SGDs) 43
Physiology Small Group Discussion (SGDs) 51
Biochemistry Small Group Discussion (SGDs) 55
Anatomy Self-Directed Learning (SDL) 56
Physiology Self-Directed Learning (SDL) 58
Biochemistry Self-Directed Learning (SDL) 63
Histology Practicals Skill Laboratory (SKL) 64
Physiology Practicals Skill Laboratory (SKL) 65
Biochemistry Practicals Skill Laboratory (SKL) 67
SECTION - III 68
Basic and Clinical Sciences (Vertical Integration) 68
Case Based Learning Objectives (CBL) 69
Vertical Integration LGIS 69
Pathology 69
Pharmacology 70
Medicine 70
Surgery 71
Obstetrics & Gynecology 72
Pediatrics 72
Radiology 73
ENT 73
Ophthalmology 74
List of CNS Module Vertical Courses Lectures 75
SECTION – IV 76

Spiral Courses 76
Behavioral sciences 82
Biomedical Ethics 82
Family Medicine 83
Introduction to Spiral Courses 77
List of CNS Module Spiral Courses Lectures 93
SECTION - V 94
Assessment Policies 94
Assessment plan 95
Types of Assessment: 96
Modular Assessment 96
Block Assessment 96
Table 4-Assessment Frequency & Time in CNS Module 97
Learning Resources 98
SECTION - VI 101
Time Table 101
CNS Module Team 103
Categorization of Modular Contents 107
Anatomy 107
Teaching Staff / Human Resource of Department of Anatomy 108
Physiology 109
Teaching Staff / Human Resource of Department of Physiology 111
Biochemistry 112
SECTION-VII 126

Table of Specification (TOS) For CNS Module Examination.....126
Table of Specification for Integrated OSPE 127
Table of Specification for Gross Anatomy OSPE 128
Annexure I 129
(Sample MCQ, SAQ, SEQ Papers, AV OSPE, OSPE & Video Assisted OSPE).....129

CNS Module Team

Module Name	:	CNS Module
Duration of module	:	06 Weeks
Coordinator	:	Dr. Arsalan Manzoor Mughal
Co-coordinator	:	Dr. Gaiti Ara
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Arsalan Manzoor Mughal (Associate Professor of Anatomy)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Gaiti Aara ((APWMO of Anatomy)
4.	Co-Coordinator	Dr. Rahat (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Shazia (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Module IV – CNS Module

Rationale: The human nervous system is the most complex and versatile achievement of the process of evolution. The nervous system of all animals functions to detect changes in the external and internal environment and to bring about appropriate responses in the muscles, organs and glands.

The anatomical, physiological, biochemical and molecular foundation of some of these aspects of neural function are well understood, while others continue to occupy the professional lives of many thousands of researchers in both the basic and clinical sciences.

The nervous system is often damaged by inherited or developmental abnormalities by disease processes and by traumatic injury. The prevention, diagnosis and management of neurological disorders are therefore of immense socioeconomic importance.

This module is expected to build the student's basic knowledge about the normal structure, organization, functions and development of nervous system. This knowledge, skills and attitudes acquired will serve as a fabric on which the student will weave further knowledge about the etiology, pathology and pathogenesis of diseases of nervous system and the principles of their management.

Module Outcomes

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

Knowledge

- Describe the development, structure, functions and biochemical processes of the nervous system.
- Briefly describe the injuries and diseases of the nervous system such as Alzheimer's disease, Parkinson's Disease, etc.
- Classify the main drug groups actin on the nervous system.
- Identify the medical conditions related to nervous system such as stroke, cerebellar disorders, meningitis etc.
- Identify the surgical conditions related to the nervous system such as head injury brain tumors and abscesses.
- Identify obstetrical conditions related to nervous system such as preeclampsia.
- Identify pediatric conditions related to nervous system such as meningitis, cerebral palsy and polio.
- Identify parts of the CNS on radiographs CT scans and MRIs.
- Identify ENT and ophthalmological conditions such as acoustic neuroma and strabismus.
- Describe aspects of behavioral sciences such as Emotions and Memory.

- Used technology based Medical Education including Artificial Intelligence.
- Appreciate concept and importance of Biomedical Ethics, & Research.

Skills

- Demonstrate dissection and identification of various parts of the nervous system.
- Identify, draw and label histological slides of the nervous system.
- Perform examination of sensory system, motor system, special senses and cranial nerves.
- Demonstrate effective skill for performing estimation of cholesterol, triglycerides and HDL.
- 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 6 weeks duration. Instructional strategies are given in the time table and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning Methodologies/Strategies
    - 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

Table1. Domains of Learning According to Blooms Taxonomy

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

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

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

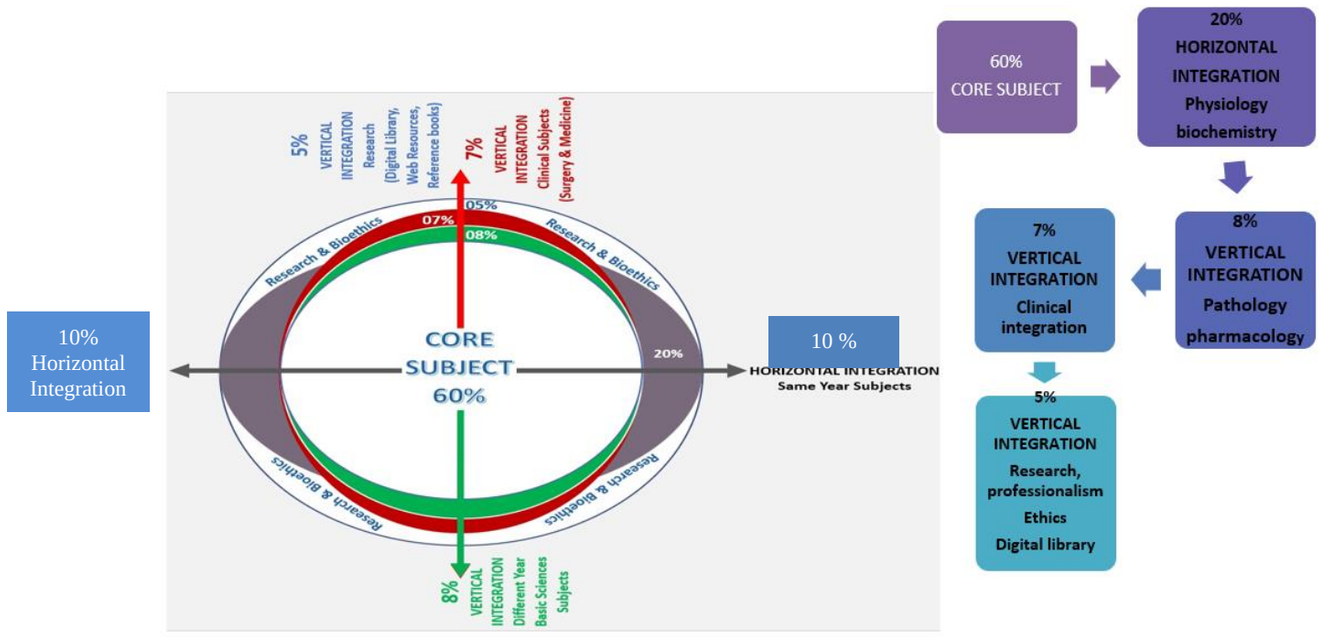


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementation of Small Group Discussions

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

Self-Directed Learning (SDL)

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

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

  ii.OSPE station

Case Based Learning (CBL)

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

Problem Based Learning (PBL)

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

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

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

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

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- 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

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	At The End Of The Session Student Should Be Able To	C/P/A	Teaching Strategy	Assessment Tool
General Anatomy Nervous System	• Discuss the major divisions of nervous system	C2	LGIS	MCQs SAQs SEQs VIVA
	• Differentiate between neurons and neuroglia	C2		
	• List the neuroglia and their functions	C1		
	• Describe myelination of nerve fibers	C2		
	• Describe the structure of a peripheral nerve and reflex action	C2		
	• Describe degeneration and regeneration of nerves	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology Early development of Skull & Central Nervous System	• Describe the process of development of neurocranium and viscerocranium	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe formation of neural tube, neuropores and their closure	C2		
	• Describe histogenesis and Cytodifferentiation within the neural tube.	C2		
	• Describe the brain flexures and their derivatives	C2		
	• Describe role of neuroblasts forming efferent and afferent rows.	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology	• Describe the significance of ventricular, mantle and marginal layers of developing spinal cord.	C2	LGIS	MCQs SAQs

Development of spinal cord	• Enumerate derivatives of alar and basal plates in developing spinal cord.	C1		SEQs VIVA
	• Describe the process of myelination of nerve fibers.	C2		
	• Describe role of neural crest cells in development of spinal ganglia.	C2		
	• Explain positional changes of spinal cord.	C2		
	• Discuss congenital anomalies due to neural tube defects and abnormal histogenesis.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
General Anatomy Autonomic Nervous System	• Enlist the components of peripheral and autonomic system.	C1	LGIS	MCQs SAQs SEQs VIVA
	• Tabulate differences between sympathetic and parasympathetic nervous systems	C2		
	• Describe effects of sympathetic and parasympathetic nervous systems on various parts of the body	C2		
	• Discuss the anatomical basis of autonomic injuries such as Horner's syndrome, Urinary bladder dysfunction, rectal distention, Erectile dysfunction are argyll Robertson pupil.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Histology Meninges, Choroid Plexus, Peripheral Nervous system and ganglia	• Describe the histological structure of meninges and choroid plexus	C2	LGIS	MCQs SAQs SEQs VIVA
	• Discuss the histological structure of Myelinated and unmyelinated nerve fibers	C2		
	• Discuss the histological structure of sensory and autonomic ganglia	C2		
	• Discuss the principles of neuroplasticity and regeneration	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology	• Describe the development of Myelencephalon.	C2	LGIS	MCQs SAQs
	• Describe the arrangement of neuroblasts in metencephalon	C2		

Development of Rhombencephalon	• Describe the development of metencephalon.	C2		SEQs VIVA
	• Describe the arrangement of neuroblasts in metencephalon	C2		
	• Describe the development of cerebellum	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Histology Spinal Cord and Cerebellum	• Describe the histological structure of spinal cord	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe the histological structure of cerebellum	C2		
	• Discuss cells in each layer along with its histological morphology	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology Development Mesencephalon and Prosencephalon	• Describe the development of mesencephalon	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe the arrangement of neuroblasts in mesencephalon	C2		
	• Describe the development of mesencephalon	C2		
	• Describe the arrangement of neuroblasts in mesencephalon	C2		
	• Describe the development of pituitary gland	C2		
	• Discuss the anatomical basis of pharyngeal hypophysis and craniopharyngiomas	C3		
	• Discuss the anatomical basis of birth defects such as encephalocele, microencephaly, microcephaly, Chiari malformation.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Histology Cerebrum	• Describe the histological structure of cerebrum	C2	LGIS	MCQs SAQs SEQs
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		

	• Apply strategic use of A.I in health care.	C3		VIVA
	• Read relevant research article.	C3		
Embryology Development of peripheral and autonomic nervous system	• Describe the development cranial nerves	C2	LGIS	MCQs SAQs SEQs VIVA
	• Describe the development of spinal nerves	C2		
	• Describe the development of sympathetic nervous system	C2		
	• Describe the development of parasympathetic nervous system	C2		
	• Correlate with the clinical conditions	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Embryology Development of Cranium	• Describe the development of different steps of cartilaginous and membranous viscero cranium and neuro-cranium.	C2	LGIS	MCQs SAQs SEQs VIVA
	• Discuss the postnatal growth of the cranium	C2		
	• Correlate with the clinical conditions.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		

Physiology Large Group Interactive Session (LGIS)

Topic	At The End Of This LGIS, Second Year MBBS Students Should Be Able To:	Learning Objectives	Teaching Strategy	Assessment Tools	References	Learning Resources
Organization of Nervous System Mechanism of synaptic transmission	• Describe the general organization of nervous system	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03.	• https://youtu.be/432AD7JZnKE https://www.osmosis.org/learn/Somatosensory_pathways
	• Describe major levels of CNS functions	C1				
	• Briefly explain nerve fiber structure, classification & properties	C2				
	• Describe labeled line principle	C1				
	• Define synapse	C1				
	• Enumerate & compare types of synapses	C2				
	• Describe process of synaptic transmission	C1				

	• Enumerate the important neurotransmitters of nervous system	C1			Page 82) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609)	
Classification of sensory receptors Properties of sensory receptors	• Enumerate & explain different types of sensory receptors according to function	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609)	• https://youtu.be/432AD7JZnKE https://www.osmosis.org/learn/Somatosensory_pathways
	• Enumerate & explain different types of sensory receptors according to location	C2				
	• Enlist various properties of sensory receptors	C1				
	• Describe mechanism of signal transduction & generation of receptor potential	C1				
	• Describe mechanism of adaptation of different types of receptors	C1				
	• Describe the properties of sensory receptors	C1				
	• Describe the types and characteristics of tactile receptors	C1				
Properties of synaptic transmission	• Briefly explain the electrical events during neuronal excitation and inhibition	C2	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609)	• https://youtu.be/432AD7JZnKE https://www.osmosis.org/learn/Somatosensory_pathways
	• Explain temporal and spatial summation	C1				
	• Enlist & explain various characteristics of synaptic transmission	C1				
Physiology of pain Dual pathway for transmission of pain Analgeia System	• Define pain	C1	LGIS	MCQ SEQ		
	• Enumerate different types of pain	C2				
	• Tabulate the differences between two types of pain	C1				
	• Describe characteristics of pain receptors	C1				
	• Discuss the mechanism of stimulation of pain	C2				

Thermal Sensations	receptors			VIVA		
	• Compare and contrast neospinothalamic & paleo spinothalamic tract	C2				
	• Define referred pain	C1				
	• Explain the mechanism of referred pain	C2				
	• Give examples of referred pain	C1				
	• Describe visceral pain and its causes	C1				
	• Define headache	C1				
	• Enlist the types of headache & their causes	C1				
	• Explain the analgesia system	C2				
	• Describe thermal receptors	C1				
	• Explain mechanism of excitation of thermal receptors	C2				
	• Describe transmission of thermal signals in nervous system	C1				
Sensory pathways for transmitting somatic signals	• Classify somatic senses	C2	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609)	• https://youtu.be/432AD7JZnKE https://www.osmosis.org/learn/Somatosensory_pathways
	• Describe the sensory pathways for transmission of somatic sensations to central nervous system	C1				
	• Enumerate sensations carried by dorsal column system and anterolateral system	C1				
	• Describe the characteristics of transmission in the dorsal column medial lemniscal system and anterolateral system	C1				
	• Compare and contrast dorsal column medial lemniscal system and anterolateral system	C2				
Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function	• Describe general organization of autonomic nervous system	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 13, Page 255,259) • Physiology by Linda S. Costanzo 6th Edition. Autonomic Nervous System(Chapter 02. Page 47,59) • Human Physiology by Dee	• https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system https://youtu.be/j9pUItHAAhs https://youtu
	• Enumerate the functions of autonomic nervous system	C1				
	• Describe sympathetic and parasympathetic nervous system	C1				
	• Enumerate & explain their receptors, neurotransmitters & physiological effects	C1				

	• Describe physiological anatomy & effects of adrenal medulla	C1			Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 11 Page 392) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 61, Page 763,765)	.be/7pGKa-1tSJw https://youtu.be/gBOAYgMxq-Q
Somatosensory cortex & lesions of somatosensory cortex	• Explain cortical mapping & association cortex • Describe lesions of somatosensory areas • Summarize role of thalamus in somatic sensations • Interpret the importance of dermatomes	C2 C1 C1 C3	LGIS	MCQ SEQ VIVA	• Textbook of Medical Physiology by Guyton & Hall.14th Edition.(Chapter 48,Page 603) https://nba.uth.tmc.edu/neuroscience/m/s2/chapter04.html	https://teachmeanatomy.info/neuroanatomy/pathways/ascending-tracts-sensory/
Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation	• Briefly explain physiological actions of ANS, vasomotor tone, vagal tone & sympathetic stress response • Draw a table showing autonomic effects on various body organs • Briefly describe the pharmacology of autonomic nervous system	C2 C1 C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 13, Page 264) • Physiology by Linda S. Costanzo 6th Edition. Autonomic Nervous • System(Chapter 02. Page 55) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 11 Page 397) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 61, Page 768)	• https://youtu.be/7pGKa-1tSJw • https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system https://www.diffen.com/difference/Parasympathetic_nervous_system_vs_Sympathetic_nervous_system
CSF, Blood Brain Barrier, Blood CSF Barrier, Lumber Puncture	• Describe briefly the physiological anatomy of cerebral blood flow • Explain cerebrospinal fluid system • Describe the CSF pressure, its measurement by lumbar puncture, & hydrocephalus • Explain blood CSF barrier & BBB • Describe brain edema	C1 C2 C1 C2 C1	LGIS	MCQ SEQ VIVA	• Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 113) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 62, Page 777-784)	• https://youtu.be/f9xi1Rf5m9w https://www.sciencedirect.com/topics/neuroscience/blood-cerebrospinal-fluid-barrier

Concept of Association areas, dominant and non-dominant cerebral hemispheres	• Draw association areas of brain	C1	LGIS	MCQ SEQ VIVA	• Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 58, Page 727)	https://my.clevelandclinic.org/health/articles/23073-cerebral-cortex https://youtu.be/2Z425-CHY1c
	• Describe association areas of brain regarding their physiological role	C1				
	• Explain briefly the clinical features, if the association areas become damaged	C2				
	• Describe concept of dominant hemisphere	C1				
	• Enlist role of parieto-occipito temporal cortex in non-dominant hemisphere	C1				
Limbic system Functions of hypothalamus	• Describe the concept of limbic system	C1	LGIS	MCQ SEQ VIVA	Textbook of Medical Physiology by Guyton & Hall.14th Edition	• https://youtu.be/h3K9RfGw8sI https://www.endocrineweb.com/endocrinology/overview-hypothalamus
	• Describe physiological anatomy of limbic system	C1				
	• Enumerate and explain the roles of hippocampus, amygdala and limbic cortex	C1				
	• Describe physiological anatomy of hypothalamus	C1				
	• Enlist functions of hypothalamus	C1				
	• Explain role of hypothalamus in: o Vegetative function o Endocrine function Behavioral function o Reward and punishment function	C2				
Speech and aphasia	• Describe sensory and motor aspects of communication	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 15, Page 290,293) Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 70, Page 1211)	• https://www.sciencedirect.com/science/article/abs/pii/S0021992422000892 https://www.stroke.org.uk/what-is-aphasia/types-of-aphasia
	• Define Wernicke's aphasia, Motor aphasia & Global aphasia	C1				
	• Explain Wernicke's aphasia, Motor aphasia & Global aphasia	C2				
	• Describe function of corpus callosum & anterior commissure in transferring information between two cerebral hemispheres	C1				
Learning and memory	• Define memory & classify its various types	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 15, Page 283) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 112) • Human Physiology by Dee	• https://youtu.be/EqdsQDM5Fys https://www.sciencedirect.com/topics/psychology/learning-and-memory
	• Describe role of synaptic inhibition and synaptic facilitation in memory	C1				
	• Explain mechanism of short term, intermediate and long-term memory	C2				
	• Describe mechanism of consolidation of memory	C1				
	• Enumerate specific parts of brain involved in memory	C2				

	• Explain the role of each part	C2			Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 09 Page 332) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 58, Page 735)	
Reticular activating system and sleep	• Describe activating driving system of the brain	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 14, Page 269,272,278) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10 Page 344) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 70, Page 12031208) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 60, Page 753)	• https://youtu.be/TdGQvWAZ0Cs https://www.physio-pedia.com/Reticular Formation
	• Explain the reticular activating system	C2				
	• Discuss the control of cerebral activity by signals from brain stem	C2				
	• Explain neurohormonal system of the brain	C2				
	• Define sleep and enumerate types of sleep	C1				
	• Compare and contrast between two types of sleep	C2				
	• Describe the basic theories of sleep in detail	C1				
	• Explain physiological effects of sleep	C2				
	• Describe sleep and wakefulness cycle	C1				
EEG and epilepsy	• Describe brain waves	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 14, Page 275) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 42) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 70, Page 1209) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 60, Page 756)	https://www.webmd.com/epilepsy/guide/types-epilepsy https://youtu.be/T7MKlPYiL48
	• Enumerate different types of brain wave	C2				
	• Explain the origin of different brain waves	C2				
	• Describe EEG	C1				
	• Define epilepsy	C1				
	• Enumerate various types of epilepsy	C1				
	• Explain various types of epilepsy	C2				
	• Describe role of nor-epinephrine, serotonin and	C1				
	• dopamine in psychotic disorders	C1				
	• Describe the causes, symptoms & treatment of depression & bipolar disorder	C1				
	• Discuss causes, types, symptoms and treatment of schizophrenia	C2				
	• Define Alzheimer's disease. Mention its causes, clinical features, incidence and	C1				

	treatment					
Introduction to motor nervous system & Reflex action Conditioned reflexes & properties Properties of reflex action Control of spinal cord reflexes by higher centers	• Outline brief introduction of motor nervous system	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of MedicalPhysiology.25TH Edition. Section 02 • (Chapter 12, Page 237,240) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 110) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. • Section 09.(Chapter 56, Page 697)	https://www.physio-pedia.com/Extrapyramidal_and_Pyramidal_Tracts https://youtu.be/B88BNYWVkWE
	• Give concept of cortical & subcortical motor control	C1				
	• Briefly explain UMN, LMN, anterior motor neurons & interneurons	C2				
	• Define reflex action	C1				
	• Define and draw reflex arc	C1				
	• Enumerate components of reflex arc	C1				
	• Classify the reflexes	C2				
	• Define conditioned reflex	C1				
	• Enlist and describe properties of conditioned reflexes	C1				
	• Give examples of conditioned reflex	C1				
	• Enlist and Explain properties of reflex action	C1,C2				
	• Compare & contrast spinal animal with decerebrate animal	C2				
	• Describe organization of spinal cord for motor functions	C1				
	• Explain the concept of cortical & subcortical control. • Define UMN & LMN	C2				
Introduction to cerebellum Neuronal circuits of cerebellum Cerebellum and its motor functions	• Describe physiological anatomy of cerebellum	C1	LGIS	MCQ SEQ VIVA		
	• Classify the functional parts of cerebellum & mention their functions	C2				
	• Describe neuronal circuits of cerebellum in detail	C1				
	• Enumerate the afferent and efferent pathways	C1				
	• Describe the functional unit of cerebellar cortex & deep cerebellar nuclei	C1				
	• Explain the role of purkinje cell, Deep nuclear cells and inhibitory cells of cerebellum in overall functions of cerebellum	C2				
	• Explain role of climbing fibers	C2				
	• Discuss the turn-on and turn-off mechanism	C2				
	• Enlist and explain motor functions of cerebellum	C1				

	• Explain the role of vestibulo cerebellum, spino cerebellum & neocerebellum in overall motor control by cerebellum	C2				
Muscle spindle & Golgi tendon organ Role of muscle spindle and Golgi tendon organ in voluntary motor activity	• Describe muscle spindle & Golgi tendon organ in detail	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 12, Page 229,234) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 68, Page 476) Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 55, Page 686,691)	https://www.osmosis.org/learn/Muscle_spindles_and_golgi_tendon_organs https://youtu.be/CzeAcc39Cyo
	• Explain the receptor function of the Muscle Spindle & Golgi tendon organ	C2				
	• Draw muscle spindle and Golgi tendon organ showing the sensory and motor innervation	C1				
	• Explain the dynamic and static response of muscle spindle & Golgi tendon organ	C2				
	• Briefly describe muscle stretch reflex	C1				
	• Draw the neuronal circuitry of the stretch reflex	C1				
	• Explain the static and dynamic components of stretch reflex	C2				
	• Discuss the clinical applications of stretch reflex	C2				
	• Explain negative stretch reflex	C2				
	• Explain lengthening reaction and its significance	C2				
	• Describe role of muscle spindle and Golgi tendon organ in voluntary muscle activity	C1				
	• Explain the role of alpha gamma co activation	C2				
Manifestations of cerebellar disease	• Enlist and explain clinical abnormalities of cerebellum	C2	LGIS	MCQ SEQ VIVA		
Polysynaptic reflexes Transection of spinal cord Role of brain stem in controlling motor functions Lesions of motor system	• Enlist polysynaptic reflexes	C1	LGIS	MCQ SEQ VIVA		
	• Describe the polysynaptic reflexes	C1				
	• Explain mechanism of reciprocal inhibition and reciprocal innervation	C2				
	• Enlist and describe reflexes of posture and locomotion	C1				
	• Explain scratch reflex	C2				
	• Enumerate the spinal cord reflexes that cause muscle spasm	C1				
	• Enlist autonomic reflexes in the spinal cord	C1				
	• Briefly describe transection of spinal cord	C1				

	• Explain stages of complete transection	C2				
	• Briefly explain stages of complications in complete transection of spinal cord	C2				
	• Describe hemi section of spinal cord	C1				
	• Explain brown-sequard syndrome	C1				
	• Enumerate and explain role of brainstem in controlling motor function	C1,C2				
	• Explain role of pontine & medullary reticular nuclei	C2				
	• Briefly write role of vestibular nuclei in antigravity muscle control	C1				
	• Summarize decerebrate rigidity	C1				
	• Enlist the effects of damage to specialized areas of motor cortex	C1				
	• Differentiate UMN Lesion and LMN Lesion	C2				
	• Explain decorticate rigidity	C2				
	• Briefly explain the pathophysiology of syringomyelia, tabs- dorsalis & poliomyelitis	C2				
Motor cortex & physiological importance of neocortex Corticospinal or pyramidal tract Extra pyramidal system	• Briefly describe motor areas in cortex	C1	LGIS	MCQ SEQ VIVA	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 12, Page 243) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 110) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 69, Page 1194) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 57, Page 720)	• https://youtu.be/hxvep2Y8ShI https://www.sciencedirect.com/science/article/pii/S2214751923000026 https://teachmeanatomy.info/neuroanatomy/structures/basal-ganglia
	• Draw motor & somatic association areas of motor cortex	C1				
	• Explain functions of motor & somatic association areas	C2				
	• Explain allocortex & neocortex	C2				
	• Describe medial and lateral descending pathways	C1				
	• Explain transmission of signals from motor cortex to muscle	C2	LGIS	MCQ SEQ VIVA		
	• Draw course of pyramidal tract	C1				
	• Enlist the functions of pyramidal tract	C1				
	• Mention the effects of lesions in Corticospinal tract	C1				
	• Briefly describe extra pyramidal descending tracts	C1				
	• Describe rigidity and spasticity	C1				
	• Describe location and function of red nucleus	C1				
	• Describe physiological anatomy of basal ganglia	C1				

Basal Ganglia & Lesions	• Draw neuronal circuits of basal ganglia	C1				
	• Explain the role of neuronal circuits in functioning of basal ganglia	C2				
	• Enlist and explain the physiological role of neurotransmitters in basal ganglia system	C1				
	• Enumerate the clinical abnormalities caused by damage to basal ganglia	C1				
	• Briefly explain Parkinson disease regarding its causes, signs and symptoms & treatment	C2				
	• Explain Huntington's Chorea regarding its causes, signs and symptoms	C2				

Biochemistry Large Group Interactive Session (LGIS)

Topic	At The End Of Lecture Students Should Be Able To	C/P/A	Teaching Strategy	Assessment Tool
Triglyceride Metabolism, Fatty acid transport	• Describe synthesis & breakdown of TAGs and factors affecting it	C2	LGIS	MCQs SAQs Viva
	• Explain entry of fatty acid into mitochondria (carnitine shuttle)	C2		
Oxidation of fatty acid	• Describe steps, enzymes, energy calculations of β- oxidation of saturated fatty acid (Odd + Even)	C2	LGIS	MCQs SAQs Viva
Oxidation of fatty acid	• Discuss other types of oxidations and related disorders	C2	LGIS	MCQs SAQs Viva
Fatty acid synthesis	• Explain the steps, regulation and related diseases of fatty acid synthesis	C2	LGIS	MCQs SAQs Viva
Cholesterol Synthesis	• Describe the steps, regulation and related disorders of Cholesterol Synthesis	C2	LGIS	MCQs SAQs Viva
Plasma Cholesterol level	• Recall normal Plasma Cholesterol level and factors controlling it	C1	LGIS	MCQs SAQs

				Viva
Ketone bodies metabolism	• Explain the synthesis and breakdown of Ketone bodies with related diseases (ketoacidosis)	C2	LGIS	MCQs SAQs Viva
Metabolism of Glycerophospholipid	• Describe the steps of biosynthesis of Glycerophospholipids with its regulation and clinical significance	C2	LGIS	MCQs SAQs Viva
Metabolism of Sphingophospholipids	• Explain the steps of biosynthesis of sphingophospholipids with its regulation and clinical significance	C2	LGIS	MCQs SAQs Viva
Introduction to Lipoproteins	• Discuss the functions and roll of Lipoproteins & apolipoprotein	C2	LGIS	MCQs SAQs Viva

LDL& HDL	• Explain the composition, functions and clinical significance of LDL& HDL	C2	LGIS	MCQs SAQs Viva
	• Illustrate the mechanism of reverse cholesterol transport	C3		
Disorders of lipoprotein metabolism	• Classify and explain the disorders of lipoprotein metabolism. • (hyper & hypo lipoproteinemia)	C2	LGIS	MCQs SAQs Viva
Fatty Liver & Adipose Tissue	• Interpret conditions leading to Fatty liver	C3	LGIS	MCQs SAQs Viva
	• Describe metabolism of adipose tissue & Brown fat	C2		
Disorders of lipoprotein metabolism	• Classify and explain the disorders of lipoprotein metabolism. • (hyper & hypo lipoproteinemia)	C2	LGIS	MCQs SAQs Viva

Anatomy Small Group Discussion (SGDs)

Topic	At The End Of Lecture Students Should Be Able To	C/P/A	Teaching Strategy	Assessment Tool
Anterior & Middle cranial fossae	• Identify and describe the boundaries of anterior and middle cranial fossae	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Discuss anatomical features present in anterior and middle cranial fossa	C2		
	• Locate foramina and describe the structures passing through them	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Posterior cranial fossa	• Identify and describe the boundaries of posterior cranial fossa	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Discuss anatomical features present in posterior cranial fossa	C2		
	• Locate foramina and describe the structures passing through them	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Meninges, Dural venous sinuses, and intracranial hemorrhages	• Identify and describe meninges and their reflections on specimens and models	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Describe the attachments and relations of dural venous sinuses of brain with the help of models and specimens	C2		
	• Discuss the clinical importance of facial vein connection with dural venous sinuses.	C3		
	• Differentiate between various types of intracranial hemorrhages	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
	• Differentiate between different types of headaches	C3		

Spinal cord	• Describe the internal and external structure of spinal cord	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Compare the arrangement of white and gray matter in different regions of the spinal cord	C2		
	• Enumerate the major ascending and descending tracts of spinal cords	C1		
	• Illustrate the arrangements of ascending and descending tracts in the spinal cors	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Ascending tracts and their clinicals	• List the ascending tracts of the spinal cord	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Tabulate the sensation, receptor, first to third order neurons, pathways and destinations	C2		
	• Describe and illustrate the pathways of lateral spinothalamic tract, anterior spinothalamic tract, anterior spinocelebellar tract and posterior spinocerebellar tracts	C2		
	• Describe and illustrate the pathways of spinotectal tract, spinoreticular tract and spino-olivary tracts	C2		
	• Describe the anatomical basis of the signs and symptoms in lesions of the ascending tracts	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Descending tracts and their clinicals	• List the descending tracts of the spinal cord	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Tabulate the sensation, receptor, first to third order neurons, pathways and destinations of pyramidal and extrapyramidal tracts	C2		
	• Describe and illustrate the pathways of corticospinal tracts	C2		
	• Describe and illustrate the pathways of extrapyramidal tracts	C2		
	• Describe the anatomical basis of the signs and symptoms in lesions of upper and lower motor neuron lesions	C3		

	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Lesions of Spinal Cord	• Explain anatomical basis of signs and symptoms of anterior and posterior nerve root lesions	C3	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Explain anatomical basis of signs and symptoms of complete cord transection syndrome, central cord syndrome, syringomyelia, anterior cord syndrome, Brown-Sequard Syndrome, Poliomyelitis and amyotrophic lateral sclerosis	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Medulla oblongata	• Identify and describe gross features of medulla and identify them on gross specimen/model.	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Identify and describe internal structure of medulla on cross sectional diagrams.	C2		
	• Describe the anatomical basis and clinical features of raised pressure in posterior cranial fossa, Arnold Chiari malformation, lateral and medial medullary syndrome.	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Pons & the Fourth ventricle	• Identify and describe the gross features of Pons on a given specimen/model	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Identify and describe internal structure of pons on cross sectional diagrams.	C2		
	• Describe the boundaries and relations of 4th ventricle	C2		
	• Describe the anatomical basis of clinical features of tumors, hemorrhage and infarctions of pons	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		

	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Midbrain & Cerebral aqueduct	• Identify and describe the gross features of Pons on a given specimen/model	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Identify and describe internal structure of pons on cross sectional diagrams.	C2		
	• Describe the boundaries and relations of 4th ventricle	C2		
	• Describe the anatomical basis of trauma, cerebral aqueduct stenosis and vascular lesions of midbrain.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cerebellum	• Identify and describe the gross features of cerebellum	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Describe internal structure of gray and white matter of cerebellar cortex	C2		
	• Describe the cerebellar cortical mechanisms	C1		
	• Describe afferent and efferent fibers of cerebellum	C2		
	• Discuss the functions of cerebellum	C2		
	• Describe the anatomical basis of signs and symptoms of cerebellar diseases such as hypotonia, gait alteration, ataxia, dysdiadochokinesia, disturbances in reflexes, disturbances in ocular movement, disorders of speech	C3		
	• Describe the anatomical basis of signs and symptoms of cerebellar syndromes such as vermis syndrome and cerebellar hemisphere syndrome	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Thalamus, Epithalamus & Subthalamus	• Identify and describe the gross structure of thalamus, epithalamus and subthalamus	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Enlist nuclei of thalamus, epithalamus & subthalamus and describe their functions	C1		
	• Describe the anatomical basis for the lesions of thalamus, epithalamus and subthalamus such as thalamic pain and thalamic hand	C3		
	• Correlate with the clinical conditions & cross sections.	C3		

	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Hypothalamus and 3rd Ventricle	• Enlist nuclei of thalamus, epithalamus & subthalamus and describe their functions	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Identify and describe the functions of tuber cinereum and mamillary bodies	C2		
	• Describe the various afferent and efferent connections of hypothalamic nuclei	C2		
	• Describe the anatomical basis for the lesions of hypothalamus and hypothalamic syndromes	C3		
	• Describe the boundaries and relations of the 3rd ventricle	C2		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cortical areas, Layers and Lesions of Cerebrum	• Identify and describe the gross features of cerebrum	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Identify the describe the lobes and subdivisions of cerebrum	C2		
	• Identify the sulci and gyri of cerebral cortex and describe their functions	C2		
	• Identify and describe the commissural, association and projection fibers present in the white matter of the brain.	C2		
	• Discuss the anatomical basis of lesions of internal capsule and alzheimer's disease	C3		
	• Discuss the anatomical basis of cerebral cortical lesions of the motor cortex, frontal eye field, motor & sensory speech areas, prefrontal cortex, sensory cortex and visual areas	C3		
	• Discuss the anatomical basis of schizophrenia and frontal lobectomy	C3		
	• Discuss the basis cerebral dominance, consciousness, persistent vegetative state, sleep and epilepsy.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		

Lateral Ventricle &CSF	• Describe the relations and boundaries of lateral ventricle	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Describe the formation of choroid plexus in ventricles	C2		
	• Explain the function, production, circulation, and absorption of cerebrospinal fluid	C2		
	• Explain the causes of overproduction and blockage of CSF	C2		
	• Discuss the anatomical basis of various types of hydrocephalus and papilledema.	C3		
	• Discuss the formation and clinical significance of blood brain barrier, blood CSF barrier and CSF Brain interface.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cranial nerves I,II,II,IV,VI	• Identify the nuclei and connections of CN I,II,II,IV,VI	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Trace the pathway and perform reflexes associated with of CN I,II,II,IV,VI	C2		
	• Describe the anatomical basis of lesions of visual pathway and ophthalmoplegias	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cranial nerves V,VII	• Identify the nuclei and connections of CN V,VII	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Trace the pathway and perform reflexes associated with of CN V,VII	C2		
	• Describe the anatomical basis of upper and lower motor neuron lesion of CN V and trigeminal neuralgia	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cranial nerves	• Identify the nuclei and connections of CN VIII-XII	C2		

VIII-XII	• Trace the pathway and perform reflexes associated with of CN VIII-XII	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Discuss the anatomical basis of vertigo, nystagmus, deafness, tinnitus, taste and gag reflex	C3		
	• Discuss the anatomical basis of paralysis of muscles supplied by accessory and hypoglossal nerves	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Basal ganglia	• Enlist components of basal ganglia	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE VIVA
	• Discuss functions of basal ganglia	C2		
	• Describe the connections of basal ganglia	C2		
	• Discuss the anatomical basis of hypo and hyperkinetic disorders such as chorea, hemiballismus, Parkinson's disease and athetosis.	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Limbic system & Reticular formation	• Enlist components and connections of limbic system	C1	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Discuss functions of limbic system	C2		
	• Describe the connections of limbic system	C2		
	• Enlist components of reticular system	C1		
	• Discuss functions of reticular system	C2		
	• Describe the connections of reticular system	C1		
	• Discuss the anatomical basis of loss of consciousness, schizophrenia, Kluver-Bucy syndrome and temporal lobe dysfunction	C3		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		

Blood Supply of Brain and clinicals	• Describe the arterial supply of brain and spinal cord from internal carotid artery and vertebrobasilar systems	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Describe the circle of Willis along with its clinical significance	C2		
	• Describe the venous drainage of brain and spinal cord	C2		
	• Discuss the anatomical basis of signs and symptoms of cerebral vessel occlusions and spinal cord ischemias.	C3		
	• Correlate with the clinical conditions & cross sections & cross sections	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Radiological Imaging of CNS	• Identify and describe the appearance of different parts of brain in o Normal radiographs o MRI o CT scan	C2	Skills lab	• MCQs • SAQs • SEQ • OSPE • VIVA
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cross Sectional Anatomy	• Identify different structures of male pelvis at different levels; S5, coccyx, Symphysis pubis, ischial tuberosity, anal verge • Identify different structures of female pelvis at different levels; S5, coccyx, Symphysis pubis, ischial tuberosity, anal verge • Practice the principles of bioethics. • Apply strategic use of A.I in health care • Read a relevant research article •	C2 C2 C3 C3 C3 C3	Skill Lab	• MCQs • SAQs • SEQ • OSPE • VIVA

Physiology Small Group Discussion (SGDs)

Topic	At The End Of This LGIS, Second Year MBBS Students Should Be Able To:	Learning Objectives	Teaching Strategy	Assessment Tools
Synapse & Sensory Receptors	• Describe the general organization of nervous system	C1	LGIS	MCQ SEQ VIVA
	• Describe major levels of CNS functions	C1		
	• Briefly explain nerve fiber structure, classification & properties	C2		
	• Describe labeled line principle	C1		
	• Define synapse	C1		
	• Enumerate & compare types of synapses	C2		
	• Describe process of synaptic transmission	C1		
	• Enumerate the important neurotransmitters of nervous system	C1		
	• Enumerate & explain different types of sensory receptors according to function	C1	LGIS	MCQ SEQ VIVA
	• Enumerate & explain different types of sensory receptors according to location	C2		
	• Enlist various properties of sensory receptors	C1		
	• Describe mechanism of signal transduction & generation of receptor potential	C1		
	• Describe mechanism of adaptation of different types of receptors	C1		
	• Describe the properties of sensory receptors	C1		
	• Describe the types and characteristics of tactile receptors	C1		
	• Briefly explain the electrical events during neuronal excitation and inhibition	C2	LGIS	MCQ SEQ VIVA
	• Explain temporal and spatial summation	C1		
	• Enlist & explain various characteristics of synaptic transmission	C1		
	• Describe visceral pain and its causes	C1		
	• Define headache	C1		
	• Enlist the types of headache & their causes	C1		
	• Explain the analgesia system	C2		
	• Describe thermal receptors	C1		
	• Explain mechanism of excitation of thermal receptors	C2		
	• Describe transmission of thermal signals in nervous system	C1		

Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function	• Describe general organization of autonomic nervous system	C1	LGIS	MCQ SEQ VIVA
	• Enumerate the functions of autonomic nervous system	C1		
	• Describe sympathetic and parasympathetic nervous system	C1		
	• Enumerate & explain their receptors, neurotransmitters & physiological effects	C1		
	• Describe physiological anatomy & effects of adrenal medulla	C1		
	• Briefly explain physiological actions of ANS, vasomotor tone, vagal tone & sympathetic stress response	C2	LGIS	MCQ SEQ VIVA
	• Draw a table showing autonomic effects on various body organs	C1		
	• Briefly describe the pharmacology of autonomic nervous system	C1		
Introduction to motor nervous system & Reflex action Conditioned reflexes & properties Properties of reflex action Control of spinal cord reflexes by higher centers	• Outline brief introduction of motor nervous system	C1	LGIS	MCQ SEQ VIVA
	• Give concept of cortical & subcortical motor control	C1		
	• Briefly explain UMN, LMN, anterior motor neurons & interneurons	C2		
	• Define reflex action	C1		
	• Define and draw reflex arc	C1		
	• Enumerate components of reflex arc	C1		
	• Classify the reflexes	C2		
	• Define conditioned reflex	C1		
	• Enlist and describe properties of conditioned reflexes	C1		
	• Give examples of conditioned reflex	C1		
	• Enlist and Explain properties of reflex action	C1,C2		
	• Compare & contrast spinal animal with decerebrate animal	C2		
	• Describe organization of spinal cord for motor functions	C1		
	• Explain the concept of cortical & subcortical control. • Define UMN & LMN	C2		
	• Describe physiological anatomy of cerebellum	C1		MCQ
	• Classify the functional parts of cerebellum & mention their functions	C2		
	• Describe neuronal circuits of cerebellum in detail	C1		
	• Enumerate the afferent and efferent pathways	C1		

Introduction to cerebellum Neuronal circuits of cerebellum Cerebellum and its motor functions	• Describe the functional unit of cerebellar cortex & deep cerebellar nuclei	C1	LGIS	SEQ VIVA
	• Explain the role of purkinje cell, Deep nuclear cells and inhibitory cells of cerebellum in overall functions of cerebellum	C2		
	• Explain role of climbing fibers	C2		
	• Discuss the turn-on and turn-off mechanism	C2		
	• Enlist and explain motor functions of cerebellum	C1		
	• Explain the role of vestibulo cerebellum, spino cerebellum & neocerebellum in overall motor control by cerebellum	C2		
Muscle spindle & Golgi tendon organ Role of muscle spindle and Golgi tendon organ in voluntary motor activity	• Describe muscle spindle & Golgi tendon organ in detail	C1	LGIS	MCQ SEQ VIVA
	• Explain the receptor function of the Muscle Spindle & Golgi tendon organ	C2		
	• Draw muscle spindle and Golgi tendon organ showing the sensory and motor innervation	C1		
	• Explain the dynamic and static response of muscle spindle & Golgi tendon organ	C2		
	• Briefly describe muscle stretch reflex	C1		
	• Draw the neuronal circuitry of the stretch reflex	C1		
	• Explain the static and dynamic components of stretch reflex	C2		
	• Discuss the clinical applications of stretch reflex	C2		
	• Explain negative stretch reflex	C2		
	• Explain lengthening reaction and its significance	C2		
	• Describe role of muscle spindle and Golgi tendon organ in voluntary muscle activity	C1		
	• Explain the role of alpha gamma co activation	C2		
	• Enlist polysynaptic reflexes	C1	LGIS	MCQ SEQ VIVA
	• Describe the polysynaptic reflexes	C1		
	• Explain mechanism of reciprocal inhibition and reciprocal innervation	C2		
	• Enlist and describe reflexes of posture and locomotion	C1		
	• Explain scratch reflex	C2		
	• Enumerate the spinal cord reflexes that cause muscle spasm	C1		
	• Enlist autonomic reflexes in the spinal cord	C1		
	• Briefly describe transection of spinal cord	C1		
	• Explain stages of complete transection	C2		
	• Briefly explain stages of complications in complete transection of spinal	C2		

	cord			
	• Describe hemi section of spinal cord	C1		
	• Explain brown-sequard syndrome	C1		
	• Enumerate and explain role of brainstem in controlling motor function	C1,C2		
	• Explain role of pontine & medullary reticular nuclei	C2		
	• Briefly write role of vestibular nuclei in antigravity muscle control	C1		
	• Summarize decerebrate rigidity	C1		
	• Enlist the effects of damage to specialized areas of motor cortex	C1		
	• Differentiate UMN Lesion and LMN Lesion	C2		
	• Explain decorticate rigidity	C2		
	• Briefly explain the pathophysiology of syringomyelia, tabs- dorsalis & poliomyelitis	C2		
Motor cortex & physiological importance of neocortex Corticospinal or pyramidal tract Extra pyramidal system Basal Ganglia & Lesions	• Briefly describe motor areas in cortex	C1	LGIS	MCQ SEQ VIVA
	• Draw motor & somatic association areas of motor cortex	C1		
	• Explain functions of motor & somatic association areas	C2		
	• Explain allocortex & neocortex	C2		
	• Describe medial and lateral descending pathways	C1		
	• Explain transmission of signals from motor cortex to muscle	C2	LGIS	MCQ SEQ VIVA
	• Draw course of pyramidal tract	C1		
	• Enlist the functions of pyramidal tract	C1		
	• Mention the effects of lesions in Corticospinal tract	C1		
	• Briefly describe extra pyramidal descending tracts	C1		
	• Describe rigidity and spasticity	C1		
	• Describe location and function of red nucleus	C1		
	• Describe physiological anatomy of basal ganglia	C1		
	• Draw neuronal circuits of basal ganglia	C1		
	• Explain the role of neuronal circuits in functioning of basal ganglia	C2		
	• Enlist and explain the physiological role of neurotransmitters in basal ganglia system	C1		
	• Enumerate the clinical abnormalities caused by damage to basal ganglia	C1		
	• Briefly explain Parkinson disease regarding its causes, signs and symptoms & treatment	C2		
	• Explain Huntington‘s Chorea regarding its causes, signs and symptoms	C2		
Limbic system Functions of hypothalamus	• Describe the concept of limbic system	C1		
	• Describe physiological anatomy of limbic system	C1		

	• Enumerate and explain the roles of hippocampus, amygdala and limbic cortex	C1		
	• Describe physiological anatomy of hypothalamus	C1		
	• Enlist functions of hypothalamus	C1		

	• Explain role of hypothalamus in:
	  ○ Vegetative function
	  ○ Endocrine function Behavioral function
	• Reward and punishment function
		C2		

Biochemistry Small Group Discussion (SGDs)

Topic	At The End Of Tutorial Students Should Be Able To	C/P/A	Teaching Strategy	Assessment Tool
Triglycerides & F.A. oxidation	• Explain the functions & uses of triglycerides and steps of oxidation of Fatty acids	C2	SGD	MCQs SAQs Viva
Fatty acid synthesis & cholesterol metabolism	• Describe the steps of fatty acid synthesis, cholesterol, their functions& clinical significance	C2	SGD	MCQs SAQs Viva
Ketone bodies & Phospholipids	• Describe the synthesis & breakdown of ketone bodies and factors affecting them.	C2	SGD	MCQs SAQs Viva
	• Describe the phospholipids synthesis & their functions	C2		
Lipoprotein (HDL)	• Explain HDL synthesis, its functions & clinical significance	C2	SGD	MCQs SAQs Viva
Lipoprotein (VLDL, LDL)	• Explain synthesis, functions & clinical significance of VLDL, LDL	C2	SGD	MCQs SAQs Viva

Anatomy Self-Directed Learning (SDL)

Topics	Learning objectives	Learning Resources
Anterior And middle Cranial Fossa	• Identify and describe the boundaries of anterior and middle cranial fossae • Discuss anatomical features present in anterior and middle cranial fossa • Locate foramina and describe the structures passing through them	• Clinically Oriented Anatomy, 9th Edition, pg no. 840-861 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/article/10.1007/s00701-013-1937-0
Posterior cranial fossa Dural venous sinuses and intracranial hemorrhages	• Identify and describe meninges and their reflections on specimens and models • Describe the attachments and relations of dural venous sinuses of brain with the help of models and specimens • Discuss the clinical importance of facial vein connection with dural venous sinuses. • Differentiate between various types of intracranial hemorrhages • Differentiate between different types of headaches	• Clinically Oriented Anatomy, 9th Edition, pg no. 840-861, 884-885, 895 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://www.tandfonline.com/doi/abs/10.3109/02688699308995089
Meninges & Spinal cord	• Describe the internal and external structure of spinal cord • Compare the arrangement of white and gray matter in different regions of the spinal cord • Enumerate the major ascending and descending tracts of spinal cords • Illustrate the arrangements of ascending and descending tracts in the spinal cord	• Clinically Oriented Anatomy, 9th Edition, pg no. 132-139, 883, 890-891 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/chapter/10.1007/978-981-15-7771-0_3
Ascending tracts & Descending tracts	• List the ascending tracts of the spinal cord • Tabulate the sensation, receptor, first to third order neurons, pathways and destinations • Describe and illustrate the pathways of lateral spinothalamic tract, anterior spinothalamic tract, anterior spinocelebellar tract and posterior spinocerebellar tracts • Describe and illustrate the pathways of spinotectal tract, spinoreticular tract and spino-olivary tracts • Describe the anatomical basis of the signs and symptoms in lesions of the ascending tracts	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 131-182 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z https://link.springer.com/chapter/10.1007/978-1-4684-7688-0_7

Medulla Oblongata, Pons& Cerebellum	• Identify and describe gross features of medulla and identify them on gross specimen/model. • Identify and describe internal structure of medulla on cross sectional diagrams. • Identify and describe the gross features of Pons on a given specimen/model • Identify and describe internal structure of pons on cross sectional diagrams. • Identify and describe the gross features of cerebellum • Describe internal structure of gray and white matter of cerebellar cortex • Describe the cerebellar cortical mechanisms	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 185-247 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z https://link.springer.com/chapter/10.1007/978-1-61779-779-8_13
Midbrain and Diencephalon	• Identify and describe the gross features of Pons on a given specimen/model • Identify and describe internal structure of pons on cross sectional diagrams. • Describe the boundaries and relations of 4th ventricle • Describe the anatomical basis of trauma, cerebral aqueduct stenosis and vascular lesions of midbrain.	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 209, 363-372 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z https://link.springer.com/chapter/10.1007/978-3-319-60187-8_8
Cerebrum & Ventricular system	• Identify and describe the gross structure of thalamus, epithalamus and subthalamus • Enlist nuclei of thalamus, epithalamus & subthalamus and describe their functions • Identify and describe the functions of tuber cinereum and mamillary bodies • Describe the relations and boundaries of ventricles • Describe the formation of choroid plexus in ventricles • Explain the function, production, circulation, and absorption of cerebrospinal fluid • Explain the causes of overproduction and blockage of CSF	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 249-277, 436-462 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/article/10.1007/BF00344224 • https://www.tandfonline.com/doi/full/10.1080/10255840701492118
Canial Nerves 1-7	• Identify the nuclei and connections of CN 1,2,3,4,& 6 • Trace the pathway and perform reflexes associated with of CN 1,2,3,4,& 6 • Describe the anatomical basis of lesions of visual pathway and ophthalmoplegias • Identify the nuclei and connections of CN 5 & 7	• Snell's Clinical Neuroanatomy 8th Edition, pg no. 323-361 • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/referenceworkentry/10.1007/978-3-540-29678-2_1315

	• Trace the pathway and perform reflexes associated with of CN 5 & 7 • Describe the anatomical basis of upper and lower motor neuron lesion of CN 5 and trigeminal neuralgia	
Cranial Nerves 8-12, Basal Ganglia, Limbic system and Reticular Formation	• Identify the nuclei and connections of CN 8-12 • Trace the pathway and perform reflexes associated with of CN 8-12 • Discuss the anatomical basis of vertigo, nystagmus, deafness, tinnitus, taste and gag reflex • Discuss the anatomical basis of paralysis of muscles supplied by accessory and hypoglossal nerves • Enlist components and connections of limbic system • Discuss functions of limbic system • Describe the connections of limbic system • Enlist components of reticular system • Discuss functions of reticular system • Describe the connections of reticular system • Discuss the anatomical basis of loss of consciousness, schizophrenia, Kluver-Bucy syndrome and temporal lobe dysfunction	• Clinically Oriented Anatomy 9th Edition, pg no. 299-308, 310- 321, 323-361. • https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z • https://link.springer.com/referenceworkentry/10.1007/978-3-540-29678-2_1315 • https://link.springer.com/book/10.1007/978-1-4615-1235-6

Physiology Self-Directed Learning (SDL)

Topics	Learning objectives	Learning Resources
Pathways for transmitting somatic signals	• Classify somatic senses • Describe the sensory pathways for transmission of somatic sensations to central nervous system. • Enumerate sensations carried by dorsal column system and anterolateral system • Describe the characteristics of transmission in the dorsal column medial lemniscal system and anterolateral system • Compare and contrast dorsal column medial lemniscal system and anterolateral system	• Ganong's Review of Medical Physiology.25TH Edition. Central and Peripheral Neurophysiology Section 02 (Chapter 08, Page 168) • Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 82) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 48, Page 601,609) • https://youtu.be/432AD7JZnKE • https://www.osmosis.org/learn/Somatosensory_pathways
Somatosensory cortex & lesions of Somatosensory cortex	• Explain cortical mapping & association cortex • Describe lesions of somatosensory areas • Summarize role of thalamus in somatic sensations	• Textbook of Medical Physiology by Guyton & Hall.14th Edition.(Chapter 48,Page 603) • https://nba.uth.tmc.edu/neuroscience/m/s2/chapter04.htm

	• Interpret the importance of dermatomes	1 • https://teachmeanatomy.info/neuroanatomy/pathways/ascending-tracts-sensory/
Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function	• Describe general organization of autonomic nervous system • Enumerate the functions of autonomic nervous system • Describe sympathetic and parasympathetic nervous system • Enumerate & explain their receptors, neurotransmitters & physiological effects • Describe physiological anatomy & effects of adrenal medulla	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 13, Page 255,259) • Physiology by Linda S. Costanzo 6th Edition. Autonomic Nervous System(Chapter 02. Page 47,59) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 11 Page 392) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 61, Page 763,765) • . https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system • https://youtu.be/j9pUItHAAhs 7 https://youtu.be/7pGKa-1tSJw https://youtu.be/gBOAYgMxq-Q
Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation	• Briefly explain physiological actions of ANS, vasomotor tone, vagal tone & sympathetic stress response • Draw a table showing autonomic effects on various body organs • Briefly describe the pharmacology of autonomic nervous system	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 13, Page 264) • Physiology by Linda S. Costanzo 6th Edition. Autonomic Nervous • System(Chapter 02. Page 55) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 11 Page 397) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 61, Page 768) • https://youtu.be/7pGKa-1tSJw • https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system • https://www.diffen.com/difference/Parasympathetic_nervous_system_vs_Sympathetic_nervous_system
,	• Describe briefly the physiological anatomy of cerebral blood flow • Explain cerebrospinal fluid system	• Physiology by Linda S. Costanzo 6th Edition. Neurophysiology (Chapter 03. Page 113)

Blood brain barrier, Blood CSF Barrier, Lumber puncture	• Describe the CSF pressure, its • measurement by lumbar puncture, & hydrocephalus • Explain blood CSF barrier • & BBB • Describe brain edema	• Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 62, Page 777-784) • https://youtu.be/f9xi1Rf5m9w • https://www.sciencedirect.com/topics/neuroscience/blood-cerebrospinal-fluid-barrier
Limbic system, Functions of hypothalamus	• Describe the concept of limbic system	• Textbook of Medical Physiology by Guyton & Hall.14th Edition • https://youtu.be/h3K9RfGw8sI • https://www.endocrineweb.com/endocrinology/overview-hypothalamus
Learning and memory	• Define memory & classify its various types • Describe role of synaptic inhibition and synaptic facilitation in memory Explain mechanism of short term, intermediate and long-term memory Describe mechanism of consolidation of memory Enumerate specific parts of brain involved in memory • Explain the role of each part	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 15, Page 283) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 112) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.The Central Nervous System (Chapter 09 Page 332) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 58, Page 735) • https://youtu.be/EqdsQDM5Fys • https://www.sciencedirect.com/topics/psychology/learning-and-memory
Concept of Association areas, Concept of Dominant and non-dominant cerebral hemispheres	• Draw association areas of brain • Describe association areas of brain regarding their physiological role • Explain briefly the clinical features, if • the association areas become damaged • Describe concept of dominant hemisphere • Enlist role of parietooccipito temporal cortex in non-dominant hemisphere	• Textbook of Medical Physiology by Guyton & Hall.14th Edition. • Section 09.(Chapter 58, Page 727) • https://my.clevelandclinic.org/health/articles/23073-cerebral-cortex https://youtu.be/2Z425-CHY1c
Speech and aphasia	• Describe sensory and motor aspects of communication Define Wernicke's aphasia, Motor aphasia & Global aphasia • Explain Wernicke's aphasia, Motor aphasia & Global • aphasia • Describe function of corpus callosum & anterior commissure in transferring information between two cerebral hemispheres	• Ganong's Review of Medical Physiology.25TH Edition. (Chapter 15, Page 290,293) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 70, Page 1211) • https://www.sciencedirect.com/science/article/abs/pii/S0021992422000892

		• https://www.stroke.org.uk/what-is-aphasia/types-of-aphasia
EEG and epilepsy	• Describe brain waves • Enumerate different types of brain wave • Explain the origin of different brain waves • Describe EEG • Define epilepsy • Enumerate various types of epilepsy • Explain various types of epilepsy • Describe role of norepinephrine, serotonin and • dopamine in psychotic disorders • Describe the causes, symptoms & treatment of depression & bipolar disorder • Discuss causes, types, symptoms and treatment of • Schizophrenia • Define Alzheimer‘s disease. Mention its causes, clinical features, incidence and treatment	• Ganong’s Review of Medical Physiology.25TH Edition. Section 02 (Chapter 14, Page 275) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 42) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 70, Page 1209) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 60, Page 756) • https://www.webmd.com/epilepsy/guide/types-epilepsy https://youtu.be/T7MKlPYiL48
Reticular activating system and sleep	• Describe activating driving system of the brain Explain the reticular activating system Discuss the control of cerebral activity by signals from brain stem Explain neurohormonal system of the brain • Define sleep and enumerate types of sleep • Compare and contrast between two types of sleep Describe the basic theories of sleep in detail • Explain physiological effects • of sleep • Describe sleep and wakefulness cycle	• Ganong’s Review of Medical Physiology.25TH Edition. Section 02 (Chapter 14, Page 269,272,278) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10 Page 344) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 70, Page 12031208) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 60, Page 753) • https://youtu.be/TdGQvWAZ0Cs • https://www.physio-pedia.com/Reticular Formation
Muscle spindle & Golgi tendon organ, Role of muscle spindle and Golgi tendon organ in voluntary motor activity	• Describe muscle spindle & • Golgi tendon organ in detail • Explain the receptor function of the Muscle Spindle & Golgi tendon organ • Draw muscle spindle and Golgi tendon organ showing the sensory and motor innervation	• Ganong’s Review of Medical Physiology.25TH Edition. Section 02 (Chapter 12, Page 229,234) • Physiological Basis of Medical Practice by Best & Taylor’s.13th Edition. (Chapter 68, Page 476) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 55, Page 686,691) • https://www.osmosis.org/learn/Muscle_spindles_and_golgi_tendon_organs https://youtu.be/CzeAcc39Cyo

	• Explain the dynamic and static response of muscle spindle & Golgi tendon organ • Briefly describe muscle stretch reflex • Draw the neuronal circuitry of the stretch reflex • Explain the static and dynamic components of stretch reflex • Discuss the clinical applications of stretch reflex • Explain negative stretch reflex • Explain lengthening reaction and its significance • Describe role of muscle spindle and Golgi tendon organ in voluntary muscle • activity • Explain the role of alpha gamma co activation	
Motor cortex & physiological importance of neocortex, Corticospinal or pyramidal tract, Extra pyramidal system	• Briefly describe motor areas in cortex • Draw motor & somatic association areas of motor cortex • Explain functions of motor & somatic association areas • Explain allocortex & neocortex • Describe medial and lateral descending pathways • Explain transmission of signals from motor cortex to muscle • Draw course of pyramidal tract • Enlist the functions of pyramidal tract • Mention the effects of lesions in Corticospinal tract • Briefly describe extra pyramidal descending tracts • Describe rigidity and • spasticity • Describe location and function of red nucleus	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 • (Chapter 12, Page 237,240) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 110) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. • Section 09.(Chapter 56, Page 697) • https://www.physio-pedia.com/Extrapyramidal_and_Pyramidal_Tracts https://youtu.be/B88BNYWVkWE
Basal Ganglia & Lesions	• Describe physiological anatomy of basal ganglia • Draw neuronal circuits of basal ganglia • Explain the role of neuronal circuits in functioning of basal ganglia • Enlist and explain the physiological role of neurotransmitters in basal ganglia system • Enumerate the clinical abnormalities caused by damage to basal ganglia • Briefly explain Parkinson disease • regarding its causes, signs and symptoms & treatment • Explain Huntington's Chorea regarding its causes, signs and symptoms	• Ganong's Review of Medical Physiology.25TH Edition. Section 02 (Chapter 12, Page 243) • Physiology by Linda S. Costanzo 6th Edition.(Chapter 03. Page 110) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 69, Page 1194) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. Section 09.(Chapter 57, Page 720) • https://youtu.be/hxvep2Y8ShI • https://www.sciencedirect.com/science/article/pii/S2214

		751923000026 https://teachmeanatomy.info/neuroanatomy/structures/basal-ganglia/

Biochemistry Self-Directed Learning (SDL)

Topics	Learning objectives	Learning Resources
Chylomicron metabolism	• Describe synthesis of chylomicron, its breakdown and factors affecting it	• Lippincott Biochemistry Chapter. 18 page 253 https://www.ncbi.nlm.nih.gov/books/NBK305896/
HDL & LDL metabolism	• Explain composition functions and clinical significance of LDL & HDL • Illustrate mechanism of revise cholesterol synthesis	• Lippincott Biochemistry Chapter. 18 page 253 • https://www.alilamedicalmedia.com/-/g...
Fatty acid oxidation	• Describe steps enzymes energy calculation of Beta oxidation of saturated fatty acid	• Lippincott Biochemistry Chapter. 16 page 213 • https://ninjanerd.org
Synthesis &Interconversion of Ketone Bodies, Regulation of Ketogenesis, Ketolysis	• Explain synthesis and breakdown of ketone bodies and related disorders	• Lippincott Biochemistry Chapter. 27 page 411 • https://youtu.be/GuSqOsm3QV8
Synthesis of Cholesterol and its regulation	• Describe steps regulation and related disorders of cholesterol synthesis	• Lippincott Biochemistry Chapter. 18 page 244 • https://youtu.be/y9zsDFdMvZY

Histology Practicals Skill Laboratory (SKL)

Practical	At The End Of This Skill Lab, Should Be Able To Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools
Ganglia	• Identify the microscopic features of ganglia	P	Skills lab	OSPE VIVA
	• Illustrate histological picture of ganglia	C2		
	• List two points of identification	C1		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Peripheral nerve	• Identify the microscopic features of peripheral nerve on given histological slide	P	Skills lab	OSPE VIVA
	• Illustrate histological picture of peripheral nerve	C2		
	• List two points of identification	C1		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Spinal cord	• Identify histological slide of spinal cord	P	Skills lab	OSPE VIVA
	• Illustrate histological picture of spinal cord	C2		
	• List two points of identification	C1		
	• Correlate with the clinical conditions & cross sections.	C3		
	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		
Cerebellum	• Identify the microscopic features of cerebellum	P	Skills lab	OSPE VIVA
	• Illustrate histological picture of cerebellum	C2		
	• List two points of identification	C1		
	• Correlate with the clinical conditions & cross sections.	C3		

	• Understand curative and preventive health care measures.	C3		
	• Practice the principles of bioethics.	C3		
	• Apply strategic use of A.I in health care.	C3		
	• Read relevant research article.	C3		

Physiology Practicals Skill Laboratory (SKL)

Practical	At The End Of This Skill Lab, Should Be Able To Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools	References
Examination of sensory nervous system	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A, P			
	• Precautions	P			
	• Recall sensations transmitted by sensory pathways	C1			
	• Recall the effects of lesions of these pathways	C1			
Examination of motor nervous system	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall descending pathways & their functions	C1			
	• Recall effects of lesions of these pathways	C1			
Examination of cerebellar System	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall functions of cerebellum & effects of lesions of cerebellum/	C3			
Ophthalmoscopy	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Clinical Correlation	C1			

Determination of Eye field	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Clinical Correlation	C3			
Recording of body temperature	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Record oral, axillary & rectal temperature	C1			
	• Recall abnormalities of body temperature	C1			
Examination of superficial & deep reflexes	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall reflex arc	C1			
	• Recall effects of UMNL & LMNL on reflexes	C1			
Examination of 3rd, 4th & 6th cranial nerves	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall functions & pathways of various cranial nerves	C1			
	• Recall effects of lesions of cranial nerves	C1			
Examination of 5th, & 7th cranial nerves / Examination of 8th , 9th, 10, 11th, 12th cranial nerves	• Apparatus identification	C1	Skill lab	OSPE	Practical Notebook of Physiology Second year MBBS by Dr Saqib Sohail
	• Principle	C1			
	• Procedure	A,P			
	• Precautions	P			
	• Recall functions & pathways of various cranial nerves	C1			
	• Recall effects of lesions of cranial nerves	C1			

Biochemistry Practicals Skill Laboratory (SKL)

Topic	At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Color Test For Sterols	Perform Color test four sterols	P	Skill Lab	OSPE
Detection of Cholesterol Crystals	Perform cholesterol Crystals Deduction Test.	P	Skill Lab	OSPE
Estimation of serum TAGS	Perform triglyceride estimation	P	Skill Lab	OSPE
Estimation of Serum HDL	Perform HDL Estimation	P	Skill Lab	OSPE
Lipid Solubility & Acrolein test	Perform Lipid Solubility & Acrolein test.	P	Skill Lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **PBLs**
- **Vertical Integration LGIS**

Case Based Learning Objectives (CBL)

Subject	Topic	At the End Of Lecture Students Should Be Able To	Learning Domain
Anatomy	• Cystic Astrocytoma of cerebellum	Apply basic knowledge of subject to study clinical case.	C3
	• Stroke	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• CVA	Apply basic knowledge of subject to study clinical case.	C3
	• Gullain Barr syndrome	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• IHD	Apply basic knowledge of subject to study clinical case.	C3
	• Respiratory Distress Syndrome	Apply basic knowledge of subject to study clinical case.	C3

Vertical Integration LGIS

Pathology

Topic	At the end of this LGIS students of should be able to:	Learning Domain	Teaching Strategy	Assessment Tool
Patterns of injury in nervous system	• Describe edema ,herniation and hydrocephalous	C2	LGIS	MCQ'S
	• Classify cerebrovascular diseases	C2		
	• Explain CNS trauma	C2		
	• Identify Congenital malformation	C1		
Diseases of myelin and neurodegenerative diseases	Students should be able to • describe the pathophysiology and histomorphology of Alzheimer's disease, Parkinson's Disease, Huntington's disease and Multiple sclerosis	C2	LGIS	MCQ'S
Meningitis	• Classify types of meningitis	C2	LGIS	MCQ'S
	• Enlist causes of meningitis	C1		
	• Describe lab diagnosis of meningitis	C2		
	• Enlist complication of meningitis	C2		

Pharmacology

Topic	At the end of this LGIS students of should be able to:	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to CNS Pharmacology	• List the major neurotransmitters in the CNS	C1	LGIS	MCQ
	• List the major classes of receptors for each of the primary neurotransmitters and their associated relevant disorders	C1		
	• Identify the special considerations associated with CNS drug delivery	C1		
	• Cite main drug groups acting on the CNS	C1		

Medicine

Topic	At The End Of This Skill Lab, Should Be Able To Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools
Stroke	• Discuss pathophysiology, Blood supply of brain (Anterior and posterior Circulation), which part of brain supplied by various arteries, Physiology of brain pathways (Corticospinal and Corticobulbar pathways), Types of Stroke, clinical features, management	C1 C2	LGIS	MCQs
Spinal Cord and Peripheral Nervous system	• Various types of pathways and cells, Peripheral Nerves and neuromuscular junction, difference between upper and lower motor neurons, various types of Plegias (Paraplegia, Hemiplegia, Quadriplegia), Various types of neuropathies and myasthenia Gravis and discuss pathophysiology	C1 C2	LGIS	MCQs
Cerebellar Disorders	• Brain parts involved in Movement and Co-ordination, how movements are brought about, possible lesions and discuss pathophysiology, types of disorders, clinical features, management	C1 C2	LGIS	MCQs
Meningitis	• Define and discuss pathophysiology and discuss symptoms and signs	C1	LGIS	MCQs
	• Discuss the causes	C2		
	• Describe the management	C2		
Epilepsy and other convulsive disorders	• Define and discuss pathophysiology	C1	LGIS	MCQs
	• Discuss the causes	C2		

	• Describe the management	C2		
Encephalitis	• Define and discuss and discuss pathophysiology, symptoms and signs	C1	LGIS	MCQs
	• Discuss the causes	C2		
	• Describe the management	C2		

Surgery

Topic	At The End Of This LGIS, Second Year MBBS Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
Brain tumors	• Classify Brain Tumors	C1	LGIS	MCQ
	• Outline clinical features of brain tumors. • Approach towards a SOL brain	C1		
Brain abscess	• Define Brain Abscess	C1	LGIS	MCQ
	• Outline clinical features of brain abscess	C1		
Head injury	• Define head injury	C1	LGIS	MCQ
	• Mechanism of Head injury	C1		
	• Clinical features of head injury	C1		
	• Glassgow coma Scale	C1		
Poly trauma Patient	• Define polytrauma	C1	LGIS	MCQ
	• Describe triage	C1		
	• ATLS Protocol	C1		

Obstetrics & Gynecology

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Seizures during pregnancy(eclampsia/epilepsy)	• Enumerate common neurological disorders during pregnancy (eclampsia, epilepsy)	C1	LGIS	MCQs
	• Understand neurological changes leading to eclampsia and epilepsy	C1		
	• Understand the effects of epilepsy and anti-epileptic drugs on mother and fetus	C1		
	• Comprehend the principles of management of epilepsy during pregnancy	C1		

Pediatrics

Topic	At The End Of This Skill Lab, Should Be Able To Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools
Meningitis	Scenario of a patient with fever & fits		LGIS	MCQs
	• Define meningitis.	C1		
	• Discuss Epidemiology &Pathophysiology	C1		
	• Discuss Etiological organisms at different ages	C1		
	• Discuss Clinical features	C1		
	• Discuss Diagnosis & Management	C1		
	• Discuss Complications & prognosis	C1		
	• Discuss Prevention of meningitis	C1		
Cerebral Palsy	• Scenario of a Cerebral Palsy patient		LGIS	MCQs
	• Student will be able to know			
	• Discus Brief anatomy of brain	C2		
	• Definition of cerebral palsy	C1		
	• Discuss Epidemiology	C2		
	• Discuss Etiology	C2		
	• Discuss Pathophysiology	C2		
	• Discuss Clinical presentation & anatomic classification of Cerebral Palsy	C2		

	• Discuss Associated problems	C2		
	• Discuss Management & Prevention	C2		
Polio	• Scenario of a patient with acute flaccid paralysis	C1	LGIS	MCQs
	• Student will be able to know	C1		
	• AFP definition	C1		
	• Discuss Etiology & Epidemiology of Polio	C2		
	• Discuss Pathogenesis	C2		
	• Discuss Clinical features	C2		
	• Discuss Management	C2		
	• Discuss Complications & sequel	C2		
	• Prevention – vaccination	C1		

Radiology

Practical	At The End Of This Skill Lab, Should Be Able To Illustrate:	Learning Domain	Teaching Strategy	Assessment Tools
Skull radio graph	• Interprat Normal Skull Radioghraph	C1	LGIS	MCQs
	• Discuss fractures and other diseases with their clinical significance	C2		
CT- scan brain	• Interpret normal anatomical structures	C2	LGIS	MCQs
MRI & CT Scan	• List some indications for contrast enhanced MRI and CT	C1	LGIS	MCQs
CT scan	• Discriminate between a subdural and epidural hematoma at CT (4) Describe imaging signs of a subarachnoid hemorrhage	C2	LGIS	MCQs

ENT

Topic	At The End Of This LGIS, Second Year MBBS Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
Acoustic neuroma	• Recognize signs and symptoms of acoustic neuroma	C1	LGIS	MCQs

Ophthalmology

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Chalazion	• Discuss in detail the clinical features and management	C2	LGIS	MCQs
Strabismus	• Discuss in detail the clinical features and management	C2	LGIS	MCQs

List of CNS Module Vertical Courses Lectures

Date/Day	Department	Time	Week	Topic Of Lectures	Teachers
29-07-2024 Monday	Pharmacology (LGIS)	11:20AM – 12:10 PM	1st Week	Introduction to CNS pharmacology	Dr. Omaima Asif (Even)
					Dr Arsheen (Odd)
02-08-2024 Friday	Pediatrics (LGIS)	08:00AM – 09:00 AM	1st Week	Meningitis	Dr. Mamoona Qudrat (Even)
					Dr. Tanzeela Rani (Odd)
03-08-2024 Saturday	Pathology (LGIS)	10:30AM – 11:20 AM	1st Week	Introduction to ANS ,Basic Characteristics of Sympathetic & Parasympathetic System	Dr. Nida Fatima (Even)
				Meningitis	Dr. Kiran Ahmad (Odd)
05-08-2024 Monday	Pathology (LGIS)	11:20AM - 12:10 PM	2nd Week	Patterns of injury in nervous system	Dr. Nida Fatima (Even)
					Dr Kiran Ahmad (Odd)
07-08-2024 Wednesday	Surgery (LGIS)	11:20AM - 12:10 PM	2nd Week	Spinal injury and Head injury	Dr. Soban Sarwar Gondal (Even)
					Dr. Usman Malik (Odd)
08-08-2024 Thursday	Radiology (LGIS)	10:30AM – 11:20 AM	2nd Week	Skull Radiograph	Dr Riffat (Even)
					Dr Saba (Odd)
09-08-2024 Friday	Medicine (LGIS)	08:00AM – 09:00 AM	2nd Week	Spinal cord and peripheral nervous system	Dr Javeria Malik (Even)
					Dr Riffat (Odd)
10-08-2024 Saturday	Gynecology &OBS (LGIS)	11:00AM – 12:10 PM	2nd Week	Seizures during pregnancy(eclampsia/epilepsy)	Dr Ismat Batool (Even)
					Dr Sadia Waheed (Odd)
17-08-2024 Saturday	Medicine (LGIS)	11:20AM – 12:10 PM	3rd Week	Cerebellar disorders	Dr Javeria Malik (Even)
					Dr Faran Maqbool (Odd)
19-08-2024 Monday	Surgery (LGIS)	10:30AM – 11:20 AM	4th Week	Management of hydrocephalus	Dr. Fraz Mehmood (Even)
					Dr. Ammad ul Haq (Odd)
19-08-2024 Monday	Medicine (LGIS)	11:20AM – 12:10 PM	4th Week	Epilepsy and other convulsive disorders	Dr Javeria Malik (Even)
					Dr Faran Maqbool (Odd)
21-08-2024 Wednesday	Medicine (LGIS)	11:20AM – 12:10 PM	4th Week	Encephalitis	Dr Javeria Malik (Even)
					Dr Faran Maqbool (Odd)
26-08-2024 Monday	Medicine (LGIS)	10:30AM – 11:20 AM	5th Week	Stroke	Dr Javeria Malik (Even)
					Dr Faran Maqbool (Odd)
28-08-2024 Wednesday	Radiology	10:30AM - 11:20 AM	5th Week	CT scan and MRI (Brain and Spinal Cord)	Dr Anum Zahoor (Even)
					Dr Faisal (Odd)
28-08-2024 Wednesday	Surgery (LGIS)	11:20AM – 12:10 PM	5th Week	Poly trauma patient	Dr. Fraz Mehmood (Even)
					Dr. Ali Tasaddaq (Odd)

SECTION – IV

Spiral Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Pak Studies/Islamiyat**
    - **Family Medicine**
    - **Behavioral Sciences**
    - **Biomedical Ethics**
    - **Early Clinical Exposure (ECE)**

Introduction to Spiral Courses

The Holy Quran Translation

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

Bioethics

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

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

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

Professionalism

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

betterment of public health. In essence, professionalism in medicine is foundational to the quality of care provided to patients and is critical for maintaining the trust that is essential for the doctor-patient relationship.

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

Communication Skills

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

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

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

Behavioral Sceinces

Behavioral sciences in medicine focus on understanding and addressing the psychological and social aspects of health and illness. This interdisciplinary field combines insights from psychology, sociology, anthropology, and other disciplines to enhance medical care and patient outcomes. It explores how behavior, emotions, and social factors influence health,

disease, and medical treatment. By incorporating behavioral science principles into medical practice, healthcare professionals can better understand patients' perspectives, improve communication, and promote positive health behaviors, ultimately contributing to more comprehensive and effective patient care.

Family Medicine

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

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

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

Artificial Intelligence

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

Integrated Undergraduate Research Curriculum

The integrated undergraduate research curriculum (IUGRC) of RMU occupies a definite space in schedule of each of the five years in rational and incremental way. It has horizontal harmonization as well as multidisciplinary research work potentials. In the first-year teachings are more introductory & inspirational rather than instructional. The teachings explain what & why of research and what capacities are minimally required to comprehend research & undertake research. Some research dignitaries' lecture are specifically arranged

for sharing their experiences and inspiring the students. Students are specifically assessed through their individual compulsory written feedback (reflection) after the scheduled teachings end.

Entrepreneurship

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

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

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

Digital Literacy Module

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

Early Clinical Exposure (ECE)

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

Early clinical experiences contribute to the development of a professional identity, helping students see themselves as future physicians and understand the responsibilities and ethics associated with the profession. This can help reduce the anxiety associated with clinical work by familiarizing students with the clinical environment. It can build confidence in

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

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

Behavioral sciences

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Emotions	• To be able to define emotions.	C1	LGIS	MCQs
	• To understand the neuroanatomy and neurochemistry of emotion way to deal with emotion	C2		
Memory	• To be able to outline the types of memory.	C2	LGIS	MCQs
	• To be able to explain the areas in brain responsible for memory storage and Retrieval	C2		

Biomedical Ethics

Topics	At the end of session students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Ethical dilemmas in healthcare practice involving breach in principle of autonomy	• Analyze ethical dilemmas in healthcare practice involving breach in principle of autonomy. • Explain what procedures adopted to maintain patient autonomy. • Identify situations in which doctor may have to take decisions in the best interest of the patients	C3 C2 C1	Short video demonstration on violation of Ethical principle of autonomy from suit CBEC Video resources	• Assignment based assessment involving real life case scenarios under aggregate Marks. (Internal Assessment) • Assignment to be uploaded on LMS
Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence	• Analyze ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence • Explain what procedures adopted to maintain the principle of beneficence and non-maleficence in challenging situations	C3 C2 C1	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources	• Assignment based assessment involving real life case scenarios under aggregate Marks

	• Identify situations in which a doctor may have to take decisions in the best interests of the patient considering the principle of beneficence and non-maleficence		Students deliberations and reflections Reflective writing	(Internal Assessment) • Assignment to be uploaded on LMS
Ethical dilemmas practice involving breach in principle of justice	• Analyze ethical dilemmas in healthcare practice involving breach in principle of justice • Explain what procedures adopted to maintain the principle of justice in challenging situations • Identify situations in which a doctor may have to take decisions in the best interests of the patient considering the principle of justice	C3 C2 C1	Short video demonstration on violation of Ethical principle of beneficence and non-maleficence from suit CBEC Video resources Students deliberations and reflections Reflective writing	• Assignment based assessment involving real life case scenarios under aggregate Marks (Internal Assessment) • Assignment to be uploaded on LMS

Family Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Approach to a patient with headache	• Describe presenting complains of patients with Headache • Discuss complications of Headache • Describe initial treatment of patients with Headache • Know when to refer patient to consultant/ Hospital	C3	LGIS-1	MCQs

Early Clinical Exposure (ECE)

Rotation to Department of Medicine

Session	Learning Objectives	Teaching Strategy
I Cases of stroke	At the end of the session students will be able to • Observe and describe the different types of stroke, including ischemic and hemorrhagic strokes, and explain the pathophysiological changes that occur in the brain as a result of these conditions. • Discuss the major risk factors for stroke, such as hypertension, atrial fibrillation, and diabetes, and recognize the early clinical signs and symptoms using the FAST (Face drooping, Arm weakness, Speech difficulties, Time to call emergency services) mnemonic. • Describe the initial steps in the management of stroke, including the importance of rapid assessment and intervention, the role of imaging in diagnosis, and the basic treatment strategies for ischemic versus hemorrhagic stroke	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit
II Paraplegia	• Outline the anatomical structures of the spinal cord and its functional relationship with the body, understanding how injuries or diseases affecting these areas can lead to paraplegia. • Discuss the various etiologies of paraplegia, including traumatic spinal cord injury, tumors, infectious diseases, and degenerative disorders, and explain the pathophysiological mechanisms that result in the loss of motor and sensory functions below the level of injury. • Describe the initial clinical assessment of a patient with suspected paraplegia, including the importance of a thorough neurological examination and the use of diagnostic imaging. They will also learn about the basic principles of acute management and the multidisciplinary approach needed for long-term rehabilitation.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
III	• Define a vegetative state and differentiate it from other conditions affecting consciousness, such as coma and minimally conscious states, based on clinical characteristics and brain activity.	• Bedside teaching • Duration 1 hrs

Vegetative state	• Identify and explain the various causes that can lead to a vegetative state, including traumatic brain injury, severe brain hypoxia, and major neurological diseases, and discuss the underlying pathophysiological changes in the brain. • Describe assessment techniques used to determine the extent of brain function, the typical medical care provided, and the ethical challenges involved in decisions about long-term care, including discussions on quality of life and end-of-life decisions.	• Conducted by senior faculty member of unit

Rotation to Department of Surgery/ Neurosurgery

Session	Learning Objectives	Teaching Strategy
I Head injury	At the end of the session students will be able to • Classify head injuries into major categories such as concussions, contusions, skull fractures, and intracranial hematomas, and understand the mechanisms that typically cause these injuries. • Recognize the immediate and delayed signs and symptoms of head injuries, including changes in consciousness, visible head trauma, cognitive impairments, and neurological deficits. • Describe the basic pathophysiological changes that occur in the brain following different types of head injuries, such as the cascading effects of brain swelling, the impact of blood-brain barrier disruptions, and neuronal damage. • Understand the initial steps in the assessment and management of a patient with a head injury, including maintaining airway, breathing, and circulation, the use of imaging modalities like CT scans to assess internal damage, and the criteria for when to escalate care to neurosurgical interventions.	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

II Nerve injuries	• Describe the basic anatomy of peripheral nerves and be able to classify nerve injuries according to severity, using the Sunderland and Seddon classification systems, which categorize injuries based on the extent of damage to nerve fibers and surrounding structures. • List the common causes of nerve injuries, including traumatic injuries (such as lacerations and avulsions), compression (from tumors or entrapment syndromes), and iatrogenic injuries (resulting from medical or surgical procedures). • Understand how to recognize the clinical manifestations of nerve injuries, such as loss of sensation, motor function, or autonomic dysfunction in the affected area, and how these symptoms correlate with the specific nerve damaged. • Discuss the initial steps in the management of nerve injuries, including the importance of a thorough neurological examination, the use of diagnostic tools like electromyography (EMG) and nerve conduction studies, and the principles guiding acute treatment and referral for possible surgical intervention.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
	• Define coma as a deep state of unconsciousness and distinguish it from other states such as vegetative state, minimally conscious state, and brain death by understanding the clinical and neurological criteria for each. • Explain the underlying pathophysiological mechanisms that can induce coma, including traumatic brain injuries, strokes, brain tumors, infections, and metabolic imbalances. They will also discuss the role of disruptions in the reticular activating system and cerebral cortex in the maintenance of consciousness. • Use the Glasgow Coma Scale (GCS) to assess the level of consciousness in a patient, interpreting scores to gauge the severity of the coma and potential outcomes. They will also identify other important clinical signs such as pupillary responses and motor reflexes that help differentiate the cause of coma. • Understand the initial diagnostic steps required when assessing a comatose patient, including neuroimaging, blood tests, and possibly lumbar puncture. They will also discuss the basic management principles aimed at preserving life and brain functions.	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit

Rotation to Department of Radiology

Session	Learning Objectives	Teaching Strategy
I CT scan Brain • Normal • Stroke • Hemorrhage • Infarction	At the end of the session students will be able to • Recognize the normal anatomical structures visible on a CT scan of the brain, including the cerebral hemispheres, cerebellum, brainstem, ventricles, and major sulci and gyri. They will also understand the typical appearances of these structures in different slices (axial, coronal, and sagittal). • Identify the CT findings associated with ischemic and hemorrhagic strokes, including areas of hypodensity in ischemic stroke and hyper density in hemorrhagic stroke. They will understand the importance of timing in the imaging of stroke for optimal diagnosis and management. • Describe the key differences in appearance between brain hemorrhages and infarctions on CT scans. They will be able to describe the characteristics of hemorrhages (e.g., acute intracerebral hemorrhage appearing as a hyperdense area) and infarctions (e.g., loss of cortical definition and the appearance of infarcted areas as hypodense). • Interpret CT images in the context of clinical symptoms to make preliminary	• Bedside Teaching • Duration 1 hour • Conducted by senior faculty member of unit

	diagnoses and understand potential management strategies. This objective aims to integrate their radiographic findings with clinical reasoning to enhance their diagnostic acumen.	
II Hydrocephalus	• Define hydrocephalus as the abnormal accumulation of cerebrospinal fluid (CSF) within the ventricles of the brain. • Distinguish between the types of hydrocephalus, including communicating, non-communicating (obstructive), and ex-vacuo, and understand the mechanisms that lead to each type. • Identify the common causes of hydrocephalus, such as congenital malformations, infections, tumors, and traumatic injuries. • Discuss the pathophysiological changes that occur, focusing on the dynamics of CSF production, flow, and absorption. • Describe the clinical manifestations of hydrocephalus, which may vary by age and the rate of CSF accumulation. • Discuss the diagnostic tools used to identify hydrocephalus, primarily imaging techniques such as ultrasound in infants, CT scans, and MRIs. • Describe the treatment options available, including surgical interventions like ventriculoperitoneal shunt placement and endoscopic third ventriculostomy.	• Bedside teaching • Duration 1 hour • Conducted by senior faculty member of unit
III Brain atrophy	• Define brain atrophy as the loss of neurons and the connections between them, resulting in decreased brain	• Bedside teaching • Duration 1 hrs

	volume. They will differentiate between focal atrophy, which affects specific areas of the brain, and generalized atrophy, which involves a reduction in the size of multiple brain regions. • Identify the various causes of brain atrophy, including neurodegenerative diseases (such as Alzheimer's disease and Parkinson's disease), traumatic brain injuries, stroke, and infectious diseases. • Describe the signs and symptoms of brain atrophy, such as cognitive decline, memory impairment, changes in motor skills, and alterations in behavior or personality, depending on the areas of the brain that are affected. • Discuss the role of imaging studies, such as MRI and CT scans, in diagnosing brain atrophy, and how these images can be used to assess the extent and pattern of atrophy. • Discuss the management approaches aimed at slowing the progression of symptoms and improving quality of life, including pharmacological treatments and supportive therapies.	• Conducted by senior faculty member of unit
IV Brain Edema	• Define brain edema • Distinguish between the two main types of brain edema: cytotoxic edema, which involves fluid buildup within brain cells due to cellular injury, and vasogenic edema,. • Identify various causes of brain edema, including traumatic brain injury,	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit

	ischemic stroke, infections, tumors, and toxic exposures. • Describe the clinical signs and symptoms of brain edema, which may include headache, nausea, vomiting, altered consciousness, and neurological deficits such as weakness or speech disturbances, depending on the severity and location of the edema. • Understand the diagnostic techniques used to identify brain edema, primarily imaging studies like CT and MRI scans • Discuss the management options available, including medical treatments to reduce swelling (such as corticosteroids and osmotic diuretics), surgical interventions to relieve pressure, and the importance of addressing the underlying cause of the edema.	
V Skull/ spine Fractures	• Classify the types of skull fractures (such as linear, depressed, diastatic, and basilar) and spine fractures (including compression, burst, flexion-distraction, and fracture-dislocation). • Describe the Pathophysiology of Skull and Spine Fractures: Students will explore the pathophysiological implications of these fractures, including potential complications such as intracranial hemorrhage from skull fractures and spinal cord injury from spine fractures. They will examine how the location and severity of the fracture impact neurological outcomes. • Identify the clinical manifestations associated with skull and spine fractures.	• Bedside teaching • Duration 1 hrs • Conducted by senior faculty member of unit

	For skull fractures, symptoms may include visible deformities, cerebrospinal fluid leakage from nose or ears, and neurological deficits. For spine fractures, symptoms can include pain, paralysis, loss of sensation, and autonomic dysregulation. • Understand the diagnostic procedures used to assess skull and spine fractures, primarily focusing on imaging techniques like X-rays, CT scans, and MRI. • Discuss initial management strategies, including stabilization, neurologic assessment, and when to refer for surgical intervention.	
VI MRI Brain/ Spine	• Describe the fundamental principles of MRI technology, including how magnetic fields and radio waves are used to create detailed images of the brain and spinal structures. • Enlist the key indications for using MRI over other imaging modalities, such as its superior ability to differentiate between soft tissues and its usefulness in diagnosing conditions like tumors, inflammatory diseases, and vascular anomalies. • Recognize normal anatomical structures of the brain and spine on MRI scans. • Identify common pathological findings, such as signs of herniated discs, spinal stenosis, brain tumors, multiple sclerosis plaques, and evidence of acute or chronic stroke.	• Bedside teaching • Duration 1 hrs Conducted by senior faculty member of unit

	• Develop skills in interpreting MRI features that are specific to neurological conditions, • Describe the safety considerations associated with MRI, including the importance of screening for contraindications like implanted metallic devices.	

List of CNS Module Spiral Courses Lectures

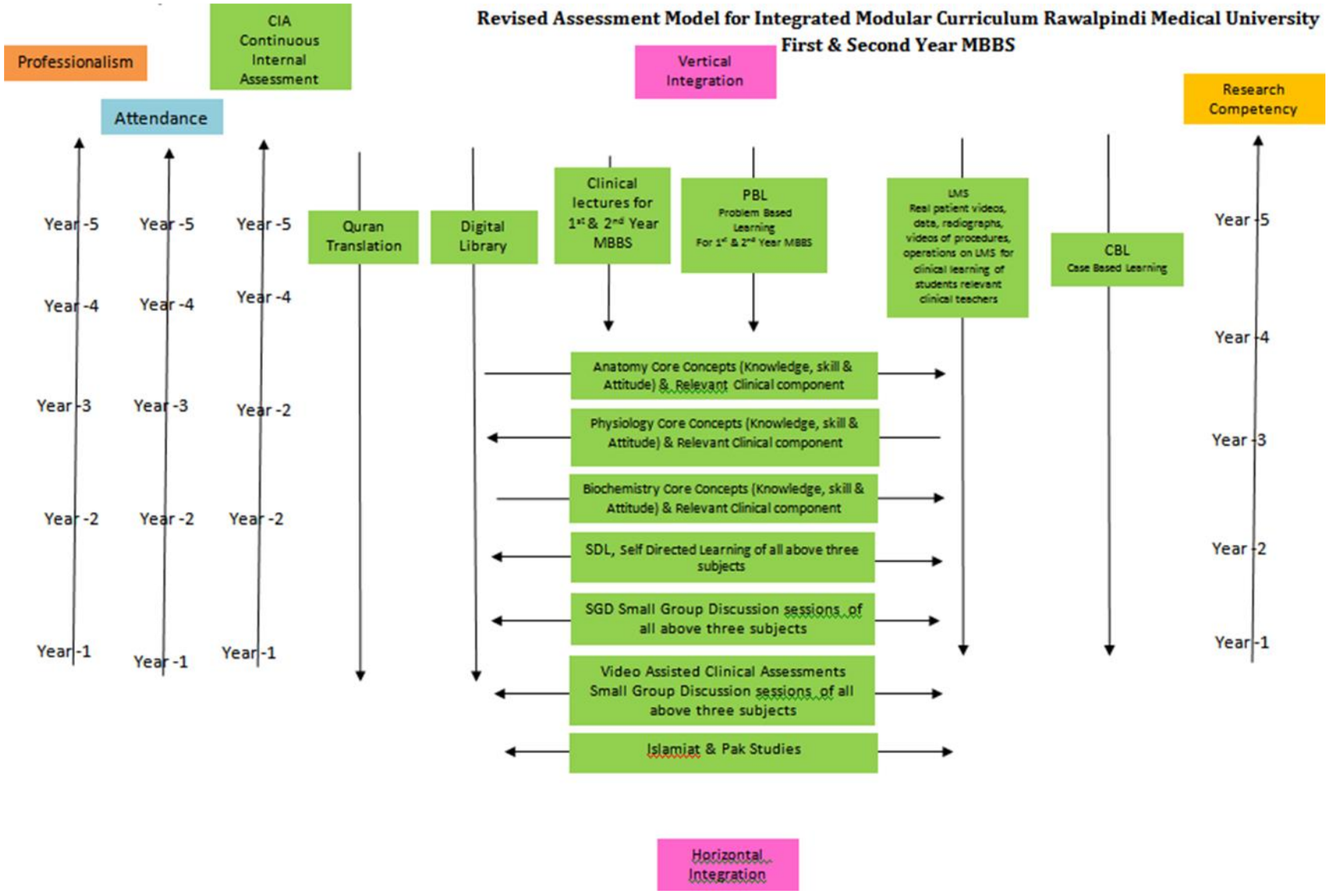
Date/Day	Department	Time	Week	Topic Of Lectures	Teachers
02-08-2024 Friday	Quran Translation	10:00AM – 11:00 AM	1st Week	Imaniyaat-5	Mufti Naeem Sherazi (Odd)
02-08-2024 Friday	Quran Translation	11:00AM – 12:00 PM	1st Week	Imaniyaat-6	Mufti Naeem Sherazi (Even)
09-08-2024 Friday	Quran Translation	10:00AM – 11:00 AM	2nd Week	Musawat	Mufti Naeem Sherazi (Even)
				Tehreek-e-Pakistan (1940-1947	Qari Aman Ullah (Odd)
09-08-2024 Friday	Quran Translation	11:00AM – 12:00 PM	2nd Week	Tehreek-e-Pakistan (1940-1947	Qari Aman Ullah (Even)
				Musawat	Mufti Naem Sherazi (Odd)
16-08-2024 Friday	Pakstudies/Islammiyat	10:00AM – 11:00 AM	3rd Week	Khwateen k hakook	Mufti Naem Sherazi (Odd)
				Qayam e Pakistan, ibtidaimushkilaat	Qari Aman Ullah (Even)
16-08-2024 Friday	Pakstudies/Islammiyat	11:00AM – 12:00 PM	3rd Week	Qayam e Pakistan, ibtidaimushkilaat	Qari Aman Ullah (Even)
				Khwateen k hakook	Mufti Naem Sherazi (Odd)
26-08-2024 Monday	Family Medicine (LGIS)	11:20AM – 12:10 PM	5th Week	Approach to a patient with neuronal disease	Dr. Sadia
27-08-2024 Tuesday	Behavioral Sciences (LGIS)	11:20AM – 12:10 PM	5th Week	Memory & Emotions	Dr. M. Azeem Rao (Even)
					Dr. Zarnain Umar (Odd)
29-08-2024 Thursday	Behavioral Sciences (LGIS)	11:20AM – 12:10 PM	5th Week	Metacognition	Dr. Zarnain Umar (Even)
					Dr. Ali Tasaddaq (Odd)
30-08-2024 Friday	Quran Translation IV	08:00AM – 09:00 AM	5th Week	Momalat-I	Mufti Naeem Sherazi (Odd)
	Quran Translation V	09:00AM – 10:00 AM		Momalat-II	Mufti Naeem Sherazi (Even)

SECTION - V

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in CNS Module**



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

60% and above is passing marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%	81 - 100%

90% is eligibility criteria for appearing professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular,modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given theshare according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based),modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in CNS Module

Block	Sr #	Module – 1 CNS Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-II	1	Weekly LMS Based Assessments (Anatomy, Physiology & Biochemistry)	Formative	2 Hours	3 Hours 45 Minutes	3 Hours	2 Formative	6 Summative
	2	End Module Examinations (SEQ, SAQ, EMQ & MCQs Based)	Summative	2 Hours				
	3	Audio Visual (AV) OSPE (10 slides) 5 minutes per slide	Summative	50 Minutes				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures & Spiral Curriculums	Formative	60 Minutes				

Learning Resources

Subject	Resources
Anatomy	**A. Neuroanatomy** **1.** Snell's Clinical Neuroanatomy by Rayan Splittgerber 9th Edition. **B. Gross Anatomy** 2. Gray's Anatomy By Prof. Susan Standring 42th Edition, Elsevier. 3. Clinical Anatomy For Medical Students By Richard S.Snell 10th Edition. 4. Clinically Oriented Anatomy By Keith Moore 9th Edition. 5. Cunningham's Manual Of Practical Anatomy By G.J. Romanes, 16th Edition, Vol-I, Ii And Iii **C. Histology** 1. B. Young J. W. Health Wheather's Functional Histology 6th Edition. 2. Medical Histology By Prof. Laiq Hussain 7th Edition. **D. Embryology** 1. Keith L. Moore. The Developing Human 11th Edition. 2. Langman's Medical Embryology 14th Edition. **E. YouTube Links** 6. https://www.youtube.com/watch?v=auogbJFitmI&pp=ygUSY25zIGFuYXRvbXkgdmlkZW9z 7. https://www.youtube.com/watch?v=Z3fLmpepJfg&list=PLmzZnYRTmRK8BTd1iJtzry0WhOYkpca0g 8. https://www.youtube.com/watch?v=q8NtmDrb_qo&pp=ygULY25zIGFuYXRvbXk%3D 9. https://www.youtube.com/watch?v=ADAOsuaOSCk&list=PLTF9h-T1TcJgx3OFachdjHPMX6VE4VDS1 **F. HEC Digital Library Links** 10. https://link.springer.com/chapter/10.1007/978-981-15-7771-0_3 11. https://link.springer.com/chapter/10.1007/978-1-4684-7688-0_7 12. https://link.springer.com/chapter/10.1007/978-1-61779-779-8_13 13. https://link.springer.com/chapter/10.1007/978-3-319-60187-8_8 14. https://link.springer.com/article/10.1007/s00701-013-1937-0 15. https://link.springer.com/article/10.1007/BF00344224 **G. Journal Links** 1. https://www.tandfonline.com/doi/abs/10.3109/02688699308995089 2. https://www.tandfonline.com/doi/full/10.1080/10255840701492118 3. https://link.springer.com/referenceworkentry/10.1007/978-3-540-29678-2_1315 1. https://link.springer.com/book/10.1007/978-1-4615-1235-6

Physiology	**A. Textbooks** 1. Textbook Of Medical Physiology by Guyton And Hall.14th edition 2. Ganong's Review of Medical Physiology.25TH Edition **B. Reference books** 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Berne & Levy Physiology 7th edition. **C. Internet References** 1. https://www.ncbi.nlm.nih.gov/books/NBK539861/ 2. https://teachmephysiology.com/nervous-system/sensory-system/pain-pathways/ 3. https://www.osmosis.org/learn/Somatosensory_pathways 4. https://www.kenhub.com/en/library/anatomy/autonomic-nervous-system 5. https://www.diffen.com/difference/Parasympathetic_nervous_system_vs_Sympathetic_nervous_system **D. HEC Library** 1. https://www.sciencedirect.com/topics/neuroscience/synaptic-transmission 2. https://nba.uth.tmc.edu/neuroscience/m/s2/chapter04.html 3. https://www.sciencedirect.com/topics/neuroscience/blood-cerebrospinal-fluid-barrier 4. https://www.sciencedirect.com/science/article/abs/pii/S0021992422000892 **E. Youtube links** 1. https://youtu.be/AG7Ev2hJGFk 2. https://youtu.be/cZwb8zqAPXc 3. https://youtu.be/5c8maFAhqIc 4. https://youtu.be/432AD7JZnKE 5. https://youtu.be/j9pUItHAAhs 6. https://youtu.be/7pGKa-1tSJw 7. https://youtu.be/gBOAYgMxq-Q 8. https://youtu.be/DPHoTIcFfLs **F. Journal of Physiology** 1. https://www.sciencedirect.com/science/article/abs/pii/S0021992422000892 2. https://www.sciencedirect.com/topics/psychology/learning-and-memory 3. https://www.physio-pedia.com/Reticular_Formation 4. https://www.sciencedirect.com/science/article/pii/S2214751923000026

Biochemistry	**A. Textbooks** 1. Harper's Illustrated Biochemistry 32th edition. 2. Lippincott's Illustrated Biochemistry 32th edition. 3. Lehninger Principle of Biochemistry 8th edition. 4.. Biochemistry by Devlin 7th edition. **B. Website** 1. https://www.alilamedicalmedia.com/-/g... 2. https://ninjanerd.org **C. Youtube** • https://youtu.be/GuSqOsm3QV8 • https://youtu.be/y9zsDFdMvZY **D. HEC Library and Journals** https://www.ncbi.nlm.nih.gov/books/NBK305896/

SECTION - VI

Time Table

Clinically Oriented Integrated Modular Curriculum for Second Year MBBS

CNS Time Table

Second Year MBBS

Session 2023 - 2024

Batch- 50

CNS Module Team

Module Name	:	CNS Module
Duration of module	:	06 Weeks
Coordinator	:	Dr. Arsalan Manzoor Mughal
Co-coordinator	:	Dr. Gaiti Ara
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Arsalan Manzoor Mughal (Associate Professor of Anatomy)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Gaiti Aara ((APWMO of Anatomy)
4.	Co-Coordinator	Dr. Rahat (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Shazia (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Discipline Wise Details of Modular Contents

Subjects	Embryology	Histology	General Anatomy	Gross Anatomy
• Anatomy	• Early CNS Development • Spinal Cord • Hindbrain & Cerebellum • Midbrain • Forebrain • Peripheral Nervous System	• Ganglia • Peripheral Nerves • Spinal Cord • Cerebellum • Cerebrum	• General Anatomy of Nervous System • General Anatomy of Autonomic Nervous System.	• Anterior, Middle & Posterior cranial fossae • Meninges, Dural venous sinuses, and intracranial hemorrhages • Spinal cord & Tracts • Brain stem (Medulla oblongata, Pons, cerebellum & Midbrain) • Diencephalon • Cerebrum • CSF and Ventricular System • Cranial nerves • Basal ganglia • Limbic system & Reticular formation • Blood Supply of Brain • Radiological Imaging of CNS • Cross Sectional Anatomy of CNS
• Biochemistry	• Fatty acid metabolism • Cholesterol Metabolism • Ketone bodies metabolism • Lipoproteins and Phospholipids • Fatty Liver and hyper Lipidemias. • Glycerophospholipid & Sphimgo phospholipid			
• Physiology	• Organization of nervous system, Mechanism of synaptic transmission • Classification of sensory receptors, Properties of sensory receptors • Properties of synaptic transmission • Physiology of pain, Dual pathway for transmission of pain, Analgesia System and Thermal sensations • Sensory pathways for transmitting somatic signals • Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function • Somatosensory cortex & lesions of Somatosensory cortex • Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation • CSF, Blood brain barrier, Blood CSF Barrier, Lumber puncture			

	• Concept of Association areas, • Concept of Dominant and non-dominant cerebral hemispheres • Limbic system, • Functions of hypothalamus • Speech and aphasia • Learning and memory • Reticular activating system and sleep • EEG and epilepsy • Introduction to motor nervous system & Reflex action, Conditioned reflexes & Properties of reflex action, Control of spinal cord reflexes by higher centers • Introduction to cerebellum, Neuronal circuits of cerebellum, and its motor functions • Muscle spindle & Golgi tendon organ, Role of muscle spindle and Golgi tendon organ in voluntary motor activity
Spiral Courses	
• The Holy Quran Translation	• Imaniyaat-5 • Imaniyaat-6 • Momalat-I • Momalat-II
• Pak Studies / Islammiyat	• Musawat • Tehreek-e-Pakistan (1940-1947) • Khwateen k hakook • Qayam e Pakistan, Ibtidai Mushkilaat
• Bioethics & Professionalism	• Ethical dilemmas in healthcare practice involving breach in principle of autonomy • Ethical dilemmas in healthcare practice involving breach in principle of beneficence and non-maleficence • Ethical dilemmas practice involving breach in principle of justice
• Radiology & Artificial Intelligence	• Skull radiograph • CT Scan & MRI
• Family Medicine	• Approach to a patient with headache
• Behavioral Sciences	• Emotions • Memory
Vertical Integration	
• Pharmacology	• Introduction to CNS
• Pathology	• Patterns of injury in nervous system • Meningitis
• Pediatrics	• Meningitis

	• Cerebral palsy, Polio
• Surgery	• Spinal injury and head injury • Management of hydrocephalus • Brain abscess • Polytrauma patient
• Medicine	• Spinal cord and peripheral nervous system • Encephalitis • Cerebellar disorders • Epilepsy and other convulsive disorders • Stroke
• Gynecology & Obs	• Seizures during pregnancy (eclampsia/ epilepsy)
Early Clinical Exposure	
• Medicine	• Cases of stroke • Paraplegia • Vegetative state
• Surgery/ Neurosurgery	• Head injury. • Nerve injuries
• Radiology	• CT scan • Brain • Normal • Stroke • Hemorrhage • Infarction Hydrocephalus • Brain atrophy • Brain Edema • Skull/ spine Fractures • MRI Brain/ Spine

Categorization of Modular Contents

Anatomy

Category A*	Category B**		Category C***			
Special Embryology	**Special Histology**	**General Anatomy**	**Demonstrations / SGD**	**CBL**	**Practical's**	**Self-Directed Learning (SDL)**
• Early CNS Development • Spinal Cord • Hindbrain & Cerebellum • Midbrain • Forebrain • Peripheral Nervous System • Development of Cranium	• Ganglia • Peripheral Nerves • Spinal Cord • Cerebellum • Cerebrum	• General Anatomy of Nervous System • General Anatomy of Autonomic Nervous System	• Anterior, Middle & Posterior cranial fossae • Meninges, Dural venous sinuses, and intracranial hemorrhages • Spinal cord & Tracts • Brain stem (Medulla oblongata, Pons, cerebellum & Midbrain) • Diencephalon • Cerebrum • CSF and Ventricular System • Cranial nerves • Basal ganglia • Limbic system & Reticular formation • Blood Supply of Brain • Radiological Imaging of CNS • Cross Sectional Anatomy	• Cystic Astrocytoma of cerebellum • Stroke	• Ganglia • Peripheral Nerves • Spinal Cord • Cerebellum • Cerebrum	• Anterior, Middle & Posterior cranial fossae • Meninges, Dural venous sinuses, and intracranial hemorrhages • Spinal cord & Tracts • Brain stem (Medulla oblongata, Pons, cerebellum & Midbrain) • Diencephalon • Cerebrum • CSF and Ventricular System • Cranial nerves • Basal ganglia • Limbic system & Reticular formation • Blood Supply of Brain • Radiological Imaging of CNS

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy Department	03
2.	Associate professor Of Physiology Department	02
	Assistant professor of Anatomy Department (AP)	01
3.	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)	11*2 = 22 hours
2.	Small Group Discussions (SGD)	22*2= 44 hours
3.	Practical / Skill Lab	7.5*5= 37.5 hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1*11 = 11 hours
2.	Small Group Discussions (SGD)	2*22= 44 hours
3.	Practical / Skill Lab	1.5 *5 = 7.5 hours
4.	Self-Directed Learning (SDL)	2*10 = 20 hours

Physiology

Category A & B*	Category C***				
LGIS	**PBL**	**CBL**	**Practical's**	**SGD**	**SDL**
• Organization of nervous system, Mechanism of synaptic transmission • Classification of sensory receptors, Properties of sensory receptors • Properties of synaptic transmission • Physiology of pain, Dual pathway for transmission of pain,Analgesia System and Thermal sensations • Sensory pathways for transmitting somatic signals • Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function • Somatosensory cortex & lesions of Somatosensory cortex • Excitatory & inhibitory effects of sympathetic & parasympathetic stimulation • CSF, Blood brain barrier, Blood CSF Barrier, Lumber puncture • Concept of Association areas, • Concept of Dominant and non-dominant cerebral hemispheres • Limbic system, • Functions of hypothalamus • Speech and aphasia • Learning and memory • Reticular activating system and sleep • EEG and epilepsy • Introduction to motor nervous system & Reflex action,Conditioned reflexes & Properties of		1. CVA 2. Gullain Barr syndrome	**1.** Examination of sensory nervous system **2.** Examination of Motor System **3.** Examination of **4.** Cerebellar System **5.** Ophthalmoscopy E **6.** Determination of field of vision	1. Synapse & sensory Receptors 2. Autonomic Nervous System 3. Motor nervous system , muscle spindle and Golgi tendon organ 4. Motor Nervous System 5. Basal Ganglia & limbic system 6. Analgesia system 7. Cerebellum	**On Campus:** **1.** Sensory pathways for transmitting somatic signals **2.** Somatosensory cortex & lesions of Somatosensory cortex **3.** Introduction to autonomic nervous system Basic Characteristics of sympathetic & parasympathetic function **4.** Excitatory & inhibitory effects of sympathetic & parasympathetic **5.** stimulation **6.** CSF, Blood brain barrier, Blood CSF Barrier, Lumber puncture **7.** Limbic system, **8.** Functions of hypothalamus **Online:** **9.** Learning and memory **10.** Concept of Association areas, Concept of Dominant and nondominant cerebral hemispheres **11.** Speech and aphasia **12.** EEG and epilepsy **13.** **14.** Reticular activating system and sleep **15.** Muscle spindle & Golgi tendon organ, Role of muscle spindle and **16.** Golgi tendon organ in voluntary motor activity **17.** Motor cortex & physiological importance of neocortex,

reflex action,Control of spinal cord reflexes by higher centers • Introduction to cerebellum, Neuronal circuits of cerebellum, • and its motor functions • Muscle spindle & Golgi tendon organ, Role of muscle spindle and Golgi tendon organ in voluntary motor activity • Manifestations of cerebellar disease • Polysynaptic reflexes & Transection of spinal cord, • Role of brain stem in controlling motor functions & Lesions of motor system • Motor cortex & physiological importance of neocortex, Corticospinal or pyramidal tract, Extra pyramidal system • Basal Ganglia & Lesions					**18.** Corticospinal or pyramidal tract, Extra pyramidal system **19.** Basal Ganglia & Lesions **Off Campus:** 1. Organization of nervous system 2. Classification of sensory receptors 3. Sensory pathways for transmitting somatic signals 4. Physiology of pain, Dual 5. pathway for 6. transmission of pain, 7. CSF, Blood brain barrier, Blood CSF Barrier, 8. Lumber puncture 9. Muscle spindle & 10. Golgi tendon organ, 11. Hypothalamus 12. Properties of reflex 13. action, Control of spinal cord 14. reflexes by higher centers 15. Reticular activating system 16. and sleep, EEG and epilepsy 17. Introduction to cerebellum, 18. Neuronal circuits of cerebellum 19. Basal Ganglia & Lesions

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / HumanResource	Total number ofteaching staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	08

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	1 x 22= 22 x 1 hour = 22 hours
2.	Small Group Discussions (SGD)/CBL	25 x 1.5 hour = 37.5+2= 39.5 hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	25 x 1.5 hour = 37.5 hours
5.	Self-Directed Learning (SDL)	oncampus14 x 1 hour = 14 hours off campus 11x1 = 11 hours

Biochemistry

Category A & B	Category C***			
LGIS	**PBL**	**CBL**	**Practical's**	**SGD**
• Triglyceride Metabolism, Fatty acid transport • Oxidation of fatty acid • Oxidation of fatty acid • Fatty acid synthesis • Cholesterol Synthesis • Plasma Cholesterol level • Ketone bodies metabolism • Biosynthesis of Glycerophospholipid • Biosynthesis of sphingophospholipids • Introduction to Lipoproteins • LDL& HDL • Disorders of lipoprotein metabolism • Fatty liver & Adipose tissues • Disorders of lipoprotein metabolism		• IHD • Respiratory Distress Syndrome	• Color Test for Sterols • Detection of Cholesterol Crystals • Estimation of serum TAGS • Estimation of Serum HDL • Lipid Solubility & Acrolein test	• Triglycerides & F.A. oxidation • Fatty acid synthesis & cholesterol metabolism • Ketone bodies & Phospholipids • Lipoprotein (HDL) • Lipoprotein (VLDL, LDL)

***:** Assistant Professor (HOD) and APMO (With Postgraduate Qualification)

Category B:** (Senior Demonstrators & APWMO)

Category C*:** (By All Demonstrators, Senior Demonstrators and APWMO)

Teaching Staff / Human Resource of Department of Biochemistry

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

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (Lectures)	2 * 5 = 10 hours	05
2.	Small Group Discussions (SGD)	7.5 * 7 = 37.5 hours	7.5
3.	Problem Based Learning (PBL)	2*1= 2 hours	2
4.	Practical / Skill Lab	7.5 * 5 = 37.5 hours	7.5
5.	Self-Directed Learning (SDL)	--------	05

Second Year Timetable for CNS Module (First Week)
(29-07-2024 To 03-08-2024)

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
29-07-2024 Monday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Organization of nervous system, Mechanism of synaptic transmission | Classification of sensory receptors &Properties of sensory receptors Dr. Faizania (Even) | Prof. .Dr. Samia / Dr. Kamil(Odd)	**B r e a k**	**ANATOMY (LGIS)** General Anatomy Nervous system | Embryology Early development of CNS Assoc. Prof. Dr. Arsalan Manzoor (Even) | Prof. Dr. Ifra Saeed (Odd)	**SDL**	**B r e a k**	**SGD / DISSECTION** Anterior and Middle Cranial Fossa	SDL Physiology Organization of nervous system, Mechanism of synaptic transmission
30-07-2024 Tuesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Classification of sensory receptors &Properties of sensory receptors | Organization of nervous system, Mechanism of synaptic transmission Prof. Dr. Sami Sarwar/ Dr. Kamil (Even) | Dr. Fazania(Odd)		**ANATOMY (LGIS)** Embryology Early development of CNS | General anatomy Nervous system Prof. Dr. Ifra Saeed (Even) | Assoc. Prof .Dr. Arsalan Manzoor (Odd)	**PBL 1 (SESSION-I)** PBL Team		**SGD / DISSECTION** Posterior cranial fossa	SDL Physiology Classification of sensory receptors
31-07-2024 Wednesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Properties of synaptic transmission | Physiology of Pain, dual Pathway for Transmission of pain, Analgesia system and thermal sensation Dr. Fazania (Even) | Prof.. Dr. Samia / Dr. Kamil (Odd)		**ANATOMY (LGIS)** Embryology Development of Spinal Cord | General Anatomy Autonomic Nervous System Prof. Dr. Ifra Saeed (Even) | Assoc. Prof .Dr. Arsalan Manzoor (Odd)	**BIOCHEMISTRY (LGIS)** Triglyceride Metabolism Transport | Introduction to Lipoproteins, chylomicrons, VLDL Metabolism Dr. Aneela (Even) | Dr. Kashif (Odd)		**SGD / DISSECTION** Meninges, Dural venous sinuses and intracranial hemorrhages	SDL Biochemistry Chylomicron Metabolism
01-08-2024 Thursday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Physiology of Pain, dual Pathway for Transmission of pain, Analgesia system and thermal sensation | Properties of synaptic transmission Prof.. Dr. Samia / Dr. Kamil (Even) | Dr. Faizania (Odd)		**ANATOMY (LGIS)** General anatomy Autonomic Nervous system | Embryology Development of Spinal Cord Assoc. Prof. Dr. Arsalan Manzoor (Even) | Prof. Dr. Ifra Saeed (Odd)	**BIOCHEMISTRY (LGIS)** Introduction to Lipoproteins, chylomicrons, VLDL Metabolism | Triglyceride Metabolism Transport Dr. Kashif (Even) | Dr. Aneela (Odd)		**SGD / DISSECTION** Spinal Cord	SDL Anatomy Posterior cranial fossa Dural venous sinuses and intracranial hemorrhages
02-08-2024 Friday	**8:00am-900am** **PEDIATRICS** Meningitis Dr. Mamoona Qudrat(Even) | Dr. Tanzeela Rani(Odd)	**9:00am-10:00am** **PHYSIOLOGY (LGIS)** Sensory Pathways for transmitting Somatic Signals | Introduction to AN, Basic Characteristics of Sympathetic & Parasympathetic Dr. Fahd (Even) | Dr Uzma (Odd)		**10:00am-11:00am** **QURAN TRANSLATION** Imaniyaat-5 Mufti Naeem Sherazi (Odd)	**11:00am-12:00pm** **QURAN TRANSLATION** Imaniyaat-6 Mufti Naeem Sherazi (Even)			
03-08-2024 Saturday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Introduction to ANS ,Basic Characteristics of Sympathetic & Parasympathetic | Sensory Pathways for transmitting Somatic Signals Dr. Uzma (Even) | Dr. Fahd (Odd)	**B r e a k**	**PATHOLOGY** Introduction to ANS ,Basic Characteristics of Sympathetic & Parasympathetic System | Meningitis Dr. Nida Fatima (even) | Dr. Kiran Ahmad (odd)	**PBL 1 (SESSION-II)** PBL Team	**B r e a k**	**SGD / DISSECTION** Ascending Tracts and their clinicals	SDL Anatomy Anterior And middle Cranial Fossa

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- Peripheral Nerve (Anatomy Histology Practical) Venue-Histology laboratory (Dr. Minahil Haq)
- Color test for Sterols (Biochemistry practical)
- (Physiology Practical) Examination of sensory nervous system Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Synapse & sensory Receptors (Venue: Lecture Hall No 5)
- Biochemistry SGD: Triglyceride Metabolism (Venue: Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-90	Dr. Gaiti Ara	New Lecture Hall Complex # 01
B	91-180	Dr. Minahil Haq	New Lecture Hall Complex # 04
C	181-270	Dr. Tariq Furqan	Anatomy Lecture Hall 04
D	271 onwards	Dr. Sadia Baqir	Anatomy Lecture Hall 03

Supervised by Prof. Dr. Ayesha Yousaf

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Rohina Khalid (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Second Year Timetable for CNS Module (Second Week)
(05-08-2024 To 10-08-2024)

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
05-08-2024 Monday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Somatosensory cortex and lesions of somatosensory cortex / Excitatory and inhibitory effects of sympathetic and parasympathetic stimulation Dr. Fahd (Even) / Dr. Uzma (Odd)	Break	**BIOCHEMISTRY (LGIS)** LDL, HDL metabolism / Fatty Acid Oxidation I Dr. Kashif (Even) / Dr. Aneela (Odd)	**PATHOLOGY** Patterns of injury in nervous system Dr. Nida Fatima (Even) / Dr Kiran Ahmad (Odd)	Break	**SGD / DISSECTION** Descending Tracts and their clinicals	SDL Physiology Sensory pathways for transmitting somatic signals-II
06-08-2024 Tuesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Excitatory and inhibitory effects of sympathetic and parasympathetic stimulation / Somatosensory cortex and lesions of somatosensory cortex Dr. Uzma (Even) / Dr. Fahd (Odd)		**ANATOMY (LGIS)** Histology Of spinal cord and peripheral nerve / Embryology Development of Rhombencephalon Asst. Prof. Dr. Maria Tasleem (Even) / Prof. Dr. Ifra Saeed (Odd)	**BIOCHEMISTRY (LGIS)** Fatty acid oxidation I / LDL, HDL metabolism Dr. Aneela (Even) / Dr. Kashif (Odd)		**SGD / DISSECTION** Lesions of Spinal Cord	SDL Physiology Physiology of pain Dual pathway for transmission of pain
07-08-2024 Wednesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Concept of Association areas, Concept of Dominant and non-dominant cerebral hemispheres / CSF, Blood Brain Barrier Blood CSF Barrier, Lumbar puncher Dr. Shazia (Even) / Dr. Maryam (Odd)		**ANATOMY (LGIS)** Embryology Development of Rhombencephalon / Histology Of spinal cord and peripheral nerve Prof. Dr. Ifra Saeed (Even) / Asst. Prof. Dr. Maria Tasleem (Odd)	**SURGERY** Spinal injury and Head injury Dr. Soban Sarwar Gondal(Even) / Dr. Usman Malik (Odd)		**SGD / DISSECTION** Medulla Oblongata	SDL Biochemistry HDL & LDL Metabolism
08-08-2024 Thursday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** CSF, Blood Brain Barrier Blood CSF Barrier, Lumbar puncher / Concept of Association areas, Concept of Dominant and non- dominant cerebral hemispheres Dr .Maryam (Even) / Dr. Shazia (odd)		**RADIOLOGY** Skull Radiograph Dr Riffat (Even) / Dr Saba (Odd)	**BIOCHEMISTRY (LGIS)** Hyperlipidemia And Fatty Liver / Fatty acid oxidation II Dr. Kashif (Even) / Dr. Aneela (Odd)		**SGD / DISSECTION** Pons & the Fourth Ventricle	SDL Anatomy Meninges, Spinal ,cord
09-08-2024 Friday	**8:00am-900am** **MEDICINE** Spinal cord and peripheral nervous system Dr Javeria Malik(Even) / Dr Riffat (Odd)	**9:00am-10:00am** **PHYSIOLOGY (LGIS)** Speech and aphasia / Limbic system, Functionsof hypothalamus Dr. Shazia (Even) / Dr. Maryam (Odd)		**10:00am-11:00am** **PAKSTUDIES/ISLAMMIYAT** Musawat / 1973 ka Aaeen Mufti Naem Sherazi (Even) / Qari Aman Ullah (Odd)	**11:00am-12:00pm** 1973 ka Aaeen / Musawat Qari Aman Ullah (Even) / Mufti Naem Sherazi (Odd)			
10-08-2024 Saturday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Limbic system, Functionsof hypothalamus / Speech and aphasia Dr. Maryam (Even) / Dr. Shazia (Odd)	Break	**ANATOMY (LGIS)** Histology of cerebellum / Embryology Development of Mesencephalon & Prosencephalon Asst. Prof. Dr. Maria (Even) / Prof. Dr. Ifra Saeed (Odd)	**OBS & GYNAE** Seizures during pregnancy(eclampsia/epilepsy) Dr Ismat Batool (Even) / Dr Sadia Waheed (Odd)	Break	**SGD / DISSECTION** Midbrain	SDL Anatomy Ascending tracts & Descending tracts

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- (Anatomy Histology Practical) Ganglia Venue-Histology laboratory (Dr. Sadia Baqir)
- (Biochemistry Practical) Detection of Cholesterol Crystals
- (Physiology Practical) Examination of Motor System Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Autonomic Nervous System (Venue: Lecture Hall No 5)
- Biochemistry SGD: Fatty Acid Oxidation (Venue: Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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. Kamil	A	Dr. Aneela	Supervised by HOD	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-90	Dr. Gaiti Ara	New Lecture Hall Complex # 01	Supervised by Prof. Dr. Ayesha Yousaf
B	91-180	Dr. Minahil Haq	New Lecture Hall Complex # 04	
C	181-270	Dr. Tariq Furqan	Anatomy Lecture Hall 04	
D	271 onwards	Dr. Sadia Baqir	Anatomy Lecture Hall 03	

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Rohina Khalid (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

\

Second Year Timetable for CNS Module (Third Week)
(12-08-2024 To 17-08-2024)

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
12-08-2024 Monday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Learning & Memory / Reticular Activating System & Sleep Dr. Maryam (Even) / Dr. Fahd (Odd)	**Break**	**ANATOMY (LGIS)** Embryology Development of Mesencephalon & Prosencephalon / Histology of cerebellum Prof. Dr. Ifra Saeed (Even) / Asst. Prof. Dr. Maria Tasleem (Odd)	**PHYSIOLOGY SDL NO. 1** Somatosensory system & its lesions Dr. Ramsha (Odd) / Dr. Ali Zain (Even)	**Break**	**CBL/SGD/ DISSECTION** CBL (Cystic Astrocytoma of Cerebellum) Cerebellum	SDL Physiology CSF, BBB, Blood CSF Barrier, LP
13-08-2024 Tuesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** Reticular Activating System & Sleep / Learning & Memory Dr. Fahd (Even) / Dr. Maryam (Odd)		**BIOCHEMISTRY (LGIS)** Hyperlipidemia & Fatty Liver / Fatty acid Oxidation-II Dr. Kashif (Even) / Dr. Aneela (Odd)	**PHYSIOLOGY SDL NO. 2** CSF, BBB, Blood CSF Barrier, Lumbar puncher Dr. Maryam (Even) / Dr. Iqra (Odd)		**SGD / DISSECTION** Thalamus, Epithalamus, Subthalamus	SDL Physiology Muscle spindle & Golgi tendon organ
14-08-2024 Wednesday	**Independence Day**							
15-08-2024 Thursday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** EEG & Epilepsy / Introduction to Moto Nervous System & reflex action, Conditional Reflexes & Its Properties, Control of Spinal cord Reflexes by Higher Centers Dr. Maryam (Even) / Dr Sidra (Odd)	**Break**	**BIOCHEMISTRY (LGIS)** Fatty acid synthesis / Cholesterol synthesis and regulation, hypercholesterolemia Dr Aneela (Even) / Dr. Kashif (Odd)	**PHYSIOLOGY SDL NO. 3** Introduction to ANS Dr. Farah (Even) / Dr. Najam us Sehar (Odd)	**Break**	**SGD / DISSECTION** Hypothalamus	SDL Biochemistry Fatty acid oxidation
16-08-2024 Friday	**8:00 AM – 9:00 AM** **BIOCHEMISTRY (LGIS)** Metabolism of Glycerophospholipids and siphonophore lipid / Ketone body metabolism Dr. Kashif (Even) / Dr. Aneela (Odd)	**9:00 AM – 10:00 AM** **PHYSIOLOGY (LGIS)** EEG & Epilepsy / Introduction to Moto Nervous System & reflex action, Conditional Reflexes & Its Properties, Control of Spinal cord Reflexes by Higher Centers Dr Sidra (Even) / Dr. Maryam (Odd)		**10:00– 11:00AM** **PAKSTUDIES/ISLAMMIYAT** Khwateen k hakook / Qayam e Pakistan, Ibtidai Mushkilaat / Islmi Jamuraiat Mufti Naem Sherazi (Even) / Qari Aman Ullah (Odd)	**11:00– 12:00AM** Qayam e Pakistan, Ibtidai Mushkilaat / Islmi Jamuraiat / Khwateen k hakook Qari Aman Ullah(Even) / Mufti Naem Sherazi (Odd)		SDL Anatomy Medulla Oblongata & Pons & Cerebellum	
17-08-2024 Saturday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)** EEG & Epilepsy / Introduction to Moto Nervous System & reflex action, Conditional Reflexes & Its Properties, Control of Spinal cord Reflexes by Higher Centers Dr Sidra (Even) / Dr. Maryam (Odd)	**Break**	**BIOCHEMISTRY (LGIS)** Cholesterol synthesis and regulation, hypercholesterolemia / Fatty acid synthesis Dr. Kashif (Even) / Dr. Aneela (Odd)	**MEDICINE (LGIS)** Cerebellar disorders Dr Javeria Malik (Even) / Dr Faran Maqbool (Odd)	**Break**	**SGD / DISSECTION** Cortical areas, Layers and Lesions of Cerebrum	SDL Anatomy Diencephalon *Online Clinical Evaluation

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- (Anatomy Histology Practical) Spinal Cord Venue-Histology laboratory (Dr. Gaiti Ara)
- (Biochemistry Practical) Estimation of serum TAGS
- (Physiology Practical) Examination of Cerebellar System Venue – Physiology Lab Lab

Topics for SGDs / CBL with Venue

- Anatomy CBL: Cystic Astrocytoma of Cerebellum
- Physiology SGDs: Motor nervous system, muscle spindle and Golgi tendon organ (Venue: Lecture Hall No 5)
- Biochemistry CBL: Respiratory Distress syndrome (Venue: Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-90	Dr. Gaiti Ara	New Lecture Hall Complex # 01	Supervised by Prof. Dr. Ayesha Yousaf
B	91-180	Dr. Minahil Haq	New Lecture Hall Complex # 04	
C	181-270	Dr. Tariq Furqan	Anatomy Lecture Hall 04	
D	271 onwards	Dr. Sadia Baqir	Anatomy Lecture Hall 03	

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Rohina Khalid (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Second Year Timetable for CNS Module (Fourth Week)
(19-08-2024 To 24-08-2024)

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
19-08-2024 Monday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)**			**SURGERY**		**MEDICINE**			**SGD / DISSECTION**	SDL Physiology Hypothalamus
		Introduction to Cerebellum, Neuronal Circuits of Cerebellum & Its Motor functions	Muscle Spindle & Golgi Tendon organ, role of muscle spindle & Golgi tendon organ in voluntary motor activity		Management of hydrocephalus		Epilepsy and other convulsive disorders			Dissection	
		Dr. Faizania (Even)	Dr. Sidra (Odd)		Dr. Fraz Mehmood (Even)	Dr. Ammad ul Haq (Odd)	Dr Javeria Malik (Even)	Dr Faran Maqbool (Odd)			
20-08-2024 Tuesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY LGIS**		**B r e a k**	**ANATOMY (LGIS)**		**PBL 2 (SESSION-I)**		**B r e a k**	**SGD / DISSECTION**	SDL Physiology Properties of reflex action, Control of spinal cord reflexes by higher centers
		Muscle Spindle & Golgi Tendon organ, role of muscle spindle & Golgi tendon organ in voluntary motor activity	Introduction to Cerebellum, Neuronal Circuits of Cerebellum & Its Motor functions		Histology of Cerebrum	Embryology Development of Peripheral and Autonomic Nervous System	PBL Team			Lateral ventricle, Ventricular system, CSF and Blood Brain Barrier	
		Dr. Sidra (Even)	Dr. Fazania (Odd)		Asst. Prof. Dr Maria Tasleem (Even)	Prof. Dr. Ifra Saeed (Odd)					
21-08-2024 Wednesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY SDL NO. 4**			**ANATOMY (LGIS)**		**MEDICINE**			**SGD / DISSECTION**	SDL Biochemistry Synthesis &Interconversion of Ketone Bodies (diagrammatically) Regulation of Ketogenesis Ketolases
		EEG & Epilepsy			Embryology Development of Peripheral and Autonomic Nervous System	Histology of Cerebrum	Encephalitis			Cranial nerves- I,II,II,IV,VI	
		Dr Maryam (Even)	Dr. Iqra (Odd)		Prof. Dr. Ifra Saeed (Even)	Asst. Prof. Dr. Maria Tasleem (Odd)	Dr Javeria Malik (Even)	Dr Faran Maqbool(Odd)			
22-08-2024 Thursday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY SDL NO 5**			**BIOCHEMISTRY SDL**		**PBL 2 (SESSION-II)**			**SGD / DISSECTION**	SDL Biochemistry
		Reticular Activating System & Sleep			Glycerophospholipids & Sphingolipids		PBL Team			Cranial nerves - V, VII	
		Dr Farah (Even)	Dr. Ali Zain (Odd)		Dr. Uzma Zafar (Odd)	Dr. Rahat (Even)					
23-08-2024 Friday	**8:00 AM – 9:00 AM** **Practical & CBL/SGD** Topics & Venue Mentioned at the end. **(Wednesday Batch 14-08-2024)**	**9:00 AM – 10:00 AM** **PHYSIOLOGY SDL NO 6**			**10:00– 11:00AM** **SGD / DISSECTION**		**11:00AM – 12:00PM**		SDL Anatomy Lateral ventricle, Ventricular system, CSF and Blood Brain Barrier		
		Motor Cortex & Physiological Importance of Neocortex, Cortico Spinal or pyramidal Tract Extra Pyramidal System			Cranial Nerves VIII-XII						
		Dr Maryam (Even)	Dr Iqra (Odd)								
24-08-2024 Saturday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**Early Clinical Exposure (ECE)**									SDL Anatomy Cranial Nerves 1-7

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- (Anatomy Histology Practical) Cerebellum Venue-Histology laboratory (Dr. Minahil Haq)
- (Biochemistry Practical) Estimation of Serum HDL
- (Physiology Practical) Ophthalmoscopy Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Motor Nervous System (Venue: Lecture Hall No 5)
- Biochemistry CBL: Ischemic Heart disease (Venue :Lecture Hall No 2)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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. Kamil	A	Dr. Aneela	Supervised by HOD	D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-90	Dr. Gaiti Ara	New Lecture Hall Complex # 01	Supervised by Prof. Dr. Ayesha Yousaf
B	91-180	Dr. Minahil Haq	New Lecture Hall Complex # 04	
C	181-270	Dr. Tariq Furqan	Anatomy Lecture Hall 04	
D	271 onwards	Dr. Sadia Baqir	Anatomy Lecture Hall 03	

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Second Year Timetable for CNS Module (Fifth Week)
(26-08-2024 To 31-08-2024)

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
26-08-2024 Monday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)**		Break	**MEDICINE**		**FAMILY MEDICINE**		Break	**SGD / DISSECTION**	SDL Physiology Introduction to cerebellum Neuronal circuits of cerebellum
		Manifestations of Cerebellar Disease	Poly synaptic reflexes & transaction of spinal cord, role of brain stem in controlling motor function & lesions of motor system		Stroke		Approach to a patient with neuronal disease			Basal Ganglia	
		Dr Fazania (Even)	Dr. Sidra (Odd)		Dr Javeria Malik (Even)	Dr Faran Maqbool (Odd)	Dr. Sadia				
27-08-2024 Tuesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)**			**PHYSIOLOGY SDLNO. 7**		**BEHAVIORAL SCIENCES**			**SGD / DISSECTION**	SDL Physiology Basal Ganglia & Lesions
		Poly synaptic reflexes & transaction of spinal cord, role of brain stem in controlling motor function & lesions	Manifestations of Cerebellar Disease		Limbic System & function of Hypothalamus		Memory & Emotions			Limbic system and Reticular Formation	
		Dr. Sidra (Even)	Dr Fazania (Odd)		Dr. Maryam (Odd)	Dr. Iqra (Even)	Dr. M. Azeem Rao (Even)	Dr. Zarnain Umar (Odd)			
28-08-2024 Wednesday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)**			**RADIOLOGY**		**SURGERY**			**CBL/SGD/ DISSECTION**	SDL Biochemistry Synthesis of Cholesterol and its regulation
		Basal Ganglia & Lesions	Motor Cortex & Physiological importance of Neocortex, Cortico Spinal or Pyramidal tracked, Extra pyramidal Systems		CT scan and MRI (Brain and Spinal Cord)		Poly trauma patient			CBL(Middle Cerebral Artery Stroke) Blood supply of Brain and Clinicals	
		Dr. Uzma (Even)	Dr Maryam (Odd)		Dr Anum Zahoor (even)	Dr Faisal (odd)	Dr. Fraz Mehmood (Even)	Dr. Ali Tasaddaq(Odd)			
29-08-2024 Thursday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY (LGIS)**			**ANATOMY (LGIS)**		**BEHAVIORAL SCIENCES**			**SGD / DISSECTION**	SDL Anatomy Cranial nerves 8-12, Basal Ganglia, Limbic system and Reticular Formation
		Motor Cortex & Physiological importance of Neocortex, Cortico Spinal or Pyramidal tracked, Extra pyramidal Systems	Basal Ganglia & Lesions		Development of Cranium	Development of Cranium	Metacognition			Radiological Imaging of CNS	
		Dr Maryam (Even)	Dr. Uzma (Odd)		Prof. Dr. Ifra Saeed (Odd)	Prof. Dr. Saima (Even)	Dr. Zarnain Umar(even)	Dr. Sadia Yasir(odd)			
30-08-2024 Friday	**8:00 AM – 9:00 AM**	**9:00 AM – 10:00 AM**			**10:00 – 11:00AM**		**11:00AM – 12:00PM**			SDL Anatomy	
	QURAN TRANSLATION IV	**QURAN TRANSLATION V**			**BIOCHEMISTRY (LGIS)**		**PHYSIOLOGY SDL NO.8**				
	Momalat-I	Momalat-II			Metabolism of Glycerophospholipids and sphingophospho lipid	Ketone Body Metabolism	Learning & Memory				
	Mufti Naeem Sherazi (Odd)	Mufti Naeem Sherazi (Even)			Dr. Kashif (Even)	Dr. Aneela (Odd)	Dr Nayab (Even)	Dr. Iqra (Odd)			
31-08-2024 Saturday	**Practical & CBL/SGD** Topics & Venue Mentioned at the end	**PHYSIOLOGY SDL NO. 09**		Break	**PHYSIOLOGY SDL NO. 10**		**ISLAMIYAT**		Break	**SGD/ DISSECTION**	SDL Biochemistry Online Clinical Evaluation
		Gasal Ganglia & its Lesions			Sensory Pathways for Transmitting somatic Signals		Haj tul Wida Khutba			Cross Sectional Study / Dissection	
		Dr. Maryam (Odd)	Dr. Iqra (Even)		Dr. Jawad (Even)	Dr. Usman (Odd)	Mufti Naeem Shirazi				

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- (Anatomy Histology Practical) Cerebrum. Venue-Histology laboratory (Dr. Sadia Baqir)
- (Biochemistry Practical) Lipid Solubility & Acrolein test
- (Physiology Practical) Determination of field of vision Venue – Physiology Lab

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Topics for SGDs / CBL with Venue

- Anatomy CBL: Middle Cerebral Artery Stroke
- Physiology SGD: Basal Ganglia & limbic system (Venue: Lecture Hall No 5)
- Biochemistry SGD: Ketone body metabolism (Venue: Lecture Hall No 2)

Table No. 2 Batch Distribution and Venues for Anatomy Small Group DisscussionSGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-90	Dr. Gaiti Ara	New Lecture Hall Complex # 01	Supervised by Prof. Dr. Ayesha Yousaf
B	91-180	Dr. Minahil Haq	New Lecture Hall Complex # 04	
C	181-270	Dr. Tariq Furqan	Anatomy Lecture Hall 04	
D	271 onwards	Dr. Sadia Baqir	Anatomy Lecture Hall 03	

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Muhammad Usman (PGT Physiology)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

No PBL during this week

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Schedule for LMS Based Weekly Online Assessments for Second Year MBBS (CNS Module) Batch 50

The online assessment for CNS Module for Second Year MBBS will be as per following schedule:

Class	Module	Day & Date	Time of Assessment	Focal person	Department Responsible
Second Year MBBS	CNS Module	Monday 05th August,2024	9:00 pm-9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 06th August,2024	9:00 pm-9:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 07th August, 2024	9:00 pm-9:30pm	Dr Aneela Jamil	Biochemistry
		Monday 12th August,2024	9:00 pm-9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 13th August, 2024	9:00 pm-9:30pm	Prof. Dr Samia Sarwar	Physiology
		Thursday 15th August,2024	9:00 pm-9:30pm	Dr Aneela Jamil	Biochemistry
		Monday 19th August,2024	9:00 pm-9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 20th August,2024	9:00 pm-9:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 21st August,2024	9:00 pm-9:30pm	Dr Aneela Jamil	Biochemistry

Second Year Timetable for CNS Module (Sixth Week)
(02-09-2024 to 07-09-2024)

Date / Day	8:00 AM – 9:00 AM	12:00-02:00pm
02-09-2024 Monday	Assessment Week	
03-09-2024 Tuesday		
04-09-2024 Wednesday		
05-09-2024 Thursday		
06-09-2024 Friday		
07-09-2024 Saturday		

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

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

SECTION-VII

Table of Specification (TOS) For CNS Module Examination

Blue Print of Assessment for First Year & Second Year MBBS

Table of Specification

Tools of Asssessment: Cognitive: MCQ- Multiple Choice Questions, EMQs- Extended Matching Questions, SAQ- Short Answer Questions, SEQ- Short Essay Questions Psychomotor: AvOSPE- Audio Visual Assisted Objective Structured Pactical Examination, labOSPE- Laboratory Based Objective Structured Practical Examination, IOSPE- Integrated Objective Structured Practical Examination, COSPE- Clinically Oriented Objective Structed Practical Examination Affect: AED Reflective Writing- Artificial Intelligence, Entraprenureship, Digital Literacy based reflective writing, OSVE- Objective Structured Viva Assessment

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

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

Block	Subjects	LMS Based Assessment					OSPE						Grand Total	Total Block Time
		MCQs					LabOSPE	IOSPE	COSPE	Total	Marks	Time		
		C	HV	S	Total	Time	C	HV	S					
BLOCK	Anatomy	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS
	Physiology	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS
	Biochemistry	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS

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

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

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

Marks per Item

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

OSPE Time=1 Round of 40 Students =80 min

3 Round of 40 Students =240 min

OSVE=Time per student=5mins

Table of Specification for Integrated OSPE

Anatomy					
Sr. #	**Topics**	**Knowledge**	**Skill**	**Attitude**	**Marks**
Block II – Reproduction & CNS					
1	Development of Reproductive System	30%	50%	20%	3
2	Development of Nervous System				3
3	Microscopic anatomy of Reproductive System				3
5	Microscopic anatomy of Nervous System				3
Physiology					
1	Examination of sensory system	30%	50%	20%	3
2	Examination of motor system				3
3	Examination of cerebellar functions				3
4	Examination of cranial nerves				3
5	Performance of pregnancy test				3
6	Practical note book / sketch copy				3
Biochemistry					
1	Quantitative estimation of Serum Uric Acid	100%			2
2	Quantitative estimation of Serum Cholesterol				
3	Quantitative estimation of Serum HDL Cholesterol	100%	90%	10%	2
4	Quantitative estimation of Serum LDL Cholesterol				
5	Quantitative estimation of Serum Triglycerides (TAG)	100%	80%	20%	2
6	Practical notebook				

Table of Specification for Gross Anatomy OSPE

Sr. #	Topics	Knowledge	Skill	Attitude	Marks
Block II- Pelvis and CNS					
1	Bones of pelvis	30%	50%	20%	3
2	Structures of Male pelvis				3
3	Structures of Female pelvis				3
4	External genitalia				3
5	Radiology of Pelvis				3
6	Meninges				3
7	Brain Stem and cerebellum				3
8	Diencephalon and telencephalon				3
9	Cranial fossae				3
10	Radiology of Skull (cranial fossae)				3

Annexure I

(Sample MCQ, SAQ, SEQ Papers, AV OSPE, OSPE)

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

RAWALPINDI MEDICAL UNIVERSITY, RWP
ANATOMY DEPARTMENT
2nd Year MBBS Module Exam (CNS)

1. A patient was unable to maintain his balance with feet & heel close together. He was also unable to detect sensations of vibration when vibrating tuning fork was placed on joints of lower limb. Which of the following spinal cord tract is likely to be effected?
    a. Rubrospinal
    b. Corticospinal
    c. Fasciculus gracilis
    d. Fasciculus cuneatus
    e. Lateral spinothalamic

2. A diagnosed case of hypertension presented with weakness of left lower limb and difficulty in movements. On examination he also had impaired sensations of two point discrimination and vibration. On protrusion of the tongue it deviated to right side. Depending on the knowledge of Neuroanatomy which part is affected?
    a. Midbrain
    b. Pons
    c. Medulla oblongata
    d. Cerebellum
    e. Hypothalamus

3. A 75-year-old female suffered a stroke that produced loss of pain and temperature sensations from the left side of her face (along her forehead, cheek, and jaw). She had no other sensory or motor losses. Her physician advised MRI of brain to rule out the cause. Which structure is most likely to be suffered?
    a. Left medial lemniscus
    b. Right spinal trigeminal nucleus
    c. Left spinothalamic tract
    d. Right spinothalamic tract
    e. Left spinal trigeminal nucleus

4. Computed tomography (CT) scan showed an area of hemorrhage in the region of the calcarine fissure. To determine the most likely neurologic deficit produced by this hematoma, which test should be performed?
    a. Rapid independent finger movements
    b. Visual fields
    c. Cognitive functions in word definition
    d. Tongue movements
    e. Muscle tone and coordination

5. Internal capsule is a white matter structure situated in each cerebral hemisphere. Which one of the following passes through the sub lentiform part of internal capsule?
    a. Optic Radiation
    b. Auditory Radiation
    c. Temporopontine fibres
    d. Anterior Thalamic radiation
    e. Corticonuclear fibres

Note: MCQs on USMLE Pattern

RAWALPINDI MEDICAL UNIVERSITY
CNS MODULE EXAM 2ND YEAR MBBS
ANATOMY SEQS

Note: Attempt all questions. All questions carry equal marks. Draw diagram where necessary

1. a. A 45-year-old man was brought to OPD. His family explained that he had been experiencing progressive weakness and difficulty in walking. They also mentioned that he had a respiratory infection a few weeks ago. After examination and tests he was diagnosed as a case of Guillain Barre Syndrome affecting peripheral nervous system. Draw the histological section of structure affected in this condition. (2)

   b. Enlist the cells present in different layers of cerebrum. (1)

   c. Enumerate nuclei of cerebrum (1)

2. a. Tabulate the adult derivatives from walls and cavities of primary and secondary brain vesicles. (2)

   b. A 25-year-old male, presented with intractable headache, dizziness, and coordination difficulties. MRI confirmed cerebellar tonsillar herniation due to congenital malformation. Describe its embryological basis? What complication can arise in this case? (2)

   c. What is Lateral Lemniscus (2)

RAWALPINDI MEDICAL UNIVERSITY
CNS MODULE 2ND YEAR MBBS
PHYSIOLOGY MCQS

1. Neurotransmitter concerned with slow chronic pain is:

    a. glutamate
    b. acetyl choline
    c. GABA
    d. substance P
    e. calcitonin gene-related peptide

2. The movement that is integrated at spinal cord level is:

    a. Turning of head
    b. Turning of eyes
    c. Walking
    d. Writing
    e. Jumping

3. A 62-year-old male is evaluated by a neurologist after a stroke. The doctor observed defect in sequencing & coordination of motor activities. The organ damaged is:

    a. Cerebellum
    b. Medulla
    c. Cortical motor strip
    d. Pons
    e. Eighth cranial nerve

4. When the awake person's attention is directed to some specific type of mental activity, the alpha waves in EEG are replaced by:

    a. Theta waves
    b. Delta waves
    c. Beta waves
    d. Gamma waves
    e. Epsilon waves

Note: MCQs on USMLE Pattern

5. When the awake person's attention is directed to some specific type of mental activity, the alpha waves in EEG are replaced by:

    a. Theta waves
    b. Delta waves
    c. Beta waves
    d. Gamma waves
    e. Epsilon waves

RAWALPINDI MEDICAL UNIVERSITY
CNS MODULE 2ND YEAR MBBS
ANATOMY EMQs

Options:

A. Ischemic stroke

B. Hemorrhagic stroke

C. Transient ischemic attack (TIA)

D. Subarachnoid hemorrhage

E. Lacunar infarct

F. Thrombolytic therapy

G. Carotid endarterectomy

H. Antiplatelet therapy

I. Anticoagulation therapy

J. Intracerebral hemorrhage

Questions:

1. A 70-year-old male presents with sudden onset of right-sided weakness and slurred speech. His symptoms started two hours ago. He has a history of hypertension and diabetes. CT scan shows no hemorrhage.

   What is the most likely diagnosis?

2. A 60-year-old female experiences a sudden severe headache described as "the worst headache of her life," followed by loss of consciousness. On examination, she has neck stiffness and photophobia.

   What is the most likely diagnosis?

3. A 55-year-old male has a history of atrial fibrillation and presents with a sudden onset of left-sided weakness. Imaging shows a clot in the middle cerebral artery.

   Which treatment is most appropriate if he arrived within 3 hours of symptom onset?

4. A 65-year-old female with a history of multiple TIAs presents with transient right-sided weakness and speech difficulties that resolved within 15 minutes.

   What is the most appropriate initial treatment to prevent future events?

5. A 75-year-old male presents with progressive numbness and weakness on the right side of his body over several days. CT scan reveals a small, deep infarct in the brain.

   What is the most likely diagnosis?

Answers:

1. **A. Ischemic stroke**
2. **D. Subarachnoid hemorrhage**
3. **F. Thrombolytic therapy**
4. **H. Antiplatelet therapy**
5. **E. Lacunar infarct**

RAWALPINDI MEDICAL UNIVERSITY
CNS MODULE 2ND YEAR MBBS
PHYSIOLOGY SEQS

Q.1 a) Compare dorsal column medial leminiscal system and antrolateral system for transmission of sensory nervous system? **(3)**

b) What is Stretch reflex **(1)**

c) Describe the role of golgi tendon organ in inverse stretch reflex. **(2)**

Q.2 . a) Give the physiological basis of sleep. **(2)**

b) What is turn on and turn off phenomenon. (1)

c) Why knee jerk becomes pendular in lesion of cerebellum. **(2)**

1. Oxidation of fatty acid decrease in:

   a. Starvation
   b. Diabetes mellitus
   c. Decreased intake of carbohydrate in diet
   d. Well fed state
   e. Excessive carnitine

2. 3- hydroxybutyrate:

   a. Synthesis is increased after high carbohydrate diet
   b. Synthesis is dependent on NADPH
   c. Is increased in ketoacidosis
   d. Is mainly excreted from lungs during respiration
   e. Is directly converted to acetone.

3.Inherited defect in enzymes of β oxidation cause:

   a. Hyperglycemia
   b. Ketoacidosis
   c. Hypoglycemia
   d. Fatty liver
   e. Methylmalonic aciduria

4. A 55-year-old male patient presents with elevated cholesterol levels. Laboratory tests reveal increased LDL cholesterol and total cholesterol levels. Which of the following enzymes is primarily responsible for the regulation of cholesterol synthesis?

   A. HMG-CoA reductase
   B. Acetyl-CoA carboxylase
   C. Fatty acid synthase
   D. Lipoprotein lipase
   E. Phosphatidate phosphatase

Note: MCQs on USMLE Pattern

SEQ

Q. a. Describe the metabolism of chylomicrons. (02)

b. Discuss causes of carnitine deficiency. (02)

c. What is systemic primary carnitine deficiency syndrome. (01)

RAWALPINDI MEDICAL UNIVERSITY DEPARTMENT OF BIOETHICS
2ND YEAR MBBS
CNS MODULE

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
   a. Bio-piracy
   b. Biosafety
   c. Bioethics
   d. Bio-patents
   e. Bio-logistic

2. The right of patients having self-decision is called.
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

3. Following is not code of ethics.
   a. Integrity
   b. Objectivity
   c. Confidentiality
   d. Behavior
   e. Autonomy

4. -------in the context of medical ethics, if it's fair and balanced
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

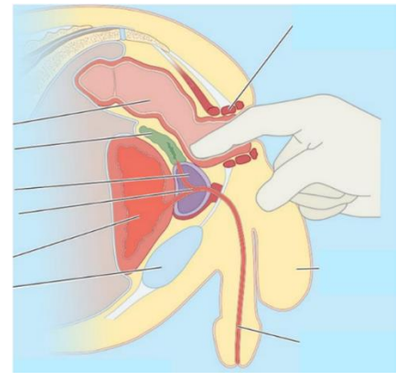
5. ------Principle requiring that physicians provide, positive benefits
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI
DEPARTMENT OF ANATOMY
2nd Year MBBS OSPE Block-II

Station No. 1 Time Allowed: 2 Min

Histology sketch copy will be assessed for

a. Complete index (1)
b. Complete and signed diagrams (1)
c. 2 ID points mentioned with each diagram (1)
d. Punctuality (1)
e. Neatness (1)



Station No. 2 Time Allowed: 2 Min

a. Identify Red (1)
b. Identify Yellow (1)
c. Identify Green (1)
d. Look at the picture given below and answer the following questions

IV a. What is this examination called? (1)
b. Which structure is examined by this technique? (1)

RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI
DEPARTMENT OF PHYSIOLOGY
2nd Year MBBS OSPE Block-II

Station No. Time Allowed: 2 Minutes

MRI of a patient suggests thrombosis of superior cerebellar artery,

a. Enlist some signs & symptoms exhibited. (2)

b. Will he experience any motor deficit? (0.5)

c. Grade his reflexes (0.5)

Station No. Time Allowed: 2 Minutes

a. Which cranial nerve assessed with the given instrument. (0.5)

b. Give afferent & efferent of gag reflex. (0.5)

c. How will you assess XII nerve? (2)

RAWALPINDI MEDICAL UNIVERSITY, RAWALPINDI
DEPARTMENT OF BIOCHEMISTRY
2nd Year MBBS OSPE Block-II

Station No. 1 Time Allowed: 2 Mins

Observed Station

Pipette out 100 microliters from given solution 03

Station No. 2 Time Allowed: 2 Mins

Observed Station

Observe the slide under the microscope. Give one identifying feature. 03

AV OSPE
DEPARTMENT OF ANATOMY

Slide 1

Total Marks: 05 marks

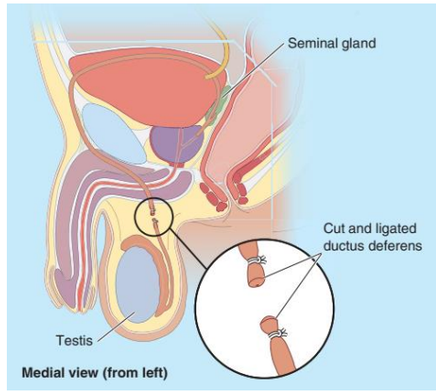
Time Allotted: 05 minutes

Requirements: Answer sheet, Pen

Objectives: _____

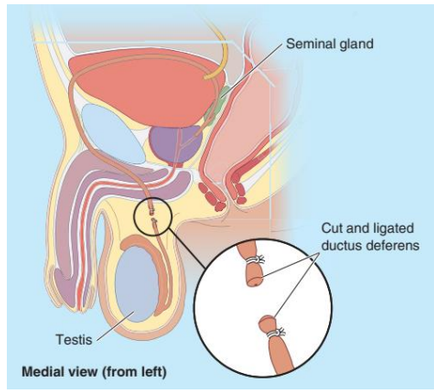
Slide 1

I. Identify Structure
   "A"
   "B"
   "C" (3)
II. Name the procedure (1)
III. What is it used for? (1)



Keys Slide 1

I. A- Anterior Lobe of Prostate
   B- Cut and ligated Vas Deferens (2)
II. Vasectomy (1)
III. Male sterilization (1)
IV. Yes in most cases (1)



Slide 2

Total Marks: 05 marks

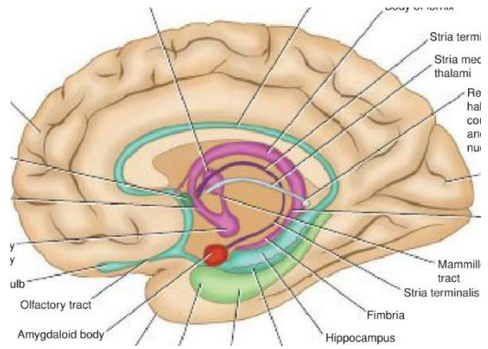
Time Allotted: 05 minutes

Requirements: Answer sheet, Pen

Objectives: _____

Slide 2

I. Identify the structures
A-
B
C
D
II. Name the clinical condition affecting A



Slide 2

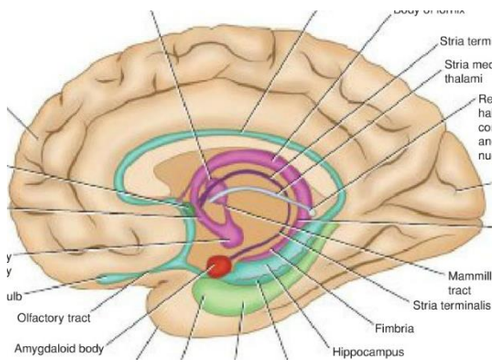
I. A- Amygdala

B- Body of Fornix

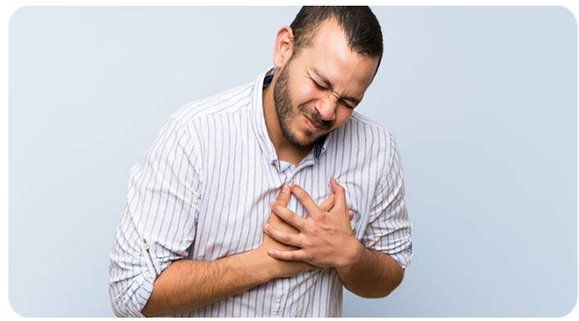
C- Mamillary Bodies

D- Anterior Nucleus of thalamus

II. Klüver-Bucy syndrome



AV OSPE
DEPARTMENT OF BIOCHEMISTRY



Slide 1

Total Marks: 05 marks

Time Allotted: 05 minutes

Requirements: Answer sheet, Pen

Objectives: _____

A 46 years male presented in ER with severe chest pain associated with nausea and sweating. Laboratory examination showed raised plasma cholesterol level.

Q1. What is the normal plasma cholesterol level? (01)

Q2. Write the causes of hypercholesterolemia. (01)

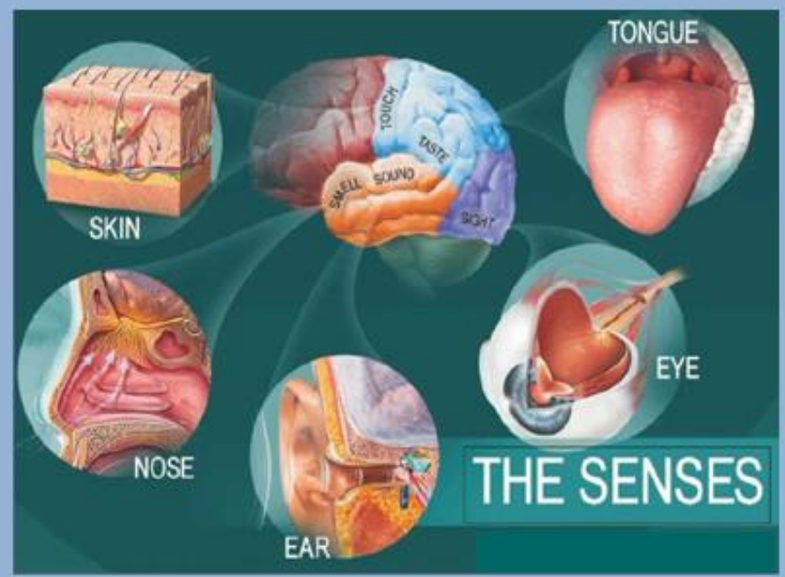
Q3. Which drugs can be used to lower plasma cholesterol level? (01)

Q4. Give the difference between LDL (low-density lipoprotein) and HDL (high-density lipoprotein). (01)

Q5. What is Bad Cholesterol. (01)

Rawalpindi Medical University
Department of Medical Education (DME)

Study Guide
Special Senses Module 2024



Procedure For Control of Documented Information

In-Compliance with

ISO 9001:2015

Clause 7.5

Copyright

The copyright of this procedure, together with all confidential information contained herein is the sole property of Rawalpindi Medical University

It may be copied in full or in parts only by the Management/personnel and only for Company-related activities. Disclosure of any information contained within this procedure to any person (s) outside the employee of the institute without written permission of the Vice Chancellor or Principal or ISO Committee Head is strictly prohibited.

Document Information

Category	**Special Senses Module Study Guide**
Document	Procedure for Control of Documented Information
Issue	1
Rev	00
Identifier	RMU-MR-SOP-60
Status	Final Document
Author(s)	Director Medical Education, Asst. Director Medical Education,
Reviewer(s)	Curriculum Committee.
Approver(s)	Vice Chancellor
Creation Date	03-05-2024
Effective Date	03-05-2024
Control Status	**Controlled**
Distribution	VC, Principal, ISO Committee
Disclaimer	This document contains confidential information. Do not distribute this document without prior approval from higher management of **Rawalpindi Medical University.**

Document Approval

Prepared By	Reviewed By	Approved By
Director Medical Education, Asst. Director Medical Education,	Curriculum Committee	Vice Chancellor

Document Revision History

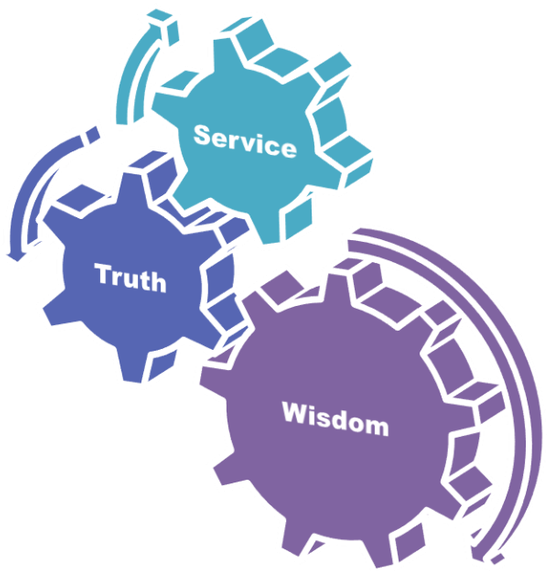
Author(s)	Date	Version	Description
Prof Naeem Akhtar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Sidra Hamid, Dr Tehmina Qamar	2017-2018	1st	Developed for Second Year MBBS. Composed of Horizontally and vertically Integrated Special Senses.
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2019-2020	2nd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated
Dr Tehzeeb, Dr Samia Sarwar, , Dr Ifra Saeed, Dr Ayesha Yousaf , Dr Tehmina Qamar, Dr Sidra Hamid	2021-2022	3rd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum incorporated
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2022-2023	4th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research, Bioethics, Family Medicine curriculum incorporated along with Professionalism
Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr. Aneela Jamil, Dr Sidra Hamid	2023-2024	5th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum revamped Bioethics, Family Medicine curriculum incorporated along with Professionalism. Entrepreneurship curriculum incorporated

List of Copy Holders

Document Code	Issue # /Rev.#	Copy #	Copy Holders	Distribution Mode	Signature
RMU-MR-SOP-60	**01/00**	**01**	**V.C**	**Email**	
RMU-MR-SOP-60	**01/00**	**02**	**HODs**	**Email**	
RMU-MR-SOP-60	**01/00**	**03**	**IC**	**Hard Copy**	

University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

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

Vision and Values

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

Goals of the Undergraduate Integrated Modular Curriculum

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

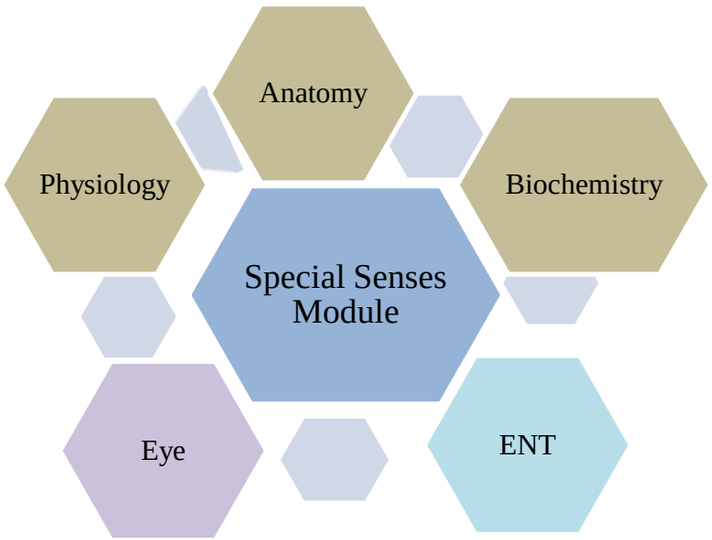
- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional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

Second Year MBBS 2024

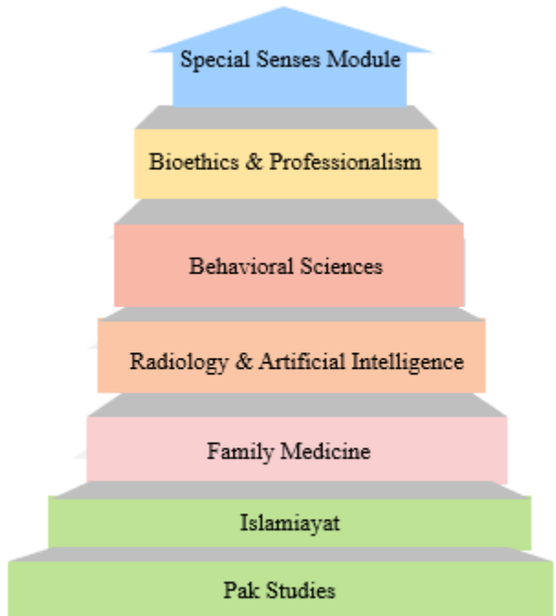
Study Guide

Special Senses Module

Integration of Disciplines in Special Senses Module



Spiral / General Education Cluster Courses



Discipline Wise Details of Modular Contents

Block	Subjects	Embryology	Histology	Histology Practical SKL. Lab.	Gross Anatomy	CBL	SDL
\ III	• Anatomy	• Development of Eye • Development of Pharyngeal arches • Development of Ear	• Histology of Eye • Histology of Ear	• Cornea • Retina • External and Internal ear	• Facial and superior aspect of cranium (Norma frontalis, Norma verticalis) • External surface of cranial base (Norma basalis) • Lateral and occipital aspect of cranium (Norma lateralis, occipitalis) • Mandible • Temporomandibular joint • Face • Scalp • Orbit boundaries and Extraocular muscles • Vessels and nerves of orbit • Eyeball • Eyelid and lacrimal apparatus • Parotid and temporal region • Infratemporal fossa • Pterygopalatine fossa • External and middle ear • Inner ear • Nose and paranasal sinuses	• Oculomotor nerve palsy • Extra Dural hemorrhage	• Norma frontalis, verticalis and basalis • Lateralis and occipitalis, TMJ & Mandible Orbit boundaries • Extraocular muscles • Vessels and Nerves of orbit • Temporal and Infra temporal region, Pterygopalatine fossa • External and middle ear
	• Physiology	• Physiology of Ear & Eye					
	• Biochemistry	• Receptors, Second messengers, Neurotransmitters, Vitamin A role in vision					
	Spiral Courses						
	• Islamiayat	• Imaniat (Hadith) • Zimidaari aur taluqaat • Uswa-e-hasna					
	• Pak Studies	• Pakistan ki jughrafiyai ahmiyat aur difai haisiyat • Pakistan k hamsaya mumalik se taluqaat • Pakistan k qudrati wasail-maadniyaat					

	• Behavioral Sciences	• Perception • Sleep and Arousal
	• Radiology & Artificial Intelligence	• General radiologic concepts
	• Family Medicine	• Approach to a patient with earache
	Vertical Integration	
	• ENT	• Nasal polyp & Sinusitis & Diseases of External Nose • Otitis Media Ear Discharge &Hearing Problems in Children • Facial fractures
	• Eye	• Refractive Errors Strabismus • Ocular trauma & Ocular Procedures • Conjunctivitis Chalazion • Cataract & Glaucoma

Table of Contents

University Moto, Vision, Values & Goals 7
Discipline Wise Details of Modular Contents 10
Special Senses Module Team 15
Module III – Special Senses Module 16
Module Outcomes 16
Knowledge 16
Skills 16
Attitude 16
SECTION - I 17
Terms & Abbreviations 17
Teaching and Learning Methodologies / Strategies 19
Large Large Group Interactive Session (LGIS) 19
Small Group Discussion (SGD) 20
Self-Directed Learning (SDL) 22
Case Based Learning (CBL) 22
Problem Based Learning (PBL) 22
Practical Sessions/Skill Lab (SKL) 23
SECTION – II 24
Learning Objectives, Teaching Strategies & Assessments 24
Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry) 25
Anatomy Large Group Interactive Session (LGIS) 25
Physiology Large Group Interactive Session (LGIS) 29

Biochemistry Large Group Interactive Session (LGIS) 34
Anatomy Small Group Discussion (SGDs) 35
Physiology Small Group Discussion (SGDs) 41
Biochemistry Small Group Discussion (SGDs) 42
Anatomy Self Directed Learning (SDL) 43
Physiology Self Directed Learning (SDL) 45
Biochemistry Self Directed Learning (SDL) 49
Histology Practicals Skill Laboratory (SKL) 50
Physiology Practicals Skill Laboratory (SKL) 51
Biochemistry Practicals Skill Laboratory (SKL) 53
SECTION - III 54
Basic and Clinical Sciences (Vertical Integration) 54
Case Based Learning Objectives (CBL) 55
Vertical Integration LGIS 55
Radiology 55
ENT 55
Eye 56
List of Special Senses Module Vertical Courses Lectures 58
SECTION – IV 60
Spiral Courses 60
Family Medicine 61
Behavioural Sciences 61
Introduction to Spiral Courses 62
List of Special Senses Module Spiral Courses Lectures 67

SECTION - V 68
Assessment Policies 68
Assessment plan 70
Types of Assessment: 70
Modular Assessment 70
Block Assessment 70
Table 4-Assessment Frequency & Time in Special Senses Module 71
Learning Resources 72
SECTION - VI 75
Time Table 75
Special Senses Module Team 77
Categorization of Modular Contents 80
Anatomy 80
Teaching Staff / Human Resources of Department of Anatomy 81
Physiology 82
Teaching Staff / Human Resources of Department of Physiology 83
Biochemistry 84
SECTION-VII 94
Table of Specification (TOS) For Special Senses Module Examination 94
Annexure I 95
(Sample MCQ, SAQ, SEQ Papers, AV OSPE, OSPE & Video Assisted OSPE) 95

Special Senses Module Team

Module Name	:	Special Senses Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Minahil Haq
Co-coordinator	:	Dr. Fareed Ullah
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Minahil Haq (Senior Demonstrator of Anatomy)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Romessa (Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Fareed Ullah Khan (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Module III – Special Senses Module

Rationale: Visual system is a blessing, and no one can underestimate the importance of sight in ones life. It is a highly sensitive system. Unfortunately, it is among the neglected parts of health care and millions of people are getting blind either due to negligence or inappropriate treatment. Refractive errors, cataract, glaucoma and diabetic eye disease are among the ophthalmic diseases which can be easily treated, and morbidity prevented if diagnosed earlier. A young doctor must know how to screen out eye diseases and treat where possible. It is our responsibility to provide them with the required acumen.

Ear, Nose and Throat disorders are very common in the community and form a major portion of clinical practice of a general / family physician. Common ENT problems like phayngitis, tonsillitis, Otitis media, rhinosinusitis, nasal allergy, deafness, vertigo and balance problems can be diagnosed and treated easily. The prevalence of cancer of the upper aerodigestive tract is very high in Pakistan. These patients must be diagnosed and treated at the early stages to reduce morbidity and mortality. Medical students must be made aware of the importance of proper management of ENT problems for the benefit of community and humanity.

Module Outcomes

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

Knowledge

- Integrate the basic knowledge and clinical problems.
- Take detailed history, examine the patients and make a provisional diagnosis with the plan of management.
- Timely refer the patient to an ophthalmologist or ENT specialist.
- Used technology based Medical Education including **Artificial Intelligence**
- Appreciate concept and importance of **Family Medicine, Biomedical Ethics, & Research.**

Skills

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

Attitude

- Demonstrate effective communication skill strategies while interacting with patients.
- Demonstrate teamwork and positive interaction with colleges.
- Demonstrate self learning attitude and problem-solving skills.

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning Methodologies/Strategies
    - 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

Table1. Domains of Learning According to Blooms Taxonomy

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

Teaching and Learning Methodologies / Strategies

Large Large Group Interactive Session (LGIS)

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

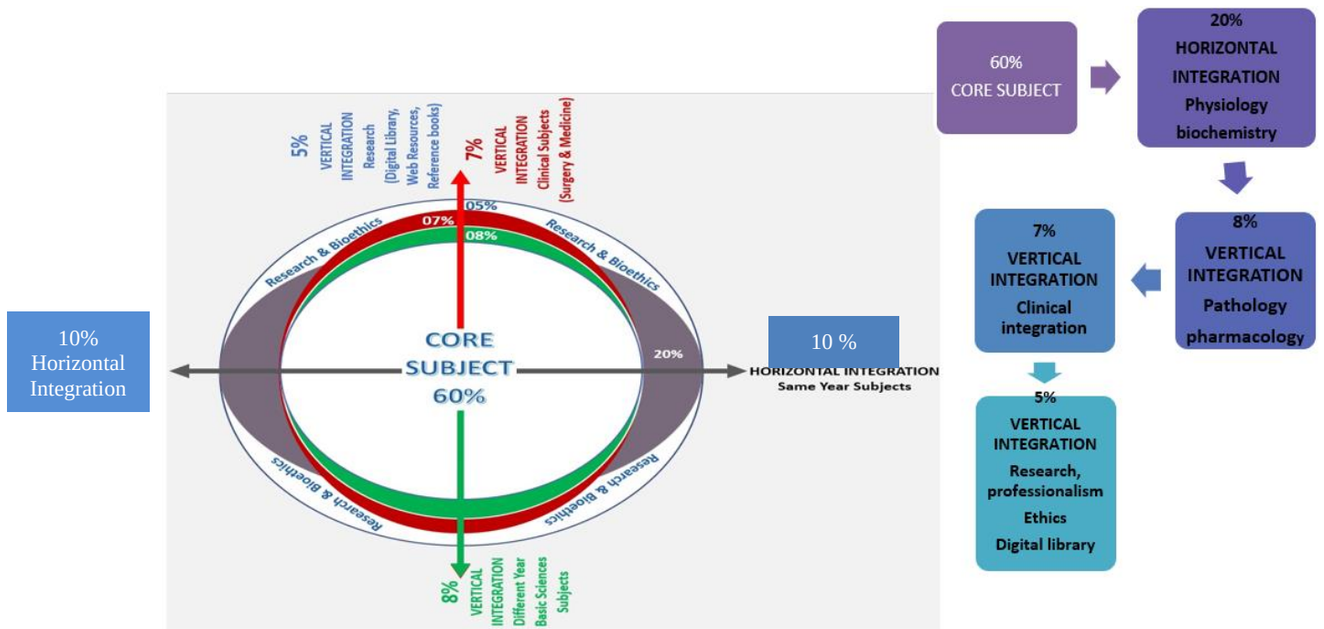


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementation of Small Group Discussions

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

Self-Directed Learning (SDL)

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

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

  ii.OSPE station

Case Based Learning (CBL)

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

Problem Based Learning (PBL)

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

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

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

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

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- 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

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topics	At the end of lecture students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Development				
Development of Pharyngeal apparatus	• Define the pharyngeal arch apparatus. • Describe components of pharyngeal arches. • Enlist derivatives of each of pharyngeal arch. • Describe the development of pharyngeal grooves and pharyngeal membranes. • Enlist the derivates of pharyngeal pouches and clefts. • Enlist common birth defects associated with pharyngeal apparatus. • Explain the embryological basis of these defects. • Understand the bio-physiological aspects of arches. • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C1 C2 C1 C2 C1 C1 C2 C2 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Development of face, nasal cavities	• Describe the developmental stages of face. • Discuss the role of neural crest cells in development of facial skeleton and pharyngeal arch derivatives. • Describe the molecular regulation of facial development. • Discuss the congenital anomalies of face. • Describe the development of nasal cavities and paranasal sinuses. • Understand the bio-physiological aspects of face & nasal cavities • Correlate with the clinical conditions.	C2 C2 C2 C3 C2 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE

	• understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C3 C3 C3		
Development of palate	• Discuss the development of primary and secondary palate. • Enlist the different varieties of cleft palate. • Discuss the etiology of cleft lip and cleft palate. • Describe embryological basis of craniofacial anomalies. • Understand the bio-physiological aspects of Palate. • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C1 C3 C3 C2 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Development of Eye I (Optic Cup & Retina)	• Describe the different embryological sources of development of eye. • Describe development of eye field on rostral neural tube. • Enlist derivatives of optic cup and development of retina. • Recall the differentiation of optic grooves and optic vesicle. • Discuss transformation of optic vesicles into optic cup. • Describe development of retina. • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care.	C2 C2 C1 C2 C2 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE

	• Read relevant research article.	C3		
Development of Eye II (Congenital defects)	• Describe formation of optic stalk. • Explain induction of optic placodes and lens primordia. • Enumerate neural crest cell and mesenchymal derived eye structures. • Enlist the molecular regulation of eye development. • Discuss birth defects of the eye. • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C2 C1 C1 C2 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Development of Ear	• Explain the development of optic placodes, otic pit, otic vesicle and otic capsule. • Enlist derivatives of otic vesicle and otic capsule. • Describe development of middle ear cavity and Eustachian tube from tubotympanic recess. • Describe the development of auditory ossicles, tympanic membrane and mastoid antrum. • Discuss development of external acoustic meatus. • Enlist commom congenital anomalies associated with ear development. • Describe the embryological basis of these anomalies • Correlate with the clinical conditions. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C1 C2 C2 C2 C1 C2 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Histology				
	• Describe the structural differences between outer, middle and inner ear.	C2 C2		

Histology of Ear	• Discuss the functions of different parts of ear. • Distinguish the auditory part of inner ear from the vestibular system. • Discuss their roles in hearing & balance • Describe the fuction of sensory hair cells. • Describe the appearance and function of spinal ganglia. • Understand the bio-physiological aspects of hearing • Correlate with the clinical conditions. • Understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C2 C2 C2 C3 C3 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Histology of Eye I (Fibrous & Vascular coat)	• Discuss the histology of different coats of the eyeball. • Describe histological sections of sclera & Cornea. • Describe the histology of choroid, ciliary body and iris. • Discuss histological sections of accessory structures of the eye. • Discuss the histological details of lens chamber & Vitroeus body. • Understand the bio-physiological aspects of vision • Correlate with the clinical conditions like glaucoma, cataract. • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C2 C2 C2 C2 C2 C3 C3 C3 C3	LGIS	MCQ SAQ VIVA OSPE
Histology of Eye II (Retina & Photoreceptors)	• Describe layers of retina • Discuss retinal pigment epithelium • Discuss histology& functions of neuronal retina. • Describe photoreceptors & rod cells. • Understand the bio-physiological aspects of Palate. • Correlate with the clinical conditions like retinal	C2 C2 C2 C2 C2 C3	LGIS	MCQ SAQ VIVA OSPE

	detachment • understand provision of curative and preventive health care measures. • Practice principles of bioethics. • Apply strategic use of AI in health care. • Read relevant research article.	C2 C3 C3 C3		

Physiology Large Group Interactive Session (LGIS)

Topics	Learning Objectives	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction	1. Explain the basic physiology of eye and its refractive surfaces 2. Discuss the physical principles of optics 3. Describe the mechanism of accommodation and its control 4. Describe the errors of refraction (Myopia, hyperopia, astigmatism and their correction by using different lens systems	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 177,185) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 85 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 374-378) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1086) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 627-635)	• https://www.britannica.com/science/human-eye • https://youtu.be/laEFdlxW0rA	1.C2 2. C2 3. C2 4.C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Introduction to Physiology of external ear, Middle ear	1.Describe physiology of external ear 2.Describe physiology of middle ear 3. Explain structure of middle ear	• Ganong's Review of Medical Physiology.25TH Edition.Section 02, (Chapter 10, Page 199) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 92 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 364-371) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 663)	• https://youtu.be/VRLm7cpmZSk • https://www.sciencedirect.com/science/article/pii/S0378595522002192	1. C2 2. C2 3. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina	1.Describe the formation and circulation of aqueous humor 2.Explain the mechanism of regulation of intraocular pressure 3.Define glaucoma and its treatment	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 178) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1094) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 635) (Chapter 51,Page 639)	• https://youtu.be/CKtLlOSh8o4 • https://youtu.be/7CFY4gxLnMY • https://my.clevelandclinic.org/health/body/24611-aqueous-humor-vitreous-humor	1. C2 2. C2 3. C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Functions of Inner ear, Physiology of Hearing	1. Describe the physiology of hearing and function of tympanic membrane and ossicular system. 2. Define impendence matching and attenuation reflex 3. Explain the conduction of sound waves in the cochlea	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 200,204) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 93	1. https://youtu.be/Ie2j7GpC4JU 2. https://youtu.be/qgdqp-oPb1Q 3. https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P	1. C2 2. C1 3. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,

		• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 371-374) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 664,669)	02025			MST based Assessment) OSPE
Photochemistry of vision &Physiological basis for photo transduction	1. Describe the physiology of retinal layers 2. Explain photochemistry of vision (rhodopsin - retinal) 3. Describe the mechanism of activation of Rods 4. Explain the photochemistry of color vision	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 182) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 87 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 379-387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 51, Page 641)	1. https://www.brainkart.com/article/Photochemistry-of-Eye-Vision_19676/ 2. https://youtu.be/k9lrM5iPNuY	1. C2 2. C2 3. C2 4. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Hearing abnormalities, Tuning fork tests and audiometry	1. Explain the auditory nervous pathway and abnormalities associated with it. 2. Describe the function of cerebral cortex in hearing.	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition(Chapter 62,Page 1067) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 672)	1. https://youtu.be/FgF91K7dU8Y 2. https://youtu.be/acYMy9b0F2A 3. https://www.uptodate.com/contents/image?imageKey=PC%2F58032&topicKey=PC%2F15359&source=see_link	1. C2 2. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Light & dark adaptation, Color vision, Neural functions of the retina, Central neurophysiology of vision, Neural pathways for analysis of visual information	1. Explain the neural circuitry of the Retina 2. Describe the physiology of visual pathway 3. Name the optic lesion associated with visual pathway	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 189,193) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 90 • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 51, Page 644)(Chapter 52,Page 653-657)	**1.** https://youtu.be/wiYmTAuVimg 2. https://youtu.be/cG5ZuK0_qtc 3. https://teachmeanatomy.info/head/cranial-nerves/optic-cnii/	1.C2 2.C2 3.C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Vestibular system	1. Describe the function of the organ of corti 2. Explain vestibular system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 209) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 95 • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,(Chapter 63,Page 1072)	1. https://www.physio-pedia.com/Vestibular_System 2. https://youtu.be/ryGMI3SpxCE 3. https://youtu.be/mcp7qLh8_5c	1. C2 2. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Lesions of visual pathway and its effects on field of vision, Movements of eye ball along with neural control	1. Explain the muscular control of eye movement 2. Describe the fixation movements of eye 3. Define accommodation reflex and pupillary light reflex 4. Name the optic lesion associated with visual pathway	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 190) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 374-378) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 52, Page 657)	1. https://youtu.be/evLyI35m8xU 2. https://teachmeanatomy.info/head/organs/eye/extraocular-muscles/	1. C2 2. C2 3. C2 4. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Sense of Taste and pathophysiology	• List the primary sensation of taste • Explain the mechanism of taste perception and its transmission into central nervous system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 221) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 100 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 361) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 675-679)	1. https://youtu.be/K9JSBzEEA0o 2. https://youtu.be/mFm3yA1nslE 3. https://www.sciencedirect.com/topics/nursing-and-health-professions/taste	1. C1 2. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Physiology of accommodation and clinical abnormalities	1. Define accommodation reflex and pupillary light reflex 2. Explain Clinical abnormalities associated with accommodation	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 188) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 52, Page 660)	1. https://youtu.be/xj0blrAx3_s 2. https://teachmephysiology.com/nervous-system/ocular-physiology/ocular-accommodation/	1. C1 2. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Sense of Smell and pathophysiology	1. List the primary sensation of smell 2. Describe the stimulation of olfactory cells and its transmission into central nervous system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 217) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 98 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 358) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 679)	1. https://www.alimentarium.org/en/fact-sheet/senses-smell 2. https://youtu.be/mFm3yA1nslE	3. C1 4. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Receptors and their classification	Define receptors. Classify Receptors	C1 C2	LGIS	MCQs, SAQs& Viva
Signal transduction G proteins	Explain the structure and function of G proteins	C2	LGIS	MCQs, SAQs & Viva
Signal transduction Second messenger system	Describe different types of second messengers	C2	LGIS	MCQs, SAQs & Viva
Neurotransmitters	Explain synthesis & functions of neurotransmitters. Discuss related clinical disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Role of vitamin A in vision	Explain the role of vitamin A in vision. Discuss related clinical abnormalities	C2 C3	LGIS	MCQs, SAQs & Viva

Anatomy Small Group Discussion (SGDs)

Topics	At the end of lecture students should be able to:	Learning Domains	Teaching Strategy	Assessment Tools
Facial & Superior Aspect of Cranium (Norma Frontalis & Verticalis.)	• Define boundaries of Norma frontalis and verticalis.	C1	Skills Lab	MCQ SAQ VIVA OSPE
	• Enumerate their muscle attachment.	C1		
	• Describe and features of its structure	C2		
	• Correlate with the clinical conditions.	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
External Surface of Cranial Base (Norma Basalis)	• Describe bones forming the base of skull	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Explain the details of anterior, middle and posterior part of base of skull	C2		
	• Identify different foramina and structures passing through them.	C1		
	• Explain the attachments and relations of base of skull.	C2		
	• Fracture of cranial base	C2		
	• Head injuries and intracranial hemorrhage	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Lateral & Occipital Aspect of Cranium (Norma Lateralis. & Occipitalis)	• Enlist various bones in normal lateralis. Describe the cranial and facial subdivision. Define external acoustic meatus,	C1	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss attachments of mastoid and styloid process.	C2		
	• Explain the boundaries of Norma occipitalis.	C2		
	• Identify different foramina and structures passing through them at the base.	C1		
	• Explain its attachments and relations.	C2		
	• Correlate with the clinical conditions	C3		

	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Mandible	• Describe the anatomical features of mandible	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe parts of mandible	C2		
	• Explain structural features of each part	C2		
	• Enlist attachments of each part	C1		
	• Describe blood and nerve supply of mandible.	C2		
	• Interpret applied anatomy of mandible.	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Temporomandibular joint (TMJ)	• Discuss the temporomandibular joint, its type, formation and neurovascular supply.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe the movement's axis and muscles involved.	C2		
	• Correlate clinically disorders of the temporo- mandibular joint.	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Face	• Discuss limits of face.	C2		
	• Tabulate the muscles of face. (Superficial and deep) origin, insertion, nerve supply and action.	C2		
	• Discuss their role in facial expression.	C2		

	• Describe facial nerve palsy upper and lower motor neuron.	C3	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss nerve supply of face.	C1		
	• Discuss superficial and deep vasculature of face.	C1		
	• Map the outline of facial artery and vein on simulated patient / model.	P+A		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Scalp and temple	• Explain the extent of scalp	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe the Scalp layers, nerves &vessels	C2		
	• Discuss the clinical correlates like scalp injuries and scalp wounds.	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Orbit	• Discuss its location, surfaces and borders	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe its muscular and ligamentous attachment.	C2		
	• Describe eyeball movements in relation to recti and oblique muscles.	C2		
	• Discuss role of levator palpebrae superioris	C2		
	• Discuss clinical correlations of different coats of eyeball.	C2		
	• Explain extent and subdivisions of pharynx	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		

Eyeball	• Describe anatomy of eyeball with suspensory apparatus.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss different coats of eyeball with their nerve and blood supply.	C2		
	• Discuss refractive media and compartments of eyeball.	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Eyelid & lacrimal app	• Discuss the different components of lacrimal apparatus	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe the lacrimal gland and its neurovascular supply	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Parotid & Temporal Region	• Describe boundaries of parotid region.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss surfaces, innervation and relations of parotid gland.	C2		
	• Understand the bio-physiological aspects of arches	C2		
	• Map the outline of parotid gland and duct on simulated patient / model.	P+As		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures.	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Infra temporal Fossa	• Discuss the boundaries and contents of temporal region.	C2	Skills Lab	MCQ SAQ VIVA
	• Describe the temporalis muscle and its relations	C2		
	• Enumerate the boundaries and contents of infratemporal region.	C1		
	• Discuss muscles of mastication	C2		
	• Correlate with the clinical conditions	C3		

	• understand provision of curative and preventive health care measures.	C3		OSPE
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Pterygopalatine Fossa	• Discuss the boundaries and contents of pterygopalatine fossa.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss the communications of pterygopalatine fossa.	C2		
	• Understand the bio-physiological aspects of arches	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
External & Midlle Ear	• Describe parts of the ear.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Discuss walls and contents of external and middle ear,	C2		
	• Discuss their blood and nerve supply.	C2		
	• Explain pharynges tympanic tube, mastoid antrum and air cells.	C2		
	• Relation of chorda tympani and facial nerve.	C1		
	• Discuss Mastoiditis and tubal blockage	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Inner Ear	• Discuss membranous and bony labyrinth.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Describe internal acoustic meatus.	C2		
	• Explain the course of 7th and 8th cranial nerve in detail.	C2		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		

	• Read relevant research article	C3		
Nose & Paranasal Sinuses	• Discuss anatomy and location of paranasal air sinuses separately.	C2	Skills Lab	MCQ SAQ VIVA OSPE
	• Define & list names of paranasal sinuses	C1		
	• Describe their blood and nerve supply	C2		
	• Describe functions of paranasal sinuses.	C2		
	• Discuss drainage of paranasal sinuses.	C2		
	• Identify carious sinuses in radiographs	C1		
	• Describe anatomy of external nose and features of nasal septum, side and anatomical position.	C2		
	• Describe details of olfactory receptors and formation of olfactory nerve.	C2		
	• Discuss blood and nerve supply of external nose and nasal septum.	C2		
	• Explain functions of nose.	C2		
	• Discuss in detail clinical correlates of external nose and nasal septum. Lateral nasal wall and their importance.	C2		
	• Discuss on clinical importance of nasal cavity.	C3		
	• Correlate with the clinical conditions	C3		
	• understand provision of curative and preventive health care measures	C3		
	• Practice principles of bioethics	C3		
	• Apply strategic use of AI in health care	C3		
	• Read relevant research article	C3		
Cross Sectional Anatomy	Identify the structures at • Sagittal section of head • Level passing through the vestibule of the nose, the inferior nasal the temporomandibular joint , the pons and the occipital lobe of the cerebrum.	C3		

Physiology Small Group Discussion (SGDs)

Topics	Learning Objectives	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Physiology of Vision	1. Explain the basic physiology of eye and its refractive surfaces 2. Discuss the physical principles of optics 3. Describe the mechanism of accommodation and its control 4. Describe the errors of refraction (Myopia, hyperopia, astigmatism and their correction by using different lens systems	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 177,185) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 85 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 374-378) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1086) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 627-635)	1. https://www.britannica.com/science/human-eye 2. https://youtu.be/laEFdlxW0rA	1.C2 2. C2 3. C2 4.C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Physiology of Hearing	1. Describe the physiology of hearing and function of tympanic membrane and ossicular system. 2. Define impendence matching and attenuation reflex 3. Explain the conduction of sound waves in the cochlea	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 200,204) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 93 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 371-374) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 664,669)	1. https://youtu.be/Ie2j7GpC4JU 2. https://youtu.be/qgdqp-oPb1Q 3. https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02025	1. C2 2. C1 3. C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Sense of Taste and Smell	1. List the primary sensation of taste 2. Explain the mechanism of taste perception and its transmission into central nervous system 3. List the primary sensation of smell 4. Describe the stimulation of olfactory cells and its transmission into central nervous system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 221) (Chapter 11, Page 217) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 100 , chapter 3, page 98 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 361) (Chapter 10,Page 358) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 675-679) . (Chapter 54, Page 679)	1. https://youtu.be/K9JSBzEEA0o 2. https://youtu.be/mFm3yA1nslE 3. https://www.sciencedirect.com/topics/nursing-and-health-professions/taste 4. https://www.alimentarium.org/en/fact-sheet/senses-smell 5. https://youtu.be/mFm3yA1nslE	1.C1 2.C2 3.C1 4.C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Receptors & G proteins	Explain different types of receptors and G proteins	C2	SGD	MCQs, SAQs& Viva
Neurotransmitters	Discuss synthesis, functions & clinical significance of neurotransmitters	C2	SGD	MCQs, SAQs & Viva

Anatomy Self Directed Learning (SDL)

Topics	Learning objectives	Learning Resources
Norma Frontalis and Verticalis.	• Define boundaries of Norma frontalis and verticalis. • Enumerate their muscle attachment. • Describe and features of its structure • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 823-8291). • https://youtu.be/rr3-V7Qhf8E • https://youtu.be/35Y71cRBqs8
External Surface of Cranial Base Norma Basalis.	• Describe bones forming the base of skull • Explain the details of anterior, middle and posterior part of base of skull • Identify different foramina and structures passing through them. • Explain the attachments and relations of base of skull. • Fracture of cranial base • Head injuries and intracranial hemorrhage • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, P829-836). • https://youtu.be/6ZjJPLOJ0N8 • https://youtu.be/75lLaDFJTP4 • https://youtu.be/fteiKT_wQDE
Lateral & Occipital Aspect of Cranium Norma Lateralis. Norma Occipitalis	• Enlist various bones in normal lateralis. Describe the cranial and facial subdivision. • Define external acoustic meatus, • Discuss attachments of mastoid and styloid process. • Explain the boundaries of Norma occipitalis. • Identify different foramina and structures passing through them at the base. • Explain its attachments and relations. • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 827-829). • https://youtu.be/tkpzPMXzwiM • https://youtu.be/9Msvtw5CjFY
Mandible	• Define location of mandible • Describe parts of mandible • Explain structural features of each part • Enlist attachments of each part • Describe blood and nerve supply of mandible. • Interpret applied anatomy of mandible. • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Pae 827). • https://youtu.be/_lHosB-c_fQ • https://youtu.be/Qc0ysewMJg4

Temporomandibular joint	• Discuss the temporomandibular joint, its type, formation, and neurovascular supply. • Describe the movement's axis and muscles involved. • Correlate clinically disorders of the temporo- mandibular joint. • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 916-920). • https://youtu.be/6tJsi5oghNY • https://youtu.be/0BKU04QLzV0
Orbit	• Discuss its location, surfaces and borders • Describe its muscular and ligamentous attachment. • Describe eyeball movements in relation to recti and oblique muscles. • Discuss role of levator palpebrae superioris • Discuss extraocular muscles of orbit. • Supporting apparatus of eyeball. • Nerves of eye ball • Vasculature of orbit • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 889-906). • https://youtu.be/HKEA4p5k66U • https://youtu.be/Oz4kGGiJNrA
Temporal Region	• Describe boundaries of parotid region. • Discuss surfaces, innervation and relations of parotid gland. • Understand the bio-physiological aspects of arches • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 914-916). • https://youtu.be/HB6bN-rs2NU • https://youtu.be/zo7DDK-h1Mg
Infra temporal Fossa	• Discuss the boundaries and contents of temporal region. • Describe the temporalis muscle and its relations • Enumerate the boundaries and contents of infratemporal region. • Discuss muscles of mastication • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 916-926). • https://youtu.be/z2GlluoOtMY • https://youtu.be/ixCCX46XWHA
Pterygopalatine Fossa	• Discuss the boundaries and contents of pterygopalatine fossa. • Discuss the communications of pterygopalatine fossa. • Understand the bio-physiological aspects of arches • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 951-954) • https://youtu.be/9taW-Th3ycc • https://youtu.be/o_JbDynMZjo

External & Middle Ear	• Describe parts of the ear. • Discuss walls and contents of external and middle ear , • Discuss their blood and nerve supply. • Explain pharyngo tympanic tube, mastoid antrum and air cells. • Relation of chorda tympani and facial nerve. • Discuss Mastoiditis and tubal blockage • Read relevant research article	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 7, Page 966-973). • https://youtu.be/VRLm7cpmZSk • https://youtu.be/unDpXRE_PPA

Physiology Self Directed Learning (SDL)

Topics Of SDL	Learning Objective	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
ON CAMPUS Introduction to Physiology of external ear, Middle ear	1.Describe physiology of external ear 2.Describe physiology of middle ear 3. Explain structure of middle ear	• Ganong's Review of Medical Physiology.25TH Edition.Section 02, (Chapter 10, Page 199) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 92 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 364-371) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 663)	1. https://youtu.be/VRLm7cpmZSk **2.** https://www.sciencedirect.com/science/article/pii/S0378595522002192	1. C2 2. C2 3. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Functions of Inner ear, Physiology of Hearing	1.Describe the physiology of hearing and function of tympanic membrane and ossicular system. 2.Define impendence matching and attenuation reflex 3. Explain the conduction of sound waves in the cochlea	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 200,204) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 93 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 371-374)	1. https://youtu.be/Ie2j7GpC4JU 2. https://youtu.be/qgdqp-oPb1Q 3. https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02025	1.C2 2.C1 3. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment)

		• Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 664,669)				OSPE SDL Evaluation
Hearing abnormalities, Tuning fork tests and audiometry	1.Explain the auditory nervous pathway and abnormalities associated with it. 2. Describe the function of cerebral cortex in hearing.	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition(Chapter 62,Page 1067) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 53, Page 672)	1. https://youtu.be/FgF91K7dU8Y 2. https://youtu.be/acYMy9b0F2A 3. https://www.uptodate.com/contents/image?imageKey=PC%2F58032&topicKey=PC%2F15359&source=see_link	1.C2 2. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
OFF CAMPUS Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction	1. Explain the basic physiology of eye and its refractive surfaces 2. Discuss the physical principles of optics 3. Describe the mechanism of accommodation and its control 4. Describe the errors of refraction (Myopia, hyperopia, astigmatism and their correction by using different lens systems	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 177,185) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 85 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Sensory Physiology (Chapter 10,Page 374-378) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1086) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 627-635)	• https://www.britannica.com/science/human-eye https://youtu.be/laEFdlxW0rA	1.C2 2. C2 3. C2 4.C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Fluid system of the eye Intraocular pressure, Function of the Structural	1.Describe the formation and circulation of aqueous humor 2.Explain the mechanism of regulation of intraocular pressure	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 178) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,Vision(Chapter 64,Page 1094)	• https://youtu.be/CKtLlOSh8o4 • https://youtu.be/7CFY4gxLnMY • https://my.clevelandclinic.org/health/body/24611	1. C2 2. C2 3. C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based

Elements of the Retina	3.Define glaucoma and its treatment	• Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 50, Page 635) (Chapter 51,Page 639)	-aqueous-humor-vitreous-humor			Aseessment, MST based Assessment) OSPE SDL Evaluation
Photochemistry of vision &Physiological basis for photo transduction	1. Describe the physiology of retinal layers 2. Explain photochemistry of vision (rhodopsin - retinal) 3. Describe the mechanism of activation of Rods 4. Explain the photochemistry of color vision	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 09, Page 182) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 87 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 379-387) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 51, Page 641)	3. https://www.brainkart.com/article/Photochemistry-of-Eye-Vision_19676/ https://youtu.be/k9lrM5iPNuY	1. C2 2. C2 3. C2 4. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Vestibular system	1. Describe the function of the organ of corti 2. Explain vestibular system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 10, Page 209) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 95 Physiological Basis of Medical Practice by Best & Taylor's.13th Edition,(Chapter 63,Page 1072)	4. https://www.physio-pedia.com/Vestibular_System 5. https://youtu.be/ryGMI3SpxCE https://youtu.be/mcp7qLh8_5c	1. C2 2. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
	1. List the primary sensation of taste 2. Explain the mechanism of taste perception and its	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 221) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 100	3. https://youtu.be/K9JSBzEEA0o 4. https://youtu.be/mFm3yA1nslE	1.C1 2. C2		MCQ SEQ VIVA VOCE

Sense of Taste and pathophysiology	transmission into central nervous system	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 361) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 675-679)	5. https://www.sciencedirect.com/topics/nursing-and-health-professions/taste		SDL	MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation
Sense of Smell and pathophysiology	1. List the primary sensation of smell 2. Describe the stimulation of olfactory cells and its transmission into central nervous system	• Ganong's Review of Medical Physiology.25TH Edition.Section 02,Vision (Chapter 11, Page 217) • Physiology by Linda S. Costanzo 6th Edition,Neurophysiology chapter 3, page 98 • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Sensory Physiology (Chapter 10,Page 358) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 10. (Chapter 54, Page 679)	6. https://www.alimentarium.org/en/fact-sheet/senses-smell 7. https://youtu.be/mFm3yA1nslE	1.C1 2.C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE SDL Evaluation

Biochemistry Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning resources
Neurotransmitter	• Explain synthesis & functions of neurotransmitters • Discuss related clinical disorders	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 13, 21 page 166 & 317 - 319) • Use digital library ◦ https://www.khanacademy.org/science/biology/human-biology/neuron-nervous-system/a/neurotransmitters-their-receptors ◦ https://youtu.be/LOHKVp8hn7o ◦ https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=neurotransmitters&oq=Neurotransmitter#:~:text=Axelrod%C2%A0%2D%20Scientific%20American%2C%201974%20%2D%20JSTOR
Receptors	• Define receptors • Classify Receptors	• Text book of Biochemistry Lehninger 8th edition (Chapter 12, page 439- 440) • Use digital library ◦ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4817805/ ◦ https://www.sinobiological.com/research/receptors/what-are-receptors#:~:text=Receptors%20are%20proteins%2C%20usually%20cell,cells%2C%20monocytes%20and%20stem%20cells. ◦ https://youtu.be/vjFes5I07c0
G - Proteins	• Explain the structure and function of G proteins	• Harper's Illustrated Biochemistry 32th edition (Chapter 42, page 503 – 505) • Use digital library ◦ https://youtu.be/GHwMJnxaiys ◦ https://www.britannica.com/science/G-protein-coupled-receptor • https://www.nature.com/scitable/topicpage/gpcr-14047471/

Role of Vitamin A in Vision	• Explain the role of vitamin A in vision
	• Discuss related clinical abnormalities
		• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 28, page 433-434)
		• Use digital library
		  ◦ https://www.bing.com/search?pglt=41&q=role+of+vitamin+a+in+vision&cvid=dddf1e33ab0a45318ddff31539f0445a&aqs=edge.2.69i57j0l8.11403j0j1&FORM=ANSPA1&PC=U531#:~:text=https%3A//pubmed.ncbi.nlm.nih.gov/27830507
		  ◦ https://www.bing.com/search?pglt=41&q=role+of+vitamin+a+in+vision&cvid=dddf1e33ab0a45318ddff31539f0445a&aqs=edge.2.69i57j0l8.11403j0j1&FORM=ANSPA1&PC=U531#:~:text=Vision%20%E2%80%93%20Introduction%20to%20%E2%80%A6-,https%3A//mtsu.pressbooks.pub/.../8f%2Dvision%2Dvitamins,-Web
		  ◦ https://youtu.be/wo7i9bFs4Bw

Second Messenger System	• Describe different types of second messengers	• Lippincott Illustrated reviews of biochemistry 8th edition (Chapter 8, page 103- 105) • Harper's Illustrated Biochemistry 32th edition (Chapter 42, page 506 – 509) • Use digital library • https://www.britannica.com/ • https://youtu.be/PzA5Z3DXfrQ

Histology Practicals Skill Laboratory (SKL)

Topics	At the End of Demonstration Student Should Be Able To	Learning Domains	Teaching Strategy	Assessment Tools
Cornea	• Identify the histological slide cornea. • Illustrate the microscopic picture of Cornea. • Enlist two points of identification of each • Read a relevant research article	P C2 C1 C3	Skill Lab	OSPE

Retina	• Identify the histological slide of retina. • Illustrate the microscopic picture of retina • Enlist two points of identification • Read a relevant research article	P C2 C1 C3	Skill Lab	OSPE
Ear	• Identify the histological slide of ear • Illustrate the microscopic picture of ear • Enlist two points of identification of each • Read a relevant research article	P C2 C1 C3	Skill Lab	OSPE

Physiology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives	Reference	Learning Domains	Learning Strategy	Assessment Tools
Estimation of Visual Acuity	• Apparatus identification • Principle • Procedure • Precautions • Recall normal value of visual acuity • Use of Snellen's chart & jaeger's chart • Recall the different Errors of refraction	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	P C1 P C1 C1 P C1	Practicals/ skill lab	Viva Voce Ospe Video Assissted Assessment
Examination of 8th Cranial Nerve (vestibular function)	• Apparatus identification • Principle • Procedure • Precautions • Use various hearing tests & interpretation of their results • Recall deafness, its types & causes	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	P C1 P C1 C1 C1	Practicals/ skill lab	Viva Voce Ospe Video Assissted Assessment

XPerformance of Hearing Test (cochlear function)	• Apparatus identification • Principle • Procedure • Precautions • Use various hearing tests & interpretation of their results • Recall deafness, its types & causes	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	P C1 P C1 C1 C1	Practicals/ skill lab	Viva Voce Ospe Video Assissted Assessment

Biochemistry Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Interpetation of Labs Reports	Write and interpret report	P	Skill Lab	OSPE
Biochemical Analysis of CSF	Write and interpret biochemical basis of CSF	P	Skill Lab	OSPE
Biochemical Analysis of Aqueous Humor	Write and interpret biochemical basis of aqueos humor and its related disorders	P	Skill Lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **Case Base Learning (CBLs)**
- **Problem Base Leaning (PBLs)**
- **Vertical Integration LGIS**

Case Based Learning Objectives (CBL)

Subjects	Topics	At the end of the session the student should be able to	Learning Domains
Anatomy	• Extra dural Haemorrhage (Norma lateralis & occipitalis)	Apply basic knowledge of subject to study clinical case.	C3
	• Occulo Motor nerve palsy (Extra ocular muscles)	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• Night Blindness	Apply basic knowledge of subject to study clinical case.	C3

Vertical Integration LGIS

Radiology

Topic	At The End Of Lecture, Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
General radiologic concepts	• Categorize different tissues from most to least opaque on x-ray including bone, soft tissue, air, metal, and fat.	C2	LGIS	MCQs

ENT

Topic	At The End Of Lecture, Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
Deafness	• Know various cases of deafness	C1	LGIS	MCQs,
	• Understand the etiology, Pathology of various cases of deafness in external middle and internal ear and to know how to treat them.	C2		
DNS & Rhinitis	• Should define the turns	C1	LGIS	MCQs,
	• Know various causes of DNS and Rhinitis	C1		
	• Must be able to know treatment of all.	C1		

Nasal polyp	• Know definition of polyp	C1	LGIS	MCQs,
	• Know different types of nasal Polyps, their etiology, pathophysiology and treatment	C1		
	• Know latest management	C1		
Diseases of External Nose	• Know various diseases of external nose, their etiology	C1	LGIS	MCQs,
	• Pathophysiology and know how to treat them	C1		
Ear Discharge	• Know Various cases of ear discharge	C1	LGIS	MCQs,
	• Understand the etiology, Pathology of various cases of ear discharge in external and middle ear.	C2		
	• Know how to treat these causes.	C1		
Facial fractures	• Classify facial fractures	C1	LGIS	MCQs,
	• Enumerate treatment options for facial fractures	C2		
Sinusitis	• Classify Sinusitis	C1	LGIS	MCQs,
	• Enlist clinical features of sinusitis.	C2		
Hearing Problems in Children	• Define deafness	C1	LGIS	MCQs,
	• State the aetiology of hearing loss	C1		
	• Elaborate the types of hearing loss	C1		
	• Discuss the investigations of hearing loss	C2		
	• Describe the treatment options for hearing loss patients.	C2		

Eye

Topic	At The End Of Lecture, Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
Refractive Errors	Refractive Errors	C1	LGIS	MCQs,
	• Types			
	• Treatment			
	ColourVison			
	• Types			
	• Inheritence			

	• Gender Predisposition			
	Night Blindness	C1		
	• Etiology			
	• Treatment			
Glaucoma	Glaucoma	C1	LGIS	MCQs,
	• What is Glaucoma			
	• Classification			
	• Treatment			
Cataract	Cataract	C1	LGIS	MCQs,
	• Define			
	• Types of cataract			
	• Surgical procedures			
Ocular trauma & Ocular Procedures	Ocular Trauma	C1	LGIS	MCQs,
	• Blunt			
	• Penetrating			
	• Chemical Burns			
	• Laceration			
	Ocular Procedures	C1		
	• Cataract surgeries			
	• Glaucoma Surgeries			
	• Laser And refractive Surgeries			
Conjunctivitis	• Define conjunctivitis	C1	LGIS	MCQs,
	• Discuss the causes & types			
	• Explain management in detail			

List of Special Senses Module Vertical Courses Lectures

Sr. No	Day / Date	Week	Time	Department / Subject	Topic	Teachers
1.	18-09-2024 Wednesday	1st	11:20am-12:10pm	EYE	Cataract & Glaucoma	Dr. Sidra Jabeen (Even) 0334 5557753 Dr. Ambreen (Odd) 0331 5567265
2.	23-09-2024 Monday	2nd	10:30am-11:20am	ENT	Nasal polyp& Sinusitis & Diseases of External Nose	Dr. Sundas Masood (Even) 0332-5350793 Dr. Ashar (Odd) 0300-5164684
3.	26-09-2024 Thursday	2nd	11:20am-12:10pm	EYE	Conjunctivitis Chalazion	Dr. Salman (Even) 0300 5357604 Dr. Wajeeha (Odd) 0345 5206729
4.	27-09-2024 Friday	2nd	8:00 AM – 9:00 AM	EYE	Ocular trauma & Ocular Procedures	Dr. Wajeeha (Even) 0345 5206729 Dr. Saira (Odd) 0334 5399129
5.	30-09-2024 Monday	3rd	10:30am-11:20am	Anatomy, Physiology, ENT	JOINT SESSION	Anatomy, Physiology, ENT
6.	30-09-2024 Monday	3rd	11:20am-12:10pm	Radiology	General radiologic concepts	Dr. Saba (Even) 0334-8518462 Dr. Maryam Azam (Odd) 0331-5314585
7.	01-10-2024 Tuesday	3rd	8:00am-9:20am	ENT	Deflected Nasal Septum (DNS) & Rhinitis	Dr. Tabsum (Even) 0333-5825335 Dr. Fatima (Odd) 0343-5150042
8.	01-10-2024 Tuesday	3rd	11:20am-12:10pm	Eye	Reflective Error & Strabismus	Dr. Sidra Jabeen (Even) 0334 5557753 Dr. Salman (Odd) 0300 5357604

9.	03-10-2024 Thursday	3rd	11:20am-12:10pm	ENT	Otitis Media Ear Discharge &Hearing Problems in Children	Dr. Haitum (Even) 0321-5843974 Dr. Fatima (Odd) 0343-5150042
10.	04-10-2024 Friday	3rd	9:00 AM – 10:00 AM	ENT	Facial fractures	Dr. Nida (Even) 0335-5914050 Dr. Farhat (Odd) 0333-5985350

SECTION – IV

Spiral Courses

Content

- **Longitudinal Themes**
    - **Pak Studies/Islamiyat**
    - **Family Medicine**
    - **Behavioral Sciences**

Family Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Approach to a patient with earache	• Define earache.	C1	LGIS	MCQs
	• Discuss various types of earache.	C2		
	• Discuss the signs and symptoms of a patient with earache.	C2		
	• Discuss the workup for diagnosis of different types of earache.	C2		
	• Discuss management of Various types of earache.	C2		
	• Appreciate approach to a patient with earache.	C3		

Behavioral Sciences

Topic	At The End Of Lecture, Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
Perception	• To be able to define perception and basic perceptual abilities. • To identify abnormalities of perceptions and their role in disease causation	C2	LGIS	MCQs,
Sleep and arousal	• To be able to understand the physiology of sleep. Disorders of sleep and their management	C2	LGIS	MCQs,

Introduction to Spiral Courses

The Holy Quran Translation

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

Bioethics

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

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

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

Professionalism

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

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

Communication Skills

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

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

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

Behavioral Sceinces

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

Family Medicine

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

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

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

Artificial Intelligence

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

Integrated Undergraduate Research Curriculum

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

Entrepreneurship

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

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

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

Digital Literacy Module

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

Early Clinical Exposure (ECE)

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

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

Practical experiences can enhance long-term retention of knowledge as students are able to connect theoretical learning with clinical experiences.: Early clinical experiences often involve working in multidisciplinary teams, which fosters a sense of collaboration and understanding of different roles within healthcare.

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

List of Special Senses Module Spiral Courses Lectures

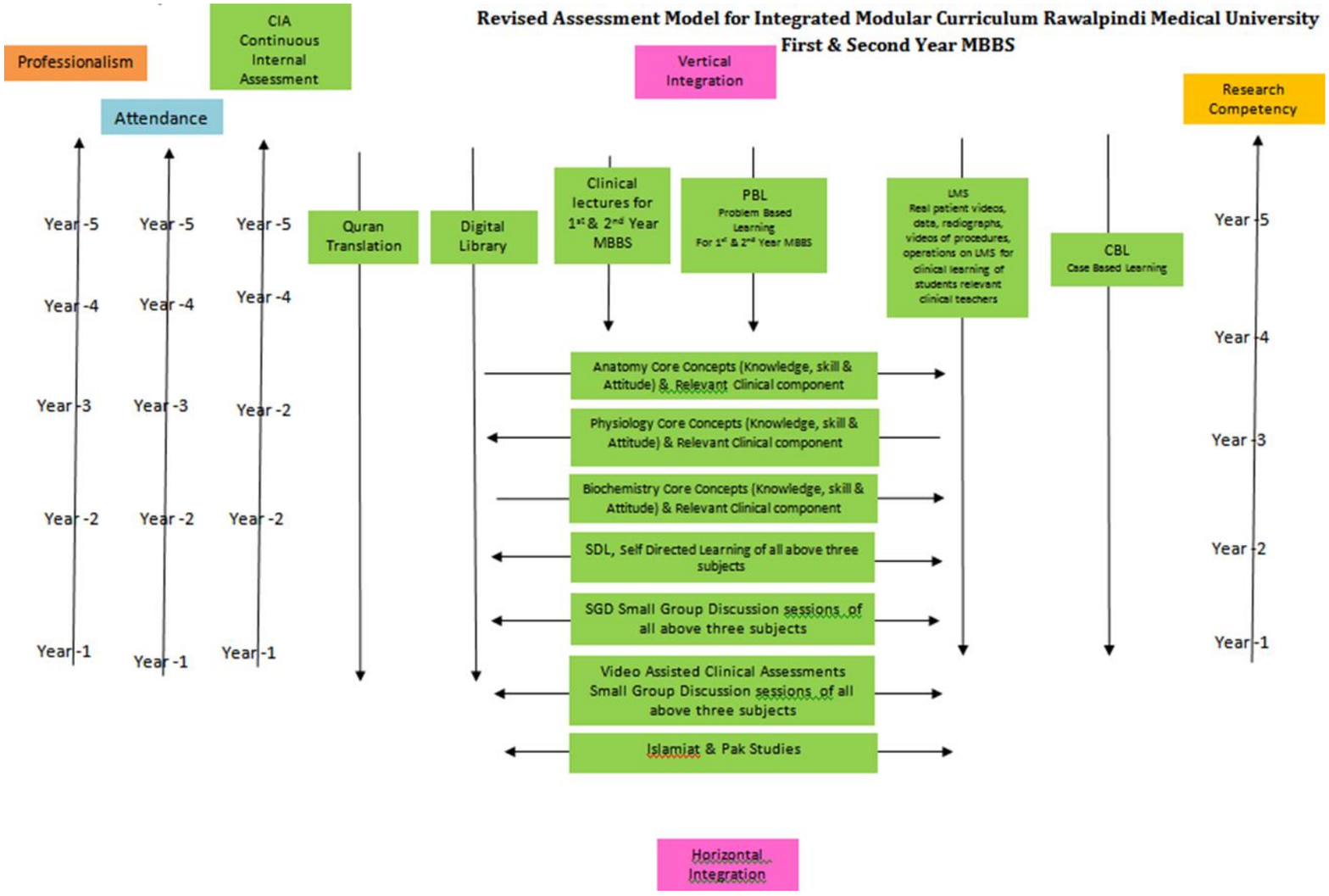
Sr. No	Day / Date	Week	Time	Department / Subject	Topic	Teachers
	16-09-2024 Monday	1st	11:20am-12:10pm	BEHAVIORAL SCIENCES	Perception and emotions	Dr. Mahmood Ali (Even) (0333-8891487) Dr. Sadia Yasir (Odd) (0333-4746639)
2.	20-09-2024 Friday	1st	10:00 – 11:00AM	Islamiayat	Imaniat (Hadith)	Mufti Naem Sherazi (0300-5580299)
3.	21-09-2024 Saturday	1st	01:10pm -02:00pm	PAK STUDIES	Pakistan ki jughrafiyai ahmiyat aur difai haisiyat	Qari Aman Ullah (0346-7598528)
4.	21-09-2024 Saturday	1st	10:30am-11:20am	Family Medicine	Approach to a patient with ear ache	Dr. Sadia 0336-5091229
5.	25-09-2024 Wednesday	2nd	11:20am-12:10pm	BEHAVIORAL SCIENCES	Sleep & Arousal	Dr. Mahmood Ali (Odd) (0333-8891487) Dr. Sadia Yasir (Even) (0333-4746639)
6.	27-09-2024 Friday	2nd	10:00 – 11:00AM	Islamiayat	Zimidaari aur taluqaat	Mufti Naem Sherazi
7.	28-09-2024 Saturday	2nd	01:10pm -02:00pm	PAK STUDIES	Pakistan k hamsaya mumalik se taluqaat / Aqliayt ka Tahafooz	Qari Aman Ullah (0346-7598528)
8.	02-10-2024 Wednesday	3rd	11:20am-12:10pm	ISLAMIAT	Halal ke Ahmiat	Mufti Naem Sherazi (0300-5580299)
9.	04-10-2024 Friday	3rd	10:00 – 11:00AM	ISLAMIAT	Uswa-e-hasna	Mufti Naem Sherazi
10.	05-10-2024 Saturday	3rd	01:10pm -02:00pm	PAKSTUDIES	Pakistan k qudrati wasail-maadniyaat / Zaraat	Qari Aman Ullah (0346-7598528)

SECTION - V

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in CNS Module**



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

60% and above is passing marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%	81 - 100%

90% is eligibility criteria for appearing professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular,modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given theshare according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based),modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in Special Senses Module

Block	Sr #	Module – 1 Special Senses Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-III	1	Weekly LMS Based Assessments (Anatomy, Physiology & Biochemistry)	Formative	2 Hours	3 Hours 45 Minutes	3 Hours	2 Formative	6 Summative
	2	End Module Examinations (SEQ, SAQ, EMQ & MCQs Based)	Summative	2 Hours				
	3	Audio Visual (AV) OSPE (10 slides) 5 minutes per slide	Summative	50 Minutes				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures & Spiral Curriculums	Formative	60 Minutes				

Learning Resources

Subject	Resources
Anatomy	**A. Gross Anatomy** 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III **B. Histology** 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. **C. Embryology** 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition. **D. Website** 1. https://my.clevelandclinic.org/health/articles/9117-male-reproductive-system 2. https://teachmeanatomy.info/pelvis/female-reproductive-tract/ 3. https://www.kenhub.com/en/start/pelvis-and-perineum **E. Youtube** 1. https://www.youtube.com/watch?v=G0ZuCilCu3E 2. https://www.youtube.com/watch?v=50iuBgTQCrQ **F. HEC Digital Library** 1. https://www.sciencedirect.com/science/article/pii/S0015028220304350 2. https://link.springer.com/article/10.1007/s11356-021-16581-9 3. https://link.springer.com/chapter/10.1007/978-3-030-30766-0_25 4. https://onlinelibrary.wiley.com/doi/abs/10.1111/and.13712
Physiology	**A. Textbooks** 1. Textbook of Medical Physiology by Guyton and Hall 14th edition. 2. Ganong 'S Review of Medical Physiology 26th edition. **B. Reference Books** 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition. **C. Website** **1.** https://teachmephysiology.com/reproductive-system/ (Reproductive physiology)

	2. https://courses.lumenlearning.com/wm-biology2/chapter/the-ovarian-cycle-the-menstrual-cycle-and-menopause/ 3. https://zerotofinals.com/obgyn/reproductivesystem/physiologyinpregnancy/ https://www.ibbiotech.com/en/info/sperm-capacitation/ **D. Youtube** 1. https://youtu.be/2_owp8kNMus (Female Reproductive system) 2. https://youtu.be/V9a2AQSJIMc (Dr Najeeb Lectures) https://youtu.be/rYVGjbzmAtg (Dr Najeeb lectures) **E. HEC Digital Library** 1. https://www.sciencedirect.com/science/article/abs/pii/S1532045621000296 2. https://www.sciencedirect.com/science/article/abs/pii/S001502822200485X **F. Physiology Journals** 1. https://rupress.org/jgp/article/5/4/441/30794/THE-RATE-OF-DECLINE-OF-MILK-SECRETION-WITH-THE 2. https://www.annualreviews.org/doi/abs/10.1146/annurev.ph.36.030174.001515?journalCode=physiol 3. https://zerotofinals.com/obgyn/reproductivesystem/physiologyinpregnancy/ https://www.msdmanuals.com/home/women-s-health-issues/normal-pregnancy/stages-of-development-of-the-fetus
Biochemistry	**Textbooks** 1. Harper's Illustrated Biochemistry 32th edition. 2. Lipponcott biochemistry 8th edition **B. Reference Books** 1.Lehninger Principle of Biochemistry 8th edition. 2. Biochemistry by Devlin 7th edition. **C. Website** • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-function • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-functionn • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/purine-synthesis • https://www.sciencedirect.com/topics/medicine-and-dentistry/purine-metabolism-disorder • https://www.cliffsnotes.com/study-guides/biology/biochemistry-ii/purines-and- • https://www.healio.com/hematology-oncology/learn-genomics/genomics-primer/regulation-of-gene-expression-in-eukaryote **D. Youtube**

	• https://www.youtube.com/watch?v=A5u_TY1A0t8 • https://www.youtube.com/watch?v=A5u_TY1A0t8 • https://www.youtube.com/watch?v=VXWyWzbigrg • https://www.youtube.com/watch?v=e2KFVvI8Akk • https://www.youtube.com/watch?v=n7Uec8Jtr4E • https://www.youtube.com/watch?v=J9jhg90A7Lw **E. HEC Digital Library** • https://www.ncbi.nlm.nih.gov/books/NBK29/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3243375/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4215161/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC378357/ • https://www.nature.com/scitable/topicpage/regulation-of-transcription-and-gene-expression-in-1086/ **F. Biochemistry Journals** • https://academic.oup.com/bmb/article/11/2/126/256755 • https://www.sciencedirect.com/topics/medicine-and-dentistry/gonadal-hormone

SECTION - VI

Time Table

Integrated Clinically Oriented Modular Curriculum for Second Year MBBS

Special Senses Module Time Table

Second Year MBBS

Session 2023-2024

Batch- 50

Special Senses Module Team

Module Name	:	Special Senses Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Minahil Haq
Co-coordinator	:	Dr. Romessa Naeem
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Minahil Haq (Senior Demonstrator of Anatomy)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Romessa (Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Fareed Ullah Khan (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Discipline Wise Details of Modular Contents

Block	Subjects	Embryology	Histology	Histology Practical SKL. Lab.	Gross Anatomy	CBL	SDL
\ III	• Anatomy	• Development of Eye • Development of Pharyngeal arches • Development of Ear	• Histology of Eye • Histology of Ear	• Cornea • Retina • External and Internal ear	• Facial and superior aspect of cranium (Norma frontalis, Norma verticalis) • External surface of cranial base (Norma basalis) • Lateral and occipital aspect of cranium (Norma lateralis, occipitalis) • Mandible • Temporomandibular joint • Face • Scalp • Orbit boundaries and Extraocular muscles • Vessels and nerves of orbit • Eyeball • Eyelid and lacrimal apparatus • Parotid and temporal region • Infratemporal fossa • Pterygopalatine fossa • External and middle ear • Inner ear • Nose and paranasal sinuses	• Oculomotor nerve palsy • Extra Dural hemorrhage	• Norma frontalis, verticalis and basalis • Lateralis and occipitalis, TMJ & Mandible Orbit boundaries • Extraocular muscles • Vessels and Nerves of orbit • Temporal and Infra temporal region, Pterygopalatine fossa • External and middle ear
	• Physiology	• Physiology of Ear & Eye					
	• Biochemistry	• Receptors, Second messengers, Neurotransmitters, Vitamin A role in vision					
	Spiral Courses						
	• Islamiayat	• Imaniat (Hadith) • Zimidaari aur taluqaat • Uswa-e-hasna					
	• Pak Studies	• Pakistan ki jughrafiyai ahmiyat aur difai haisiyat • Pakistan k hamsaya mumalik se taluqaat • Pakistan k qudrati wasail-maadniyaat					

	• Behavioral Sciences	• Perception • Sleep and Arousal
	• Radiology & Artificial Intelligence	• General radiologic concepts
	• Family Medicine	• Approach to a patient with earache
	Vertical Integration	
	• ENT	• Nasal polyp & Sinusitis & Diseases of External Nose • Otitis Media Ear Discharge &Hearing Problems in Children • Facial fractures
	• Eye	• Refractive Errors Strabismus • Ocular trauma & Ocular Procedures • Conjunctivitis Chalazion • Cataract & Glaucoma

Categorization of Modular Contents

Anatomy

Category A*	Category B**	Category C***			
		Demonstrations / SGD	**CBL**	**SKL/Practical's**	**Self-Directed Learning (SDL)**
• Special Embryology	• Special Histology	• Facial and superior aspect of cranium (Norma frontalis, Norma verticalis) • External surface of cranial base (Norma basalis) • Lateral and occipital aspect of cranium (Norma lateralis, occipitalis) • Mandible • Temporomandibular joint • Face • Scalp • Orbit boundaries Extraocular muscles • Vessels and nerves of orbit • Eye ball • Eyelid and lacrimal apparatus • Parotid and temporal region • Infratemporal fossa • Pterygopalatine fossa • External and middle ear • Inner ear • Nose and paranasal sinuses	• Oculomotor nerve palsy • Extra Dural hemorrhage	• Cornea • Retina • External and internal ear	• Norma frontalis, verticalis and basalis • Lateralis and occipitalis, TMJ & Mandible • Orbit boundaries & Extraocular muscles • Vessels and Nerves of orbit • Temporal and Infra temporal region, Pterygopalatine fossa • External and middle ear

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrator

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.	Assistant professor of Anatomy department (AP)	01
3.	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 * 09 = 18 hours
2.	Small Group Discussions (SGD)	2*15 + 1*4= 34 hours
3.	Practical / Skill Lab	1.5 * 15 = 22.5 hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1 * 9 = 09 hours
2.	Small Group Discussions (SGD)	2*15 + 1*4= 34 hours
3.	Practical / Skill Lab	1.5 * 3 = 4.5 hours
4.	Self-Directed Learning (SDL)	2 * 3 = 06 hours

Physiology

Category A	Category B	Category C
Photochemistry of vision &Physiological basis for photo transduction **(By Prof. Dr. Samia Sarwar / Dr. Uzma)**	Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction **(By Dr. Uzma)**	**CBL:**
Physiology of accommodation and clinical abnormalities **(By Prof. Dr. Samia Sarwar / Dr. Uzma)**	Introduction to Physiology of external ear, Middle ear **(By Dr. Fareed)**	**PBL:**
	Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina **(By Dr. Uzma)**	**Practical:** 1. Estimation of Visual Acuity 2. Examination of 8th Cranial Nerve (vestibular function) 3. Performance of Hearing Test (cochlear function)
	Functions of Inner ear, Physiology of Hearing **(By Dr. Fareed)**	**CBL:**
	Hearing abnormalities, Tuning fork tests and audiometry **(By Dr. Aneela)**	**SGD:** 1. Physiology of Vision 2. Physiology of hearing & Balance 3. Sense of Taste & Smell
	Light & dark adaptation, Color vision, Neural functions of the retina, Central neurophysiology of vision, Neural pathways for analysis of visual information **(By Dr. Uzma)**	**SDL: (ON CAMPUS)** **1.** Introduction to Physiology of external ear, Middle ear **2.** Functions of Inner ear, Physiology of Hearing **3.** Hearing abnormalities, Tuning fork tests and audiometry **(OFF CAMPUS)** **4.** Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction **5.** Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina **6.** Photochemistry of vision &Physiological basis for photo transduction **7.** Vestibular system **8.** Sense of Taste and pathophysiology **9.** Sense of Smell and pathophysiology
	Vestibular system **(By Dr. Sidra)**	
	Lesions of visual pathway and its effects on field of vision, Movements of eyeball along with neural control **(By Dr. Uzma)**	
	Sense of Taste and pathophysiology **(By Dr. Kamil)**	
	Sense of Smell and pathophysiology **(By Dr. Kamil)**	

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resources of Department of Physiology

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Physiology department	01
2.	Assistant professor of Physiology department (AP)	01
3.	Associate professor of Physiology department	01 (DME)
4..	Demonstrators of Anatomy department	07
5.	Residents of physiology department (PGTs)	08

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	12 * 1= 12 hours
2.	Small Group Discussions (SGD) Case based learning (CBL)	1.5 * 3 = 4.5 hours
3.	Problem based learning (PBL)	--
4.	Practical / Skill Lab	1.5 * 3 = 4.5 hours
5.	Self- Directed Learning	3x1=3hours (on campus) + 6x1=6hours (off campus) = 9hours

Biochemistry

Category A*	Category B**	Catogery C***			
LGIS	**LGIS**	**PBL**	**CBL**	**Practical's**	**SGD**
• Neurotransmitter • Second Messenger	• Receptors • G-Proteins • Role of Vitamin A in Vision		Night Blindness	• Lipid Profile • Urine Report Revision • Spectrophotometer Revision	• Neurotransmitters • G-Proteins

Category A*: By HOD and Assistant Professor

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

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	Assistant professor of biochemistry department (AP)	01
2	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 (LECTURES)	2 * 5= 10hours	05
2.	Small Group Discussions (SGD)	1.5 * 5 = 7.5hours=22.5 hrs	4.5
3.	Problem Based Learning (PBL)	Zero	zero
4.	Practical / Skill Lab	1.5 * 5= 7.5hours=22.5 hrs	4.5
5.	Self-Directed Learning (SDL)	----------	05

Second Year MBBS Time Table For Special Senses Module (First Week)
(16-09-2024 To 21-09-2024)

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)
16-09-2024 Monday	Practical & CBL/SGD Topic mentioned at the end	**PHYSIOLOGY LGIS**		Break	**ANATOMY LGIS**		**BEHAVIORAL SCIENCES**		Break	**SGD/DISSECTION**	SDL Physiology Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction
		Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction	Introduction to Physiology of external ear, Middle ear		Histology of Eye-I	Development of Eye-I	Perception			Facial and superior aspect of cranium (Norma frontalis & Norma verticalis)	
		Dr. Uzma (Even)	Dr. Fareed (Odd)		Assist. Prof. Dr. Maria (Even)	Prof. Dr. Ifra Saeed (Odd)	Dr. Mahmood Ali (even)	Dr. Sadia Yasir (Odd)			
17-09-2024 Tuesday	Eid Milad-un-Nabi (12th Rabi-ul- Awwal 1446 A.H)										
18-09-2024 Wednesday	Practical & CBL/SGD Topic mentioned at the end	**PHYSIOLOGY LGIS**		Break	**PBL 1 (SESSION I)**		**EYE**		Break	**SGD/DISSECTION**	SDL Physiology Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina
		Introduction to Physiology of external ear, Middle ear	Introduction to Physiology of Eye & Optics of vision. General Principles of optics, Physiological basis for errors of refraction		PBL Team		Cataract & Glaucoma			Norma Basalis	
		Dr. Fareed (Even)	Dr. Uzma (Odd)				Dr. Sidra Jabeen (Even)	Dr. Ambreen (Odd)			
19-09-2024 Thursday	Practical & CBL/SGD Topic mentioned at the end	**PHYSIOLOGY LGIS**			Practical & CBL/SGD Topic mentioned at the end **Tuesday Batch 17-09-2024**		**ANATOMY LGIS**			CBL/DISSECTION	` SDL Anatomy Norma frontalis
		Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina	Functions of Inner ear, Physiology of Hearing				Development of Eye-I	Histology of Eye-I		Lateral and occipital aspect of cranium (Norma lateralis & occipitalis) Extra Dural hemorrhage	
		Dr. Uzma (Even)	Dr Fareed (Odd)				Prof. Dr. Ifra Saeed (Even)	Assist. Prof. Dr. Maria (Odd)			
20-09-2024 Friday	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM		10:00 – 11:00AM			11:00AM – 12:00PM		SDL Biochemistry Receptors		
	SGD/DISECTION	**BIOCHEMISTRY (LGIS)**		**ISLAMIAYAT**			**PBL 1 (SESSION II)**				
	Scalp	Receptors	Neurotransmitters	Imaniat (hadith)			PBL team				
		Dr. Uzma (Even)	Dr. Aneela (Odd)	Mufti Naem Sherazi							
21-09-2024 Saturday	8:00am-9:20am	9:20am – 10:10am		10:10am-10:30am	10:30am-11:20am		11:20am -12:50pm		12:50pm - 01:10pm	01:10pm -02:00pm	SDL Anatomy verticalis and basalis
	Practical & CBL/SGD Topic mentioned at the end	**BIOCHEMISTRY (LGIS)**		Break	**FAMILY MEDICINE**		**SGD/DISECTION**		Break	**PAK STUDIES**	
		Neurotransmitters	Receptors		Approach to a patient with earache		Mandible, Temporomandibular joint			Pakistan ki jughrafiyai ahmiyat aur difai haisiyat	
		Dr. Aneela (Even)	Dr. Uzma (Odd)		Dr. Sadia					Qari Aman Ullah	

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- Cornea (Anatomy Histology Practical) Venue-Histology laboratory-Dr. Gaiti Ara
- (Biochemistry Practical) Interpetation of Labs Reports Venue- Biochemistry laboratory
- Examination of Visual Acuity (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Physiology of Vision (Venue: Lecture Hall No 5)
- Biochemistry SGD: Neurotansmitter
- Anatomy CBL: Extradural Hemorrhage

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-90	Dr. Sadia Baqir	New Lecture Hall Complex # 01	Supervised by Prof. Dr. Ayesha Yousaf
B	91-180	Dr. Gaiti Ara	New Lecture Hall Complex # 04	
C	181-270	Dr. Minahil	Anatomy Lecture Hall 04	
D	271 onwards	Dr. Tariq Furqan	Anatomy Lecture Hall 03	

Table No. 3 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions & Biomedical Ethics Club Activity

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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Uzma Zafar (APWMO Biochemistry)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Gaiti Ara (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Second Year MBBS Time Table For Special Senses Module (Second Week)
(23-09-2024 To 28-09-2024)

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)
23-09-2024 Monday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS**		Break	**ENT**		**BIOCHEMISTRY (LGIS)**		Break	**SGD/DISSECTION**	SDL Anatomy Orbit boundaries Extraoccular muscles
		Photochemistry of vision &Physiological basis for photo transduction	Hearing abnormalities, Tuning fork tests and audiometry		Nasal polyp& Sinusitis & Diseases of External Nose		Role Of Vitamin A In Vision	G-Proteins		Face	
		Prof. Dr. Samia /Dr. Uzma (Even)	Dr. Aneela (Odd)		Dr. Sundas Masood (Even)	Dr. Ashar (Odd)	Dr.Almaas(Even)	Dr. Uzma/ Dr. Aneela (Odd)			
24-09-2024 Tuesday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS**			**ANATOMY (LGIS)**		**BIOCHEMISTRY (LGIS)**			**CBL/ DISSECTION**	SDL Biochemistry G-Proteins
		Functions of Inner ear, Physiology of Hearing	Fluid system of the eye Intraocular pressure, Function of the Structural Elements of the Retina		Histology of Eye-II	Development of Eye-II	G-Proteins	Role Of Vitamin A In Vision		Orbit Extraocular muscles (ooculomotor nerve palsy)	
		Dr. Fareed (Even)	Dr. Uzma (Odd)		Assist. Prof. Dr. Maria (Even)	Prof. Dr. Ifra Saeed (Odd)	Dr. Uzma/ Dr. Aneela (Even)	Dr. Almaas (Odd)			
25-09-2024 Wednesday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS**			**ANATOMY (LGIS)**		**BEHAVIORAL SCIENCES**			**SGD/DISSECTION**	SDL Physiology Photochemistry of vision &Physiological basis for photo transduction
		Hearing abnormalities, Tuning fork tests and audiometry	Photochemistry of vision &Physiological basis for photo transduction		Development of Eye-II	Histology of Eye-II	Sleep & Arousal			Eyelids and Lacrimal apparatus	
		Dr. Aneela (Even)	Prof. Dr. Samia / Dr. Uzma(Odd)		Prof. Dr. Ifra Saeed (Even)	Assist. Prof. Dr. Maria (Odd)	Dr. Mahmood Ali (Odd)	Dr. Sadia Yasir (Even)			
26-09-2024 Thursday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS**			**ANATOMY (LGIS)**		**EYE**			**SGD/DISSETION**	SDL physiology Vestibular system
		Light & dark adaptation, Color vision, Neural functions of the retina, Central neurophysiology of vision, Neural pathways for analysis of visual information	Vestibular system		Histology of Ear	Development of Pharyngeal Apparatus	Conjunctivitis Chalazion			Vessels and Nerves of Orbit	
		Dr. Uzma (Even)	.Dr. Sidra (odd)		Assist. Prof. Dr. Maria (Odd)	Prof. Dr. Ifra Saeed (Even)	Dr. Salman (Even)	Dr. Wajeeha (Odd)			
27-09-2024 Friday	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM			10:00 – 11:00AM		11:00AM – 12:00PM				
	EYE	**PHYSIOLOGY LGIS**			**ISLAMIAT**		**SGD/DISECTION**				
	Ocular trauma & Ocular Procedures	Vestibular system	Light & dark adaptation, Color vision, Neural functions of the retina, Central neurophysiology of vision, Neural pathways for analysis of visual information		Zimidaari aur taluqaat		Eyeball			SDL Anatomy Vessels and Nerves of orbit	
	Dr. Wajeeha (Even) / Dr. Saira (Odd)	.Dr. Sidra (Even)	Dr. Uzma (Odd)		Muftii Naeem Sherazi						
28-09-2024 Saturday	**8:00am-9:20am**	**9:20am – 10:10am**		**10:10am-10:30am**	**10:30am-11:20am**		11:20am -12:50pm		12:50pm - 01:10pm	01:10pm -02:00pm	SDL Biochemistry Role Of Vitamin A In Vision Mid Online Clinical Evaluation
	Practical & CBL/SGD Topic mentioned at the end	**ANATOMY (LGIS)**		Break	**BIOCHEMISTRY (LGIS)**		**SGD/DISECTION**		Break	**PAK STUDIES**	
		Development of Pharyngeal Apparatus	Histology of Ear		Second messenger system	Second messenger system	Parotid & Temporal region			Pakistan k hamsaya mumalik se taluqaat / Aqliayt ka Tahafooz	
		Prof. Dr. Ifra Saeed (Odd)	Assist. Prof. Dr. Maria (Even)		Dr . Uzma (Even)	Dr Aneela (Odd)				` Qari Aman Ullah	

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- Retina (Anatomy Histology Practical) Venue-Histology laboratory-Dr. Minahil
- (Biochemistry Practical) Biochemical Analysis of CSF Venue- Biochemistry laboratory
- Examination of 8th Cranial Nerve (Vestibular function) (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Physiology of hearing & Balance (Venue: Lecture Hall No 5)
- Biochemistry SGD: G-Proteins
- Anatomy CBL: Oculomotor Nerve Palsy

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-90	Dr. Sadia Baqir	New Lecture Hall Complex # 01
B	91-180	Dr. Gaiti Ara	New Lecture Hall Complex # 04
C	181-270	Dr. Minahil	Anatomy Lecture Hall 04
D	271 onwards	Dr. Tariq Furqan	Anatomy Lecture Hall 03

Supervised by Prof. Dr. Ayesha Yousaf

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Uzma Zafar (APWMO Biochemistry)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Gaiti Ara (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Second Year MBBS Time Table For Special Senses Module (Third Week)
(30-09-2024 To 05-10-2024)

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)
30-09-2024 Monday	Practical & CBL/SGD Topic mentioned at the end	**PHYSIOLOGY LGIS**		Break	**JOINT SESSION**		**RADIOLOGY**		Break	**SGD/DISSECTION**	Anatomy SDL Temporal and Infra temporal region, Pterygopalatine fossa
		Lesions of visual pathway and its effects on field of vision, Movements of eye ball along with neural control	Sense of Taste and pathophysiology		Deafness		General radiologic concepts			Infratemporal fossa-I	
		Dr. Uzma (Even)	Dr. Kamil (Odd)		Anatomy, Physiology, ENT (Dr. Arshad)		Dr. Saba (Even)	Dr. Maryam Azam (Odd)			
01-10-2024 Tuesday	**ENT**	**PHYSIOLOGY LGIS**			**ANATOMY LGIS**		**EYE**			**SGD/DISSECTION**	SDL Physiology Sense of Smell and pathophysiology
	Deflected Nasal Septum (DNS) & Rhinitis	Sense of Taste and pathophysiology	Lesions of visual pathway and its effects on field of vision, Movements of eye ball along with neural control		Development of Ear	Development of Nose	Reflective Error & Strabismus			Infratemporal fossa-II	
	Dr. Tabsum (Even) / Dr. Fatima (Odd)	Dr. Kamil (Even)	Dr. Uzma (Odd)		Assist. Prof. Dr. Maria (Even)	Prof. Dr. Ifra Saeed (Odd)	Dr. Sidra Jabeen (Even)	Dr. Salman (Odd)			
02-10-2024 Wednesday	Practical & CBL/SGD Topic mentioned at the end	**PHYSIOLOGY LGIS**		Break	**ANATOMY LGIS**		**SGD/DISSECTION**			**SGD/DISSECTION**	Anatomy SDL External and middle ear
		Physiology of accommodation and clinical abnormalities	Sense of Smell and pathophysiology		Development of Nose	Development of Ear	Pterygopalatine fossa			External and middle ear	
		Prof.Dr. Samia Sarwar/ Dr Uzma (Even)	Dr. Kamil (Odd)		Prof. Dr. Ifra Saeed (Even)	Assist. Prof. Dr. Maria (odd)					
03-10-2024 Thursday	Practical & CBL/SGD Topic mentioned at the end	**PHYSIOLOGY LGIS**			**ANATOMY LGIS**		**ENT**			**SGD/DISSECTION**	
		Sense of Smell and pathophysiology	Physiology of accommodation and clinical abnormalities		Development of Palate	Development of Palate	Otitis Media Ear Discharge &Hearing Problems in Children			Inner ear	SDL Physiology Sense of Taste and pathophysiology
		Dr Kamil (Even)	Prof.Dr. Samia Sarwar/ Dr Uzma (Odd)		Prof. Dr. Ifra Saeed (Odd)	Assist. Prof. Dr. Maria (Even)	Dr. Haitum (Even)	Dr. Fatima (Odd)			
04-10-2024 Friday	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM			10:00 – 11:00AM		11:00AM – 12:00PM				
	Practical & CBL/SGD Topic mentioned at the end	**ENT**			**ISLAMIAT**		**ISLAMIAT**				
		Facial fractures			Uswa-e-hasna		Halal ke Ahmiat				
		Dr. Nida (Even)	Dr. Farhat (Odd)		Mufti Naem Sherazi		Mufti Naeem Shirazi				
05-10-2024 Saturday	8:00am-9:20am	9:20am – 10:50am		10:50am – 11:10am	11:10am – 12:00pm		12:00pm – 12:50pm		12:50pm – 01:10pm	01:10pm – 02:00pm	
	Practical & CBL/SGD Topic mentioned at the end	**SGD/DISECTION**		Break	**PHYSIOLOGY SDL No. 01**		**SGD/DISECTION**		Break	**PAKSTUDIES**	End Online clinical Evaluation
		Nose and paranasal sinuses			Functions of Inner ear, Physiology of Hearing		Cross Sectional Anatomy			Pakistan k qudrati wasail-maadniyaat / Zaraat	
					Dr. Fareed (Even)	Dr Ali Zain (Odd)				Qari Aman Ullah	

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- External & Internal Ear (Anatomy Histology Practical) Venue- Histology laboratory-Dr. Sadia Baqir
- (Biochemistry Practical) Biochemical Analysis of Aqueous Humor Venue- Biochemistry laboratory
- Performance of Hearing Test (cochlear function) (Physiology Practical) Venue – Physiology Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Physiology of Taste & Smell (Venue: Lecture Hall No 5)
- Biochemistry CBL: Night Blindness

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Nayab		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Nayab
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue	
A	01-90	Dr. Sadia Baqir	New Lecture Hall Complex # 01	Supervised by Prof. Dr. Ayesha Yousaf
B	91-180	Dr. Gaiti Ara	New Lecture Hall Complex # 04	
C	181-270	Dr. Minahil	Anatomy Lecture Hall 04	
D	271 onwards	Dr. Tariq Furqan	Anatomy Lecture Hall 03	

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Rahat Afzal (Senior Demonstrator Biochemistry)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Gaiti Ara (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Ramsha (PGT Physiology)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Tentative Schedule for LMS Based Weekly Online Assessments for Second Year MBBS (Special Senses Module) Batch 50

The online assessment for Special Senses Module for Second Year MBBS will be as per following schedule:

Class	Module	Day & Date	Time of Assessment	Focal person	Department Responsible
Second Year MBBS	Special Senses Module	Monday 23rd September,2024	9:00 pm-9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 24th September,2024	9:00 pm-9:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 25th September,2024	9:00 pm-9:30pm	Dr Aneela Jamil	Biochemistry

Note: All dates are subject to change.

Second Year MBBS Time Table For Special Senses Module (Fourth Week)
(07-10-2024 To 12-10-2024)

Date / Days	08:00am – 02:00pm
07-10-2024 Monday	Assessment Week
08-10-2024 Tuesday	
09-10-2024 Wednesday	
10-10-2024 Thursday	
11-10-2024 Friday	
12-10-2024 Saturday	

Note: Timetable Subject to Change According to The Current Circumstances.

SECTION-VII

Table of Specification (TOS) For Special Senses Module Examination

Blue Print of Assessment for First Year & Second Year MBBS

Table of Specification

Tools of Asssessment: Cognitive: MCQ- Multiple Choice Questions, EMQs- Extended Matching Questions, SAQ- Short Answer Questions, SEQ- Short Essay Questions Psychomotor: AvOSPE- Audio Visual Assisted Objective Structured Pactical Examination, labOSPE- Laboratory Based Objective Structured Practical Examination, IOSPE- Integrated Objective Structured Practical Examination, COSPE- Clinically Oriented Objective Structed Practical Examination Affect: AED Reflective Writing- Artificial Intelligence, Entraprenureship, Digital Literacy based reflective writing, OSVE- Objective Structured Viva Assessment

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 MCQs					OSPE						Grand Total	Total Block Time
							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	6.5 HRS
	Physiology	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS
	Biochemistry	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS

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

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

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

Marks per Item

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

OSPE Time=1 Round of 40 Students =80 min

3 Round of 40 Students =240 min

OSVE=Time per student=5mins

Annexure I

(Sample MCQ, SAQ, SEQ Papers, AV OSPE, OSPE & Video Assisted OSPE)

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.

Sample Paper of MCQs
Department of Anatomy

1. During the 4th week of development, mesenchyme for pharyngeal arches comes from which of following sources? (1 Point)
    a. Neural crest cells
    b. Lateral plate mesoderm
    c. Paraxial mesoderm
    d. Ectodermal placods
    e. All of above
2. A teenager was fond of hearing loud rock music he is liable to suffer from (1 Point)
    a. Nerve deafness
    b. Presbycusis
    c. Conductive deafness
    d. Sensorineural deafness
    e. Otosclerosis
3. Established function of external ear (1 Point)
    a. Attenuation
    b. Accentuation
    c. Impedance matching
    d. Determination of direction
    e. Determination of loudness
4. Medial palpebral ligament is attached to the frontal process of (1 Point)
    a. Frontal
    b. Zygomatic
    c. Maxilla
    d. Temporal
    e. Nasal
5. The stroma of cornea (1 Point)
    a. Makes up 30% of the corneal thickness.
    b. Has collagen bundles arranged at right angles.
    c. Is highly vascular.
    d. Has cells called hyalocytes.
    e. Has hydration maintained by surface epithelium

Sample Paper of SEQs
Department of Anatomy

1. a. Give the boundaries and contents of infratemporal fossa (3)

   b. Tabulate the attachments and actions of extra occular muscles. (2)

2. a. Describe the formation of nasal septum, Discuss its blood supply with clinical significance. (3)

   b. Give connections of submandibular ganglion with special reference to its secretomotor fibers. (2)

Department of Physiology

1. Cannaliculus innominatus is situated between foramen (1 Point)
    a. Rotudum and ovale
    b. Ovale and spinosum
    c. Mastoid and styloid process
    d. Sphenoid and Vesalius
    e. Sacerum and ovale
2. Olfactory receptors have a unique capability that they: (1 Point)
    a. Do not adapt.
    b. Do not regenerate.
    c. Are hyperpolarized.
    d. Make electrotonic junctions.
    e. Make gap junctions
3. Which of the following substances is present in high concentration in the urine of patients with pheochromocytomas? (1 Point)
    a. Epinephrine.
    b. Metanephrine.
    c. Norepinephrine.
    d. Dopamine.
    e. 3- methyoxy-4-OH-Mandelic acid
4. On turning head to the right, the impulse traffic: (1 Point)
    a. Increases in Right VIII nerve.
    b. Decreases in Right VIII nerve.
    c. Increases in Left VIII nerve.
    d. Decreases in Left VII nerve.
    e. No change
5. On irrigating right auditory canal with cold water nystagmus is: (1 Point)
    a. Towards left side
    b. Towards right side
    c. Not seen
    d. Vertical
    e. Rotational

Department of Biochemistry

1. Which one of the following is fat soluble vitamin? (1 Point)
    a. vitamin A
    b. vitamin C
    c. vitamin B1
    d. vitamin B6
    e. vitamin B9
2. Auditory loss in a 70-year-old man is best called. (1 Point)
    a. Nerve deafness
    b. Presbycusis
    c. Conductive deafness
    d. Sensorineural deafness
    e. Otosclerosis
3. Taste receptors are: (1 Point)
    a. Modified neural cells.
    b. Also found in respiratory epithelium
    c. Modified epithelial cells.
    d. Have a half life of 8 weeks.
    e. Cannot regenerate
4. Superior and inferior lateral arteries are the branches of (1 Point)
    a. Facial artery
    b. External carotid artery
    c. Maxillary artery
    d. Lingual artery
    e. Transverse facial artery
5. Hair cell in vestibular apparatus are type of (1 Point)
    a. Teleceptors
    b. Exteroceptors
    c. Mechanoreceptors
    d. Nociceptors
    e. Photoceptors

SEQ

Q. Explain synthesis and fate of catecholamines. 05

Sample Paper of EMQs

Options:

A. Conductive hearing loss

B. Sensorineural hearing loss

C. Mixed hearing loss

D. Otitis media

E. Otosclerosis

F. Noise-induced hearing loss

G. Presbycusis

H. Meniere's disease

I. Acoustic neuroma

J. Tympanic membrane perforation

Questions:

1. A 65-year-old male presents with gradually progressive bilateral hearing loss. He reports difficulty hearing in noisy environments. There is no history of ear infections or trauma.

What is the most likely diagnosis?

2. A 40-year-old female presents with episodes of vertigo, tinnitus, and fluctuating hearing loss in her left ear. The episodes last several hours and are associated with a feeling of fullness in the ear.

What is the most likely diagnosis?

3. A 30-year-old construction worker reports progressive hearing loss and tinnitus in both ears. He has been exposed to loud machinery noise for several years without ear protection.

What is the most likely diagnosis?

4. A 5-year-old child is brought in by his parents due to decreased hearing in the right ear. Examination reveals a bulging, erythematous tympanic membrane with effusion.

What is the most likely diagnosis?

5. A 50-year-old male presents with unilateral hearing loss and a constant ringing sound in his right ear. MRI reveals a mass at the cerebellopontine angle.

What is the most likely diagnosis?

Answers:

1. **G. Presbycusis**
2. **H. Meniere's disease**
3. **F. Noise-induced hearing loss**
4. **D. Otitis media**

I. Acoustic neuroma

Department of Bioethics

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
   a. Bio-piracy
   b. Biosafety
   c. Bioethics
   d. Bio-patents
   e. Bio-logistic

2. The right of patients having self-decision is called.
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

3. Following is not code of ethics.
   a. Integrity
   b. Objectivity
   c. Confidentiality
   d. Behaviour
   e. Autonomy

4. -------in the context of medical ethics, if it's fair and balanced
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

5. ------Principle requiring that physicians provide, positive benefits
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

OSPE
Department of Anatomy

Section I: Core Concept

A. Gross Anatomy (Special Senses)

Station No. 1 **Time Allowed: 2 mins**

I. Identify Red on Cadaver and give its action (1)

II. Identify Green on Cadaver (1)

Section I: Core Concept

A. Gross Anatomy (Special Senses)

Station No. 2 **Time Allowed: 2 mins**

I. Identify Red on model and give the formation of plexus on it (1)
II. Identify Green on model (1)

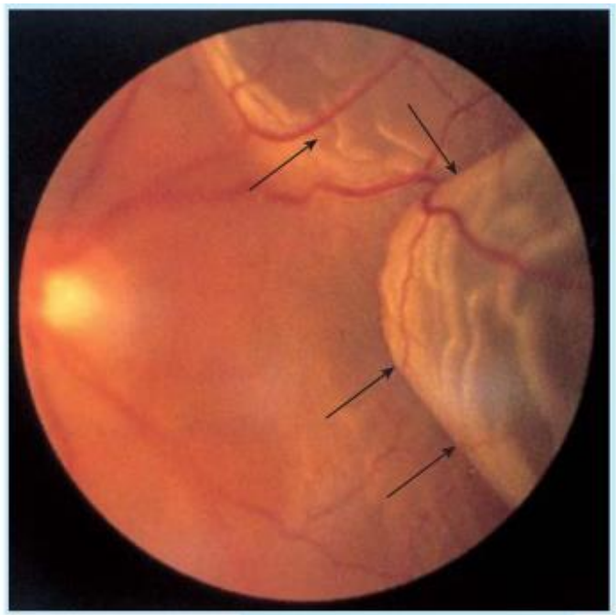
Slide 2

A 65-year-old male with a history of trauma to the left eye presented with a one day complaint of flashing lights and a gray curtain.

Q1. What is the most likely diagnosis? (1)

Q2. In this case fluid accumulates between which two layers? (2)

Q3. To visualize the shown image image, which instrument is used to confirm the diagnosis (2)



AV OSPE

Department of Anatomy

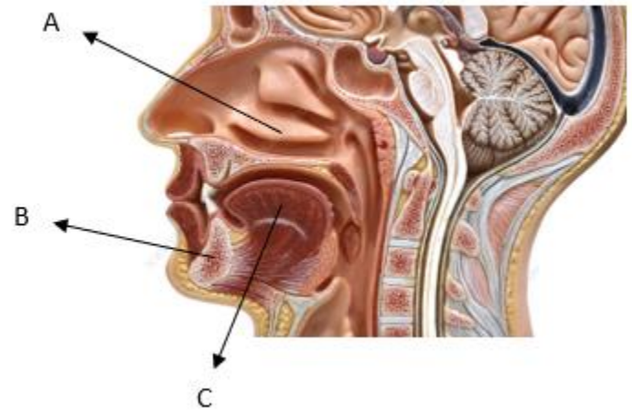
Cross Sectional

Q.1 Identify

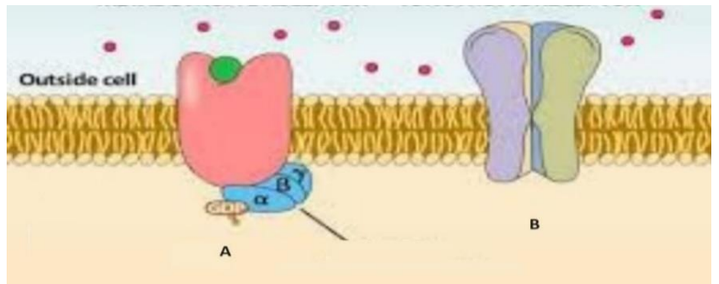
1. A
2. B
3. C

Q.2 Give Embryological Source of C?

1) A (1)
2) B (1)



AV OSPE
Department of Biochemistry



Q1-Identify the type of receptors. 02

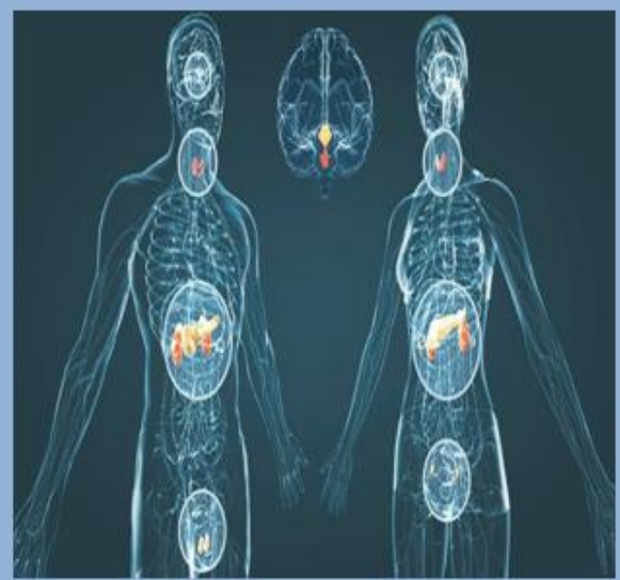
1) A (1)
2) B (1)
3) C (1)

Q2-Give example of receptor

3) A (1)
4) B (1)

Rawalpindi Medical University
Department of Medical Education (DME)

Study Guide
Endocrinology Module 2024



Procedure For Control of Documented Information

In-Compliance with

ISO 9001:2015

Clause 7.5

Copyright

The copyright of this procedure, together with all confidential information contained herein is the sole property of Rawalpindi Medical University

It may be copied in full or in parts only by the Management/personnel and only for Company-related activities. Disclosure of any information contained within this procedure to any person (s) outside the employee of the institute without written permission of the Vice Chancellor or Principal or ISO Committee Head is strictly prohibited.

Document Information

Category	**Endocrinology Module Study Guide**
Document	Procedure for Control of Documented Information
Issue	1
Rev	00
Identifier	RMU-MR-SOP-67
Status	Final Document
Author(s)	Director Medical Education, Asst. Director Medical Education,
Reviewer(s)	Curriculum Committee.
Approver(s)	Vice Chancellor
Creation Date	01-06-2024
Effective Date	01-06-2024
Control Status	**Controlled**
Distribution	VC, Principal, ISO Committee
Disclaimer	This document contains confidential information. Do not distribute this document without prior approval from higher management of **Rawalpindi Medical University.**

Document Approval

Prepared By	Reviewed By	Approved By
Director Medical Education, Asst. Director Medical Education,	Curriculum Committee	Vice Chancellor

Document Revision History

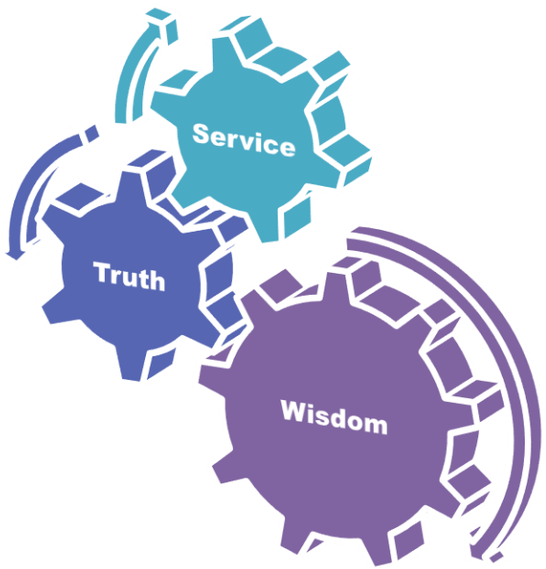
Author(s)	Date	Version	Description
Prof Naeem Akhtar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Sidra Hamid, Dr Tehmina Qamar	2017-2018	1st	Developed for Second Year MBBS. Composed of Horizontally and vertically Integrated Endocrinology Module.
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr. Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2019-2020	2nd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated
Dr Tehzeeb, Dr Samia Sarwar, , Dr Ifra Saeed, Dr Ayesha Yousaf , Dr Tehmina Qamar, Dr Sidra Hamid	2021-2022	3rd	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum incorporated
Dr Tehzeeb, Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr Tehmina Qamar, Dr Sidra Hamid	2022-2023	4th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research, Bioethics, Family Medicine curriculum incorporated along with Professionalism
Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr. Aneela Jamil, Dr Sidra Hamid	2023-2024	5th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum revamped Bioethics, Family Medicine curriculum incorporated along with Professionalism. Entrepreneurship curriculum incorporated

List of Copy Holders

Document Code	Issue # /Rev.#	Copy #	Copy Holders	Distribution Mode	Signature
RMU-MR-SOP-67	**01/00**	**01**	**V.C**	**Email**	
RMU-MR-SOP-67	**01/00**	**02**	**HODs**	**Email**	
RMU-MR-SOP-67	**01/00**	**03**	**IC**	**Hard Copy**	

University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

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

Vision and Values

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

Goals of the Undergraduate Integrated Modular Curriculum

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

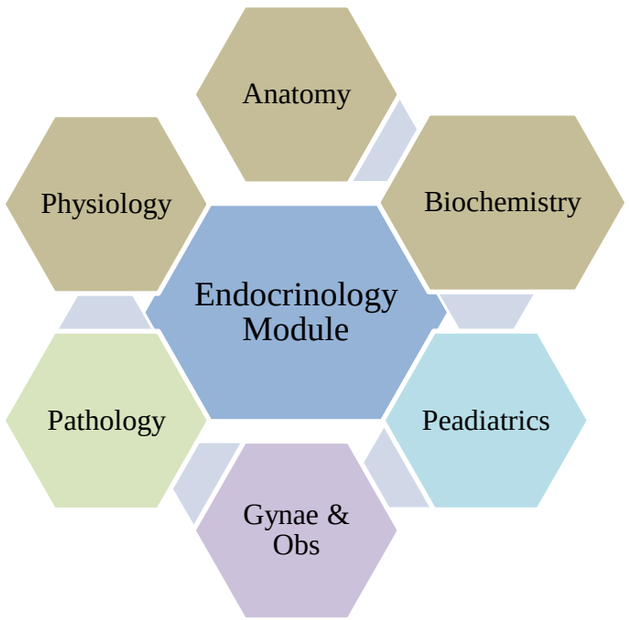
- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional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

Second Year MBBS 2024

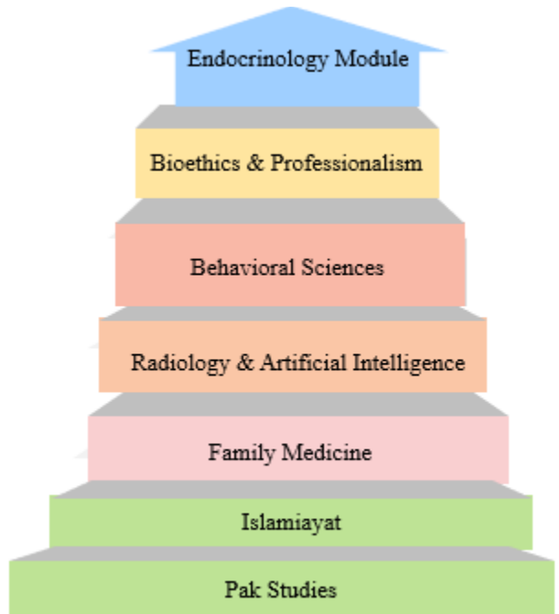
Study Guide

Endocrinology Module

Integration of Disciplines in Endocrinology Module



Spiral / General Education Cluster Courses



Discipline Wise Details of Modular Contents

Block	Subjects	Embryology	Histology	Histology Practical SKL. Lab.	Gross Anatomy	CBL	SDL
III	• Anatomy	• Development of pituitary & pineal gland • Developmnt of thyroid & parathyroid gland • Developmnt adrenal gland and pancreas	• Pituitary & pineal gland • Thyroid & parathyroid gland • Adrenal gland and pancreas	• Pituitary Gland • Thyroid & parathyroid gland • Adrenal gland • Pancreas	• Bones of neck. Hyoid Bone & Cervical vertebrae • Fascias of Neck • Superficial structurs of neck • Lateral-cervical region (muscles & triangles) • Latera-cervical-region (neurovascular organization) • Interior-cervical region(muscles) • Interior-cervical region (vessels of neck & cervical plexus) • Submandular region • Soft palate • Deep structures of neck • Root of neck • Thyroid &Parathyroid gland • Larynx • Pharynx • pancreas		• Bones of neck • SCM region & superficial & deep fascia • lateral cervical region • Anterior Triangle of neck & its subdivisions • Thyroid and para thyroid gland • Online SDL Evaluation • soft palate, larynx
	• Physiology	• Classification of hormones, Mechanism of action of different hormones Physiology of Thyroid hormones, Adrenal hormones, Insulin and glucagon, Blood glucose regulation, Role of Calcium & Phosphate					
	• Biochemistry	• Classification of hormones, Thyroid hormones, Adrenal hormones, Insulin and glucagon, Blood glucose regulation, Calcium revisit					
	Spiral Courses						
	• Pak Studies	• Tareek e Khatm e Naboat / Muslim Milat ke Buniyad • Islam Ka Mashi Nizam • 2 Qoumi Nazria / Islami Mumliqat Qiyam					
	• Islamiayat	• Rasalat • Itihad e Umat • Amal Bin Maroof					
	• Biomedical Ethics	• History of Medical Ethics					

	• Behavioral Sciences	• Professionalism in Healthcare
	• Radiology & Artificial Intelligence	• Basics of Radiology
	• Family Medicine	• Approach to patient diabetes mellitus
	Vertical components	
	• Peads	• Growth problems due to Endocrine causes
	• Surgery	• Diabetic foot
	• Pathology	• Hypothyroidism and hyperthyroidism
	• Obs & Gynae	• Endocrine Disorders in Pregnancy (Diabetes Mellitus, Thyroid Disorders)
	Early Clinical Exposure (ECE)	
	• Medicine	• Thyroid disorders • Hyperthyroidism • Hypothyroidism • Cushing Syndrome
	• Surgery	• Thyroid Nodule • Multi nodular Goiter • CA Thyroid • Graves Diseases
	• Eye	• Blindness • Visual field defect • Cataract
	• Otolaryngology	• Deafness • Hearing tests • Nasal Obstruction

Table of Contents

University Moto, Vision, Values & Goals 7

Discipline Wise Details of Modular Contents 10

Endocrinology Module Team 15

Module VI – Endocrinology Module 16

Module Outcomes 16

Knowledge 16

Skills 16

Attitude 16

SECTION - I 17

Terms & Abbreviations 17

Teaching and Learning Methodologies / Strategies 19

Large Large Group Interactive Session (LGIS) 19

Small Group Discussion (SGD) 20

Self-Directed Learning (SDL) 22

Case Based Learning (CBL) 22

Problem Based Learning (PBL) 22

Practical Sessions/Skill Lab (SKL) 23

SECTION – II 24

Learning Objectives, Teaching Strategies & Assesssments 24

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry) 25

Anatomy Large Group Interactive Session (LGIS) 25

Anatomy Small Group Discussion (SGDs) 26

Anatomy Self Directed Learning (SDL) 30

Histology Practicals Skill Laboratory (SKL) 32
Physiology Large Group Interactive Session (LGIS) 33
Physiology Small Group Discussion (SGDs) 40
Physiology Self Directed Learning (SDL) 44
Physiology Practicals Skill Laboratory (SKL) 50
Biochemistry Large Group Interactive Session (LGIS) 51
Biochemistry Small Group Discussion (SGDs) 52
Biochemistry Self Directed Learning (SDL) 52
Biochemistry Practicals Skill Laboratory (SKL) 53
SECTION - III 54
Basic and Clinical Sciences (Vertical Integration) 54
Case Based Learning Objectives (CBL) 55
Vertical Integration LGIS 55
Medicine 55
Pathology 55
Surgery 56
Gynecology & Obstetrics 56
Pediatrics 56
List of Endocrinology Module Vertical Courses Lectures 58
SECTION – IV 59
Spiral Courses 59
Radiology & Artificial Inteligence 60
Behaveioural Sciences 60
Family Medicine 60

Biomedical Ethics & Professionalism 61
Introduction to Spiral Courses 62
SECTION - V 67
Assessment Policies 67
List of Endocrinology Module Spiral Courses Lectures 68
Assessment plan 70
Types of Assessment: 70
Modular Assessment 70
Block Assessement 70
Table 4-Assessment Frequency & Time in Endocirnology Module 71
Learning Resources 72
SECTION - VI 75
Time Table 75
Endocrinology Module Team 77
Categorization of Modular Contents 80
Anatomy 80
Teaching Staff / Human Resources of Department of Anatomy 81
Physiology 82
Teaching Staff / Human Resources of Department of Physiology 83
Biochemistry 84
SECTION-VII 94
Table of Specification (TOS) For Endocrinology Module Examination 94
Annexure I 95
(Sample MCQ, SAQ, SEQ Papers, AV OSPE, OSPE & Video Assisted OSPE) 95

Endocrinology Module Team

Module Name	:	Endocrinology Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Kashif Rauf
Co-coordinator	:	Dr. Aneela Yasmeen
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Kashif Rauf (Demonstrator of Biochemistry)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Nayab (PGT Biochemistry)
5.	Co-coordinator	Dr. Aneela Yasmeen (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Module VI – Endocrinology Module

Rationale: The endocrine system is one of the two control systems of the body. It consists of many small organs responsible for the release of hormones. The endocrine system regulates metabolism, growth and development, tissue function and mood of a person. This system acts by means of hormones secreted into the blood to control process that require duration rather than speed e.g, metabolic activities and water and electrolyte balance. In this module we will concentrate on the integrating functions of the endocrine system and focus our teaching on the interaction of hormones and their integration to produce homeostatic regulation.

Module Outcomes

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

Knowledge

- The students should know the hormones and the organs producing them. They should know the chemical nature, biosynthesis and the physiological functions on their target organs. The student should understand & apply the concepts & principles of the basic sciences in context of clinical signs & symptoms to commonly occurring diseases of the endocrine.
- Used technology based Medical Education including
  Artificial Intelligence
- Appreciate concept and importance of
  Family Medicine
  Biomedical Ethics & Professional
  Research

Skills

- Students should be able to recognize the histological features of all the endocrine glands under microscope.

Attitude

- Student should observe lab safety rules
  Should have professional Attitude

SECTION - I

Terms & Abbreviations

Contents

- Domains of Learning
- Teaching and Learning Methodologies/Strategies
    - 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

Table1. Domains of Learning According to Blooms Taxonomy

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

Teaching and Learning Methodologies / Strategies

Large Large Group Interactive Session (LGIS)

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

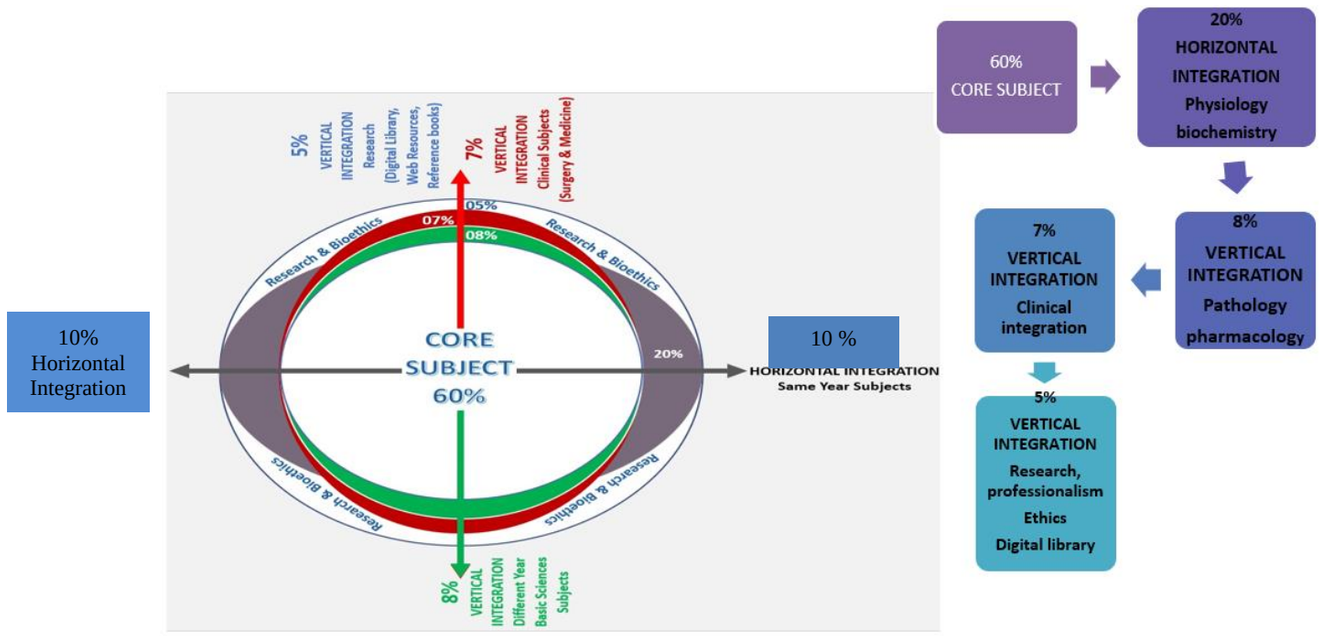


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementaion of Small Group Discussions

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

Self-Directed Learning (SDL)

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

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

  ii.OSPE station

Case Based Learning (CBL)

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

Problem Based Learning (PBL)

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

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

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

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

SECTION – II

Learning Objectives, Teaching Strategies & Assesssments

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

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching strategy	Assessment Tool
Histology of pituitary gland and pineal gland	• Describe histological structure of pituitary and pineal gland • Enumerate different cells present in both glands • Discuss bio-physiological aspects related to their secretions • Discuss the related clinical • Read relevant research article • Use digital library	C2 C1 C2 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA
Histology of thyroid and parathyroid glands	• Describe histological structure of thyroid and parathyroid gland • Enumerate different cells present in both glands • Discuss bio-physiological aspects related to their secretions • Discuss the related clinical • Read relevant research article • Use digital library	C2 C1 C2 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA
Histology of adrenal gland	• Describe histological structure of adrenal gland. • Enumerate different cells present in gland • Discuss bio-physiological aspects related to secretions. • Discuss the related clinical • Read relevant research article • Use digital library	C2 C1 C2 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA
Development of pituitary and pineal gland	• Describe stages of development of pituitary and pineal glands • Enumerate structures involved in development of glands • Discuss congenital abnormalities related to development of glands • Read relevant research article • Use digital library	C2 C1 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA
Development of thyroid and parathyroid glands	• Describe a stage of development of thyroid and parathyroid glands • Enumerate structures involved in development of glands • Discuss congenital abnormalities associated with their development	C2 C1 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA

	• Read relevant research article • Use digital library			
Development of adrenal gland	• Describe stages of development of adrenal glands • Enumerate structures involved in the development of gland. • Discuss congenital abnormalities associated with its development. • Read relevant research article • Use digital library	C2 C1 C3 C3 C3	LGIS	• MCQS • SEQS • VIVA

Anatomy Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Bones of neck Hyoid Bone Cervical vertebrae	• Describe the borders and surfaces of body and the two cornuas of hyoid bone.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss the attachments on the hyoid bone.	C2		
	• Discuss the related applied of hyoid.	C2		
	• Describe anatomical features of cervical typical & atypical vertebrae .	C2		
	• Discuss the intervertebral joints& movements of cervical region of vertebral column.	C2		
	• Discuss the anatomical basis of cervical pain & injuries of cervical vertebral column	C2		
	• Read relevant research article	C3		
	• Use digital library.	C3		
Fascias of Neck.	• Understand cervical subcutaneous tissue & platysma.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss the deep cervical fascia and the formation of layers due to its condensation.	C2		
	• Discuss the attachments and special features of the investing layer.	C2		
	• Describe the attachments and special features of prevertebral fascia.	C2		
	• Describe the attachments and special features of pretracheal fascia.	C2		
	• Discuss the carotid sheath formation, contents and relations.	C2		
	• Differentiate between the buccopharyngeal fascia and pharyngobasilar fascia.	C2		
	• Discuss related clinicals	C3		
	• Read relevant research article	C3		
	• Use digital library.	C3		
	• Discuss the location, attachments & actions of SCM & trapezius.	C2		

Superficial structures of the neck	• Describe boundaries & location of posterior cervical region .	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss suboccipital triangle of neck & its contents.	C2		
	• Discuss related clinicals	C3		
	• Discuss the location, attachments & actions of SCM & trapezius .	C2		
	• Describe boundaries & location of posterior cervical region .	C2		
	• Discuss related clinicals	C2		
	• Read relevant research article	C3		
	• Use digital library.	C3		
lateral cervical region-(Muscles & triangles)	• Describe boundaries of posterior triangle.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss the muscles in lateral cervical region.(splenius capitus ,levator scapulae ,middle scalene &posterior scalene.	C2		
	• Describe boundaries and contents of occipital triangle	C2		
	• Discuss boundaries and contents of subclavian triangle	C2		
	• Discuss related clinicals	C3		
	• Read relevant research article	C3		
	• Use digital library.	C3		
lateral cervical region-(Neuro vascular organization)	• Discuss arteries in lateral cervical region (supra scapular artery, 3rd part of subclavian artery ,	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss veins of lateral cervical region (EJV&subclavian vein)	C2		
	• Discuss nerve supply of lateral cervical region	C2		
	• Discuss lymphatic drainage in lateral cervical region.	C2		
	• Discuss related clinicals	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Anterior cervical region-(Muscles)	• Discuss the Muscles in anterior cervical region (suprahyoid muscle group & infrahyoid muscle group)	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss the anatomical basis of torticollis	C3		
	• Discuss related clinicals.	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Anterior Cervical Region-(Vessels of	• Discuss arterial supply in anterior cervical region (carotid system of arteries)	C2	Skill lab	MCQS
	• Discuss venous drainage in anterior cervical region	C2		
	• Discuss formation of cervical plexus	C2		

neck & Cervical plexus)	• Enumerate branches of cervical plexus	C2		SEQS VIVA OSPE
	• Discuss area of distribution	C2		
	• Describe clinical and applied anatomy	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Submandibular Region	• Discuss the relations of digastric, mylohyoid and hyoglossus muscles.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Describe the gross features, relations, blood supply, lymphatic drainage and nerve supply of submandibular salivary gland.	C2		
	• Describe the details of Wharton's duct, its opening and related clinicopathological conditions	C2		
	• Describe the gross features, relations, blood supply, lymphatic drainage and nerve supply of sublingual salivary gland.	C2		
	• Tabulate the comparison of three salivary glands.	C2		
	• Describe the connections and branches with area of supply by the sub-mandibular ganglion.	C2		
	• Read relevant research article	C3		
	• Use digital library	C3		
Soft Palate	• Discuss the anatomy of soft palate along with attachment of muscles and their actions.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Describe boundaries of tonsillar fossa.	C2		
	• Discuss related clinicals	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Deep structures of neck	• Discuss prevertebral muscles (ant.vertebral muscles & lateral vertebral muscles)	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss related clinicals.	C3		
	• Read relevant research article	C3		
	• Use digital library	C3		
Root of Neck	• Discuss arteries & veins in root of neck.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss nerve supply in root of neck.	C2		
	• Discuss related clinicals.	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		

Thyroid and para thyroid glands	• Discuss anatomy & functions of thyroid & parathyroid gland	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss blood supply of thyroid gland	C2		
	• Discuss lymphatic drainage & nerve supply of thyroid gland	C2		
	• Discuss related clinicals.	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		
larynx	• Discuss larynx in detail with its cartilages and muscles.	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss blood supply of larynx	C2		
	• Discuss functions of larynx • Discuss trachea (revisit).	C2		
	• Discuss related clinicals	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		
Pharynx	• Tabulate muscles of pharynx with origin, insertion, nerve supply and actions	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Discuss nerve supply of Pharynx	C2		
	• Discuss blood supply of larynx	C2		
	• Discuss esophagus (revisit)	C2		
	• Discuss related clinicals	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		
Pancreas & Adrenal gland	• Describe location of pancreas & Adrenal gland	C2	Skill lab	MCQS SEQS VIVA OSPE
	• Enlist different parts of pancreas	C2		
	• Describe relations of pancreas	C2		
	• Discuss blood supply of pancreas	C2		
	• Discuss the clinical Anatomy of pancreas	C3		
	• Discuss related clinicals	C3		
	• Read a relevant research article	C3		
	• Use digital library	C3		

Anatomy Self Directed Learning (SDL)

Topics	Learning objectives	Learning Resources
Bones of neck Hyoid Bone, Cervical vertebrae	• Describe the borders and surfaces of body and the two cornuas of hyoid bone. • Discuss the attachments on the hyoid bone. • Discuss the related applied of hyoid. • Describe anatomical features of cervical typical & atypical vertebrae . • Discuss the intervertebral joints& movements of cervical region of vertebral column. • Discuss the anatomical basis of cervical pain & injuries of cervical vertebral column • Read relevant research article • Use digital library.	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 8, Page 982-985). • https://youtu.be/Mrtt9s72a7I?si=-lCPt14ihH7g0tKE • https://youtu.be/4Q244XGveyQ?si=TH6IM2Jf43P_SBv3
Sternocleidomastoid region & superficial & deep fascias of neck	• Discuss the location, attachments & actions of SCM & trapezius . • Describe boundaries & location of posterior cervical region . • Discuss suboccipital triangle of neck & its contents. • Discuss related clinicals • Discuss the location,attachments & actions of SCM & trapezius . • Describe boundaries & location of posterior cervical region . • Discuss related clinicals • Read relevant research article • Use digital library.	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 8, P 989-992). • https://youtu.be/nSaaWPzG4Zk?si=Muj6xMLX8fYkPOie • https://youtu.be/dEpCSJajCew?si=OM4W_bKbS7Eodte4
Lateral cervical region	• Describe boundaries of posterior triangle. • Discuss the muscles in lateral cervical region . • (splenius capitus ,levator scapulae ,middle scalene &posterior scalene. • Describe boundaries and contents of occipital triangle • Discuss boundaries and contents of subclavian triangle • Discuss related clinicals • Read relevant research article • Use digital library.	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 8, Page 992-999). • https://youtu.be/bk9KA2nR7PA?si=jBEzEd-MWZ83ne6a • https://youtu.be/kPUwVJE_j0I?si=--Ozn5s_bZLuoq-a

Anterior Triangle of neck & its subdivisions	• Discuss the Muscles in anterior cervical region (suprahyoid muscle group & infrahyoid muscle group) • Discuss the anatomical basis of torticollis • Discuss related clinicals. • Discuss arteries in anterior cervical region (carotid system of arteries) • Discuss veins in anterior cervical region • Discuss formation of cervical plexus • Enumerate branches of cervical plexus • Discuss area of distribution • Read relevant research article • Use digital library	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 8, Page,999-1005). • https://youtu.be/hnLtAYvAMkw?si=EWZCqciSD2K91uo4 • https://youtu.be/YOgE2pmXfZg?si=7hU-ZAw7wcaomUyI	
Thyroid and para thyroid gland	▪ Discuss anatomy & functions of thyroid& parathyroid gland ▪ Discuss blood supply of thyroid gland ▪ Discuss lymphatic drainage of thyroid gland ▪ Discuss nerve supply of thyroid gland ▪ Discuss related clinicals. • Read a relevant research article • Use digital library	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 8, Page 1018-1021). • https://youtu.be/7_Rd7HEZPI?si=mhoplCBjHSUL6pwI • https://youtu.be/ruOirrIc6oY?si=frzfEV7Lqb52Pp6Q	
Soft palate, larynx	• Discuss the anatomy of soft palate. • Along with attachment of muscles and their actions. • Describe boundaries of tonsillar fossa. • Discuss larynx in detail with its cartilages and muscles. • Discuss blood supply of larynx • Discuss functions of larynx • Discuss trachea (revisit). ▪ Discuss related clinicals ▪ Read a relevant research article • Use digital library	• Clinical Oriented Anatomy by Keith L. Moore.6TH Edition. (Chapter 8, Page 1021-1032). https://youtu.be/eBn3PMX0tfk?si=hCg37nm5DsR6T1_s https://youtu.be/4SDETzyJCVI?si=zWSHGf-prTqR1kqi	

Histology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At the end of practical students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Histology of pituitary gland	• Identify the histological slide of the pituitary gland	P	Skill lab	OSPE VIVA
	• Illustrate the histological structure of the pituitary gland	C2		
	• Enlist two points of identification	C1		
Histology of adrenal gland	• Identify the histological slide of the adrenal gland	P	Skill Lab	OSPE VIVA
	• Illustrate the histological structure of the adrenal gland	C2		
	• Enlist two points of identification	C1		
Histology of thyroid and parathyroid gland	• Identify the histological slide of the thyroid and parathyroid gland	P	Skill lab	OSPE VIVA
	• Illustrate the histological structure of the thyroid and parathyroid gland	C2		
	• Enlist two points of identification	C1		
Histology of pancreas	• Identify the histological slide of the pancreas	P	Skill lab	OSPE VIVA
	• Illustrate the histological structure of the pancreas	C2		
	• Enlist two points of identification	C1		

Physiology Large Group Interactive Session (LGIS)

Topic	At The End Of Lecture Students Should Be Able To	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Introduction to endocrinology & Signal transduction - I	• Define endocrinology • Describe several types of chemical messenger systems • Enumerate endocrine glands in the body along with their secretions • Compare two major control systems of the body • Identify different locations and properties of hormone receptors • Explain various intracellular signaling pathways after hormone receptor activation • Describe various mechanism of actions of hormones in detail	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 16, Page 299) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 395) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 231) (Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 50,Page 817) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 75, Page 915-928)	• https://youtu.be/QLcxQT1fb_c • https://www.khanacademy.org/science/ap-biology/cell-communication-and-cell-cycle/cell-communication/a/introduction-to-cell-signaling • https://youtu.be/GHwMJnxaiys	1. C1 2. C1 3. C1 4. C2 5.C1 6.C2 7.C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Hypothalamic–pituitary axis & GH	• Recall the physiological anatomy and parts of pituitary gland • Enumerate various cell types in pituitary gland along with their secretion and function • Explain connections of anterior and posterior pituitary gland with hypothalamus • Enlist various hormones secreted from anterior & posterior pituitary gland • Describe metabolic functions of growth hormone • Elaborate the role of growth hormone in	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 17, Page 307,313,324) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 407,411) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 241) (Chapter 23,Page 775) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 51,Page	• https://www.mdpi.com/2072-6694/15/15/3820 • https://youtu.be/fqz4WOwfz4Q • https://resources.wfsahq.org/atotw/the-hypothalamic-pituitary-axis-part-1-anatomy-physiology/	C1 C1 C2 C1 C1 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

	soft tissue and bone growth • Discuss role of somatomedins in relation with growth hormone • Explain regulation of secretion	837) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 76, Page 929)				
Introduction to endocrinology & Signal transduction-II	• Classify hormones according to solubility and chemical nature • Describe the nature& synthesis of hormones • Differentiate different classes of hormones • Describe the secretion, transport, feedback control& clearance of hormones Differentiate different classes of hormones	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 16, Page 301,304) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 395) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 235,250) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 50,Page 817-831) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 75, Page 915-928)	• https://youtu.be/QLcxQT1fb_c • https://www.khanacademy.org/science/ap-biology/cell-communication-and-cell-cycle/cell-communication/a/introduction-to-cell-signaling • https://youtu.be/GHwMJnxaiys	C2 C1 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Abnormalities of growth hormone secretion	• Enlist abnormalities of GH secretion • Describe pan hypopituitarism • Discuss in detail dwarfism & its treatment • Explain gigantism & acromegaly • Differentiate gigantism & acromegaly	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 18, Page 321-334) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 412) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 775) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 76, Page 936)	1. https://youtu.be/0GuRf5YPGiA 2. https://www.ncbi.nlm.nih.gov/books/NBK278971/	C1 C1 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Insulin and glucagon: Structure and metabolic functions	• Describe physiological anatomy of pancreas • Describe chemistry, synthesis and transport of insulin • Describe the factors which affect secretion of insulin • Discuss mechanism of action of insulin • Describe the physiological actions of insulin • Explain mechanism of insulin secretion • Describe mechanism of action of glucagon • Discuss regulation of secretion of glucagon • Explain the functions of glucagon	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 429,445) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 440,446) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 902) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 973,982)	1. https://youtu.be/1c6a0BNsyek 2. https://www.britannica.com/science/insulin 3. https://www.medicalnewstoday.com/articles/316427#overview	C1 C1 C1 C2 C1 C2 C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Hormones of posterior pituitary gland (oxytocin and ADH)	• Recall site of synthesis and secretion of posterior pituitary hormones • Describe mechanism of action, stimuli for secretion, functions and regulation of ADH • Discuss functions of oxytocin	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 17, Page 311) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 415) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 241) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 51,Page 849) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section	1. https://youtu.be/EGl1Oeetxpg 2. https://teachmephysiology.com/endocrine-system/hypothalamus-pituitary/posterior-pituitary/posterior-pituitary-gland/ 3. https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/posterior-pituitary-hormones	C1 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

		14. (Chapter 76, Page 938)				
Regulation of blood Glucose & Diabetes mellitus	• Describe various factors regulating blood glucose concentration • Discuss the importance of blood glucose regulation • Discuss the pathophysiology of diabetes mellitus • Explain the physiology of diagnosis of diabetes mellitus • Explain the treatment of diabetes mellitus • Differentiate between type I & type II diabetes mellitus • Differentiate between diabetes mellitus & diabetes insipidus	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 435-438,446-448) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 445) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 915) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 983)	1. https://youtu.be/KY85BUcQZew 2. https://www.pharmaguideline.com/2022/01/hormonal-regulation-of-blood-glucose-level.html 3. https://www.medicalnewstoday.com/articles/316427	C1 C2 C2 C2 C2 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Aldosterone and cortisol	• Describe physiological anatomy of adrenal gland • Enumerate its various hormones • Describe synthesis, transport & metabolism of adrenocortical hormones • Describe mechanism, physiological actions of aldosterone • Explain the phenomenon of aldosterone escape • Describe regulation of aldosterone secretion • Enlist abnormalities of aldosterone secretion • Describe mechanism, physiological actions of cortisol	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 351-364) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 427) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 866) • Textbook of Medical Physiology by	1. https://youtube/2-Z3Q6BZuBY 2. https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 3. https://www.britannica.com/science/aldosterone	C1 C1 C1 C1 C2 C1 C1 C2 C2 C1 C2 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

	Discuss anti stress and anti-inflammatory actions of cortisol • Describe regulation of cortisol secretion • Discuss functions of adrenal androgens • Describe the chemistry, secretion regulation of secretion of ACTH • Discuss the actions of ACTH	Guyton & Hall.14th Edition..Section 14. (Chapter 78,Page 955)				
Thyroid hormone: Production, storage and release	• Recall physiological anatomy of thyroid gland • Briefly explain secretions of thyroid gland • Compare the features of tri iodothyronine with thyroxine • Describe the steps of synthesis of thyroid hormone • Discuss in detail half-life, release, and transport of thyroid hormones • Explain regulation of secretion of thyroid hormone	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 337) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 419) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 770) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 855) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 941)	1. https://youtu.be/afVX3mlNB80 2. https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thyroid-hormone-release 3. https://byjus.com/biology/thyroid-hormone/	C1 C2 C2 C1 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Abnormalities of adrenocortical	• Discuss in detail Cushing's syndrome • Differentiate between Cushing disease and Cushing's syndrome • Discuss adrenogenital syndrome • Discuss the physiological anatomy of adrenal medulla • Enumerate various hormones secreted by adrenal medulla • Describe the steps involved in synthesis of catecholamines	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 364-373) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 431,434,437) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765)	1. https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 2. https://youtu.be/pSeU9Ei-3u4 3. https://medlineplus.gov/adrenalglandd	C2 C2 C2 C2 C1 C1 C2 C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based

hormone	• Explain the function of catecholamines • Discuss stress response • Describe pheochromocytoma	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 874,875) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78, Page 969)	isorders.html			Aseessment, MST based Assessment) OSPE
Physiological role of thyroid hormone	• Describe mechanism of action of thyroid hormone • Explain physiological functions of thyroid hormone	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 343,345) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 423) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 770) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 855) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 944)	1. https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thyroid-hormone-release 2. https://youtu.be/IXjRsX50JB4 3. https://journals.physiology.org/doi/full/10.1152/physrev.2001.81.3.1097	C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Calcium homeostasis (Vitamin D, parathyroid hormone	• Discuss normal levels and metabolism of calcium and phosphate • Describe the effects of hypocalcemia & hypercalcemia • Explain the absorption and excretion of calcium and phosphate • Discuss in detail bone physiology • Describe the steps involved the activation of Vitamin D • Discuss the actions of vitamin D	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 375-386) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 448) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 777,779)	1. https://youtu.be/JYQL7JEsF_4 2. https://teachmephysiology.com/biochemistry/electrolytes/calcium-regulation	C2 C1 C2 C2 C1 C2 C1 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,

and calcitonin)	• Describe the physiological anatomy of parathyroid glands • Describe the chemistry & regulation of secretion of parathyroid hormone • Explain the actions of parathyroid hormones • Describe functions and regulation of calcitonin	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54,Page 881,890) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 991)		C1		MST based Assessment) OSPE
Abnormalities of thyroid hormone (Goiter, hypothyroidism and hyperthyroidism)	• Enlist disorders of thyroid gland • Discuss in detail causes, symptoms, diagnosis and treatment of hyperthyroidism • Discuss in detail causes, symptoms, diagnosis and treatment of hypothyroidism • Compare hypothyroidism with hyperthyroidism • Differentiate between pituitary dwarfism and cretinism	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 344,345) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 425) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 773) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 861) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 950)	1. https://www.hopkinsmedicine.org/health/conditions-and-diseases/disorders-of-the-thyroid 2. https://youtu.be/0vnpmaSI57c	C1 C2 C2 C2 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo	• Discuss in detail hypoparathyroidism • Describe hyperparathyroidism • Describe osteoporosis	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 378,380,381,385,387) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 453) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter	1. https://www.orthobullets.com/basic-science/9031/rickets 2. https://youtu.be/Srm2GH1dusg 3. https://www.webmd.com/osteoporosi	C2 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,

and hyperparathyroidism)		23,Page 779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54, Page 881,890) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 1003,1006)	s/what-is-osteomalacia			MST based Assessment) OSPE

Physiology Small Group Discussion (SGDs)

Topic	At The End Of Lecture Students Should Be Able To	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Signal transduction & Growth hormone.	• Define endocrinology • Describe several types of chemical messenger systems • Enumerate endocrine glands in the body along with their secretions • Compare two major control systems of the body • Identify different locations and properties of hormone receptors • Explain various intracellular signaling pathways after hormone receptor activation • Describe various mechanism of actions of hormones in detail	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 16, Page 299) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 395) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 231) (Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 50,Page 817) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 75, Page 915-928)	• https://youtu.be/QLcxQT1fb_c • https://www.khanacademy.org/science/ap-biology/cell-communication-and-cell-cycle/cell-communication/a/introduction-to-cell-signaling https://youtu.be/GHwMJnxaiys	1. C1 2. C1 3. C1 4. C2 5.C1 6.C2 7.C1	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Thyroid Hormones	• Recall physiological anatomy of thyroid gland • Briefly explain secretions of thyroid gland • Compare the features of tri iodothyronine with thyroxine • Describe the steps of synthesis of thyroid hormone • Discuss in detail half-life, release, and transport of thyroid hormones Explain regulation of secretion of thyroid hormone	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 337) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 419) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 770) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 855) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 941)	1. https://youtu.be/afVX3mlNB80 2. https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thyroid-hormone-release **3.** https://byjus.com/biology/thyroid-hormone/	C1 C2 C2 C1 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Insulin and Glucose Metabolism	• Describe physiological anatomy of pancreas • Describe chemistry, synthesis and transport of insulin • Describe the factors which affect secretion of insulin • Discuss mechanism of action of insulin • Describe the physiological actions of insulin • Explain mechanism of insulin secretion • Describe mechanism of action of glucagon • Discuss regulation of secretion of glucagon Explain the functions of glucagon	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 429,445) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 440,446) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 902) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 973,982)	1. https://youtu.be/1c6a0BNsyek 2. https://www.britannica.com/science/insulin 3. https://www.medicalnewstoday.com/articles/316427#overview	C1 C1 C1 C2 C1 C2 C1 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism	• Discuss in detail hypoparathyroidism • Describe hyperparathyroidism Describe osteoporosis	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 378,380,381,385,387) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 453) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54, Page 881,890) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 1003,1006)	1. https://www.orthobullets.com/basic-science/9031/rickets 2. https://youtu.be/Srm2GH1dusg 3. https://www.webmd.com/osteoporosis/what-is-osteomalacia	C2 C1 C1	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE
Insulin and Glucagon:Structure and metabolic functions (Second week)	• Describe physiological anatomy of pancreas • Describe chemistry, synthesis and transport of insulin • Describe the factors which affect secretion of insulin • Discuss mechanism of action of insulin • Describe the physiological actions of insulin • Explain mechanism of insulin secretion • Describe mechanism of action of glucagon • Discuss regulation of secretion of glucagon Explain the functions of glucagon	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 429,445) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 440,446) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 902) 4. Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79,	1. https://youtu.be/1c6a0BNsyek 2. https://www.britannica.com/science/insulin 3. https://www.medicalnewstoday.com/articles/316427#overview	C1 C1 C1 C2 C1 C2 C1 C2 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

		Page 973,982)				
Adrenal gland and its hormones (Fourth week)	• Describe physiological anatomy of adrenal gland • Enumerate its various hormones • Describe synthesis, transport & metabolism of adrenocortical hormones • Describe mechanism, physiological actions of aldosterone • Explain the phenomenon of aldosterone escape • Describe regulation of aldosterone secretion • Enlist abnormalities of aldosterone secretion • Describe mechanism, physiological actions of cortisol Discuss anti stress and anti-inflammatory actions of cortisol • Describe regulation of cortisol secretion • Discuss functions of adrenal androgens • Describe the chemistry, secretion regulation of secretion of ACTH Discuss the actions of ACTH	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 351-364) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 427) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 866) 5. Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78,Page 955)	1. https://youtube/2-Z3Q6BZuBY 2. https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 3. https://www.britannica.com/science/aldosterone	C1 C1 C1 C1 C2 C1 C1 C2 C2 C1 C2 C1 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment, MST based Assessment) OSPE

Physiology Self Directed Learning (SDL)

Topic	At The End Of Lecture Students Should Be Able To	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
(ON CAMPUS) Regulation of blood Glucose & Diabetes mellitus	• Describe various factors regulating blood glucose concentration • Discuss the importance of blood glucose regulation • Discuss the pathophysiology of diabetes mellitus • Explain the physiology of diagnosis of diabetes mellitus • Explain the treatment of diabetes mellitus • Differentiate between type I & type II diabetes mellitus • Differentiate between diabetes mellitus & diabetes insipidus	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 435-438,446-448) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 445) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 915) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 983)	1. https://youtu.be/KY85BUcQZew 2,https://www.pharmaguideline.com/2022/01/hormonal-regulation-of-blood-glucose-level.html 3.https://www.medicalnewstoday.com/articles/316427	C1 C2 C2 C2 C2 C2 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
Abnormalities of adrenocortical hormone	• Discuss in detail Cushing's syndrome • Differentiate between Cushing disease and Cushing's syndrome • Discuss adrenogenital syndrome • Discuss the physiological anatomy of adrenal medulla • Enumerate various hormones secreted by adrenal medulla • Describe the steps involved in synthesis of catecholamines • Explain the function of catecholamines • Discuss stress response • Describe pheochromocytoma	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 364-373) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 431,434,437) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th	1. https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 2. https://youtu.be/pSeU9Ei-3u4 3. https://medlineplus.gov/adrenalglanddisorders.html	C2 C2 C2 C2 C1 C1 C2 C2 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation

		Edition. Section 07(Chapter 53,Page 874,875) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78, Page 969)				
Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism)	• Discuss in detail hypoparathyroidism • Describe hyperparathyroidism • Describe osteoporosis	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 378,380,381,385,387) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 453) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54, Page 881,890) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 1003,1006)	1. https://www.orthobullets.com/basic-science/9031/rickets 2. https://youtu.be/Srm2GH1dusg 3. https://www.webmd.com/osteoporosis/what-is-osteomalacia	C2 C1 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
(OFF CAMPUS) Hypothalamic–pituitary axis & GH	• Recall the physiological anatomy and parts of pituitary gland • Enumerate various cell types in pituitary gland along with their secretion and function • Explain connections of anterior and posterior pituitary gland with hypothalamus • Enlist various hormones secreted from anterior & posterior pituitary gland • Describe metabolic functions of	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 17, Page 307,313,324) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 407,411) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 241)	• https://www.mdpi.com/2072-6694/15/15/3820 • https://youtu.be/fqz4WOwfz4Q https://resources.wfsahq.org/atotw/the-hypothalamic-	1. C1 2. C1 3. C2 4. C1 5. C1 6. C2 7. C2 8. C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE

	growth hormone • Elaborate the role of growth hormone in soft tissue and bone growth • Discuss role of somatomedins in relation with growth hormone • Explain regulation of secretion	(Chapter 23,Page 775) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 51,Page 837) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 76, Page 929)	pituitary-axis-part-1-anatomy-physiology/			SDL Evaluation
Introduction to endocrinology & Signal transduction	• Classify hormones according to solubility and chemical nature • Describe the nature& synthesis of hormones • Differentiate different classes of hormones • Describe the secretion, transport, feedback control& clearance of hormones • Differentiate different classes of hormones	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 16, Page 301,304) • Physiology by Linda S. Costanzo 6th Edition.Endocrine Physiology (chapter 09, page 395) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 07,Page 235,250) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 50,Page 817-831) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 75, Page 915-928)	• https://youtu.be/QLcxQT1fb_c • https://www.khanacademy.org/science/ap-biology/cell-communication-and-cell-cycle/cell-communication/a/introduction-to-cell-signaling https://youtu.be/GHwMJnxaiys	C2 C1 C2 C1 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
Insulin and glucagon:	• Describe physiological anatomy of pancreas • Describe chemistry, synthesis and transport of insulin • Describe the factors which affect secretion of insulin	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 24, Page 429,445) • Physiology by Linda S. Costanzo 6th Edition.Endocrine	1. https://youtu.be/1c6a0BNsyek 2. https://www.britannica.com/science/i	C1 C1 C1 C2 C1 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MS

	• Discuss mechanism of action of insulin • Describe the physiological actions of insulin • Explain mechanism of insulin secretion • Describe mechanism of action of glucagon • Discuss regulation of secretion of glucagon • Explain the functions of glucagon	Physiology (chapter 09, page 440,446) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. (Chapter 22,Page 743) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 56,Page 902) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 79, Page 973,982)	nsulin 3. https://www.medicalnewstoday.com/articles/316427#overview	C1 C2 C2		T based Assessment) OSPE SDL Evaluation
Aldosterone and cortisol	• Describe physiological anatomy of adrenal gland • Enumerate its various hormones • Describe synthesis, transport & metabolism of adrenocortical hormones • Describe mechanism, physiological actions of aldosterone • Explain the phenomenon of aldosterone escape • Describe regulation of aldosterone secretion • Enlist abnormalities of aldosterone secretion • Describe mechanism, physiological actions of cortisol Discuss anti stress and anti-inflammatory actions of cortisol • Describe regulation of cortisol secretion • Discuss functions of adrenal androgens • Describe the chemistry, secretion	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 20, Page 351-364) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 427) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 765) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 53,Page 866) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 78,Page 955)	1. https://youtube/2-Z3Q6BZuBY 1. https://journals.physiology.org/doi/abs/10.1152/ajplegacy.1964.207.1.109 2. https://www.britannica.com/science/aldosterone	C1 C1 C1 C1 C2 C1 C1 C2 C2 C1 C2 C1 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MS T based Assessment) OSPE SDL Evaluation

	regulation of secretion of ACTH • Discuss the actions of ACTH					
Thyroid hormone:	• Recall physiological anatomy of thyroid gland • Briefly explain secretions of thyroid gland • Compare the features of tri iodothyronine with thyroxine • Describe the steps of synthesis of thyroid hormone • Discuss in detail half-life, release, and transport of thyroid hormones • Explain regulation of secretion of thyroid hormone	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 337) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 419) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 770) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 855) • Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 941)	1. https://youtu.be/afVX3mlNB80 2. https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/thyroid-hormone-release 3. https://byjus.com/biology/thyroid-hormone/	C1 C2 C2 C1 C1 C2 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation
Abnormalities of thyroid hormone (Goiter, hypothyroidism and hyperthyroidism)	• Enlist disorders of thyroid gland • Discuss in detail causes, symptoms, diagnosis and treatment of hyperthyroidism • Discuss in detail causes, symptoms, diagnosis and treatment of hypothyroidism • Compare hypothyroidism with hyperthyroidism • Differentiate between pituitary dwarfism and cretinism	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 19, Page 344,345) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 425) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 773) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 52,Page 861)	1. https://www.hopkinsmedicine.org/health/conditions-and-diseases/disorders-of-the-thyroid 2. https://youtu.be/0vnpmaSI57c	C1 C2 C2 C2 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation

		• Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 77, Page 950)				
Calcium homeostasis (Vitamin D, parathyroid hormone and calcitonin)	• Discuss normal levels and metabolism of calcium and phosphate • Describe the effects of hypocalcemia & hypercalcemia • Explain the absorption and excretion of calcium and phosphate • Discuss in detail bone physiology • Describe the steps involved the activation of Vitamin D • Discuss the actions of vitamin D • Describe the physiological anatomy of parathyroid glands • Describe the chemistry & regulation of secretion of parathyroid hormone • Explain the actions of parathyroid hormones Describe functions and regulation of calcitonin	• Ganong's Review of Medical Physiology.25TH Edition.Section 03 (Chapter 21, Page 375-386) • Physiology by Linda S. Costanzo 6th Edition. Endocrine Physiology (chapter 09, page 448) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.(Chapter 23,Page 777,779) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 07(Chapter 54,Page 881,890) Textbook of Medical Physiology by Guyton & Hall.14th Edition..Section 14. (Chapter 80, Page 991)	1. https://youtu.be/JYQL7JEsF_4 2.https://teachmephysiology.com/biochemistry/electrolytes/calcium-regulation	C2 C1 C2 C2 C1 C2 C1 C1 C2 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Aseessment,MST based Assessment) OSPE SDL Evaluation

Physiology Practicals Skill Laboratory (SKL)

Topic	At The End Of Lecture Students Should Be Able To	References	Learning Resources	Learning Domains	Learning Strategy
Examination of pupillary reaction	• Principle • Procedure • Precautions • Clinical correlation OF Pupillary Reactions	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	A3/P3/C1	Practicals /skill lab	Viva Voce Ospe Video Assissted Assessment
Checking for color vision	• Apparatus identification • Principle • Procedure • Precautions • Clinical correlation for color vision	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	A3/P3/C1	Practicals /skill lab	Viva Voce Ospe Video Assissted Assessment
Revision of practical	• Revision	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	A3/P3	Practicals /skill lab	Viva Voce Ospe Video Assissted Assessment

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Classification and mechanism of action of hormones	Classify hormones Explain the mechanism of action of hormones	C2 C2	LGIS	MCQs, SAQs & Viva
Thyroxin	Describe nature, formation and mechanism of action of thyroxin Discuss related clinical disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Parathyroid and Calcitonin	Discuss role of various hormones acting on calcium and phosphate metabolism Discuss related clinical disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Adrenal cortical hormones	Describe synthesis, mechanism of action and functions of aldosterone, cortisol and adrenal androgens Discuss related clinical disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Adrenal medullary hormones	Describe mechanism of action and role of adrenal medullary hormones Discuss related diseases	C2 C3	LGIS	MCQs, SAQs & Viva
Insulin and glucagon	Explain formation, mechanism of action and role of insulin and glucagon Discuss related diseases	C2 C3	LGIS	MCQs, SAQs & Viva
Blood glucose regulation	Describe regulation of normal plasma glucose level Explain hypoglycemia	C2 C3	LGIS	MCQs, SAQs & Viva

Biochemistry Small Group Discussion (SGDs)

Topic	At The End Of Tutorial Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Classification of endocrine hormones,	• Classify Endocrine hormones	C1	SGD	MCQs SAQs Viva
	• Disscus the mechanism of action of endocrine hormones	C2		
Adrenocortical Hormones	• Elaborate formation, functions & related disorders of adrenocortical hormones	C2	SGD	MCQs SAQs Viva

Biochemistry Self Directed Learning (SDL)

Topic	At The End Of SDL Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool	Learning Resources
Classification & Mechanism of action of Endocrine Hormones	• Classify Endocrine Hormones	C1	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter 41, pages 482-484 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapter 18, pages 265-266 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6761896/ https://www.youtube.com/watch?v=KSclrkk_Ako
	• Discuss the Mechanism of action of various Endocrine Hormones	C2			
Formation & Mechanism of action of Thyroid Hormone	• Elaborate the nature, formation, mechanism of action and related diseases of Thyroxin	C2	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter 41, pages 492-493 and 498 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapter 29, pages 452-454 https://www.nature.com/articles/boneres201311 https://www.youtube.com/watch?v=cDGmsR2ZILE
Synthesis & Mechanism of Action of	• Describe synthesis, mechanism of action and functions of Aldosterone, Cortisol and Adrenal androgens • Discuss related clinical disorders	C2	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter 41, pages 485-488, 491- 492, and 495-496, 498-499 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapter 18, pages 262-266
	• Describe mechanism of action and role of Adrenal	C2			

Adrenocortical Hormones	Medullary Hormones • Discuss related diseases				https://www.ncbi.nlm.nih.gov/books/NBK470339/ https://www.youtube.com/watch?v=JlI5N2N4d-k https://www.sciencedirect.com/topics/medicine-and-dentistry/adrenal-medulla https://www.youtube.com/watch?v=afzWLmd72Rk
Synthesis & Mechanism of Action of Insulin & Glucagon	• Explain formation, mechanism of action and role of Insulin and Glucagon • Discuss related diseases	C2	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter pages 493-494 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapter 23, pages 341-354 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6515536/ https://www.youtube.com/watch?v=1c6a0BNsyek https://www.youtube.com/watch?v=-3J6QRMerQE
Glucose Tolerance Test Curves Hypoglycemia Diabetic Ketoacidosis & Hyperosmolar Hyperglycemic State Online Clinical Evaluation	• Normal & abnormal curves of glucose tolerance test and factors effecting it. Interpretation of GTT curves for Diabetes Mellitus • Hypoglycemia, Hyperglycemia & Diabetic ketoacidosis	C2	SDL	MCQs SAQs Viva	1. Harper's Illustrated Biochemistry 32nd edition, chapter pages 719-720, 136-138 & 469-470 2. Lippincott Illustrated Reviews, Biochemistry, 8th Edition, chapters 23 & 25, pages 350-354 & 375-387 https://www.ncbi.nlm.nih.gov/books/NBK532915/ https://www.youtube.com/watch?v=SRZlYdQWO3g https://www.ncbi.nlm.nih.gov/books/NBK279052/ https://www.youtube.com/watch?v=jCf7W1U4JKE https://www.ncbi.nlm.nih.gov/books/NBK534841/

Biochemistry Practicals Skill Laboratory (SKL)

Topic	At The End Of Practical Students Should Be Able To	C/P/A	Teaching Strategy	Assessment Tool
Estimation of Blood Glucose	• Perform estimation of glucose by spectrophotometer	P	Skill lab	OSPE
GTT	• Explain the procedure of practical, normal & abnormal curves of glucose and factors effecting it Interpret the result of GTT	P	Skill lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **Case Base Learning (CBLs)**
- **Problem Base Learning (PBLs)**
- **Vertical Integration LGIS**

Case Based Learning Objectives (CBL)

Subjects	Topics	At the end of the session the student should be able to	Learning Domains
Anatomy	• Multi Nodular Goitre with Hypothyroidism	Apply basic knowledge of subject to study clinical case.	C3
	• Torticollis	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Adrenocortical Hormone	Apply basic knowledge of subject to study clinical case	C3
Biochemistry	• Thyrotoxicosis	Apply basic knowledge of subject to study clinical case.	C3
	• Addison's Disease	Apply basic knowledge of subject to study clinical case	C3

Vertical Integration LGIS

Medicine

Topic	At the end of this LGIS students of should be able to:	Learning Domain	Teaching Strategy	Assessment Tool
Diabetes mellitus	• Define diabetes	C1	LGIS	MCQ's
	• Classify diabetes	C2		
	• Discuss pathogenesis of type I and type II diabetes mellitus	C2		

Pathology

Topic	At the end of this LGIS students of should be able to:	Learning Domain	Teaching Strategy	Assessment Tool
Hypothyroidism and hyperthyroidism	• Discuss discuss pathophysiology, clinical manifestations of hypothyroidism and hyperthyroidism	C2	LGIS	MCQ
	• Workup and management	C2		
Diabetes mellitus	• Discuss pathophysiology, clinical manifestations of type I and type II diabetes mellitus	C2	LGIS	MCQ
	• Discuss Workup and management	C2		

Surgery

Topic	At the end of this LGIS students of should be able to:	Learning Domain	Teaching Strategy	Assessment Tool
Diabetic foot	• Describe Diabetic Foot	C2	LGIS	MCQ
	• Classify Diabetic foot	C1		
	• Describe Pathophysiology of Diabetic foot	C2		
	• Outline Management of Diabetic foot	C2		

Gynecology & Obstetrics

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Endocrine disorders in pregnancy (diabetes mellitus, thyroid disorders)	Diabetes Mellitus: • Know why pregnancy is a diabetogenic state	C2	LGIS	MCQs
	• Define gestational diabetes mellitus (GDM)	C1		
	• Correlate clinical features with pathophysiology of GDM	C2		
	• Outline brief management plan for these conditions	C2		
	• Know the methods for screening of diabetes in pregnancy	C2		
	• Thyroid disorders:	C1		
	• Know pathophysiology of common thyroid disorders during pregnancy	C2		
	• Understand clinical presentation of thyroid disorders in pregnancy	C2		
	• Comprehend effects of thyroid disorders on mother and fetus	C2		

Pediatrics

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Growth	• Identify key hormones involved in growth (e.g., growth hormone,	C2		

problems due to Endocrine causes	thyroid hormones, sex steroids) and their physiological roles.		LGIS	MCQs
	• Differentiate between endocrine and non-endocrine causes of growth disturbances.	C2		
	• Outline treatment options for endocrine-related growth problems, including hormone replacement therapy and surgical interventions.	C3		

List of Endocrinology Module Vertical Courses Lectures

Sr. #	Date/Day	Department	Time	Topic Of Lectures	Teachers Name & Contact No.
1.	12-10-2024 Saturday	PEADS	9:00 AM – 10:00 AM	Growth problems due to Endocrine causes	Dr. Hina Sattar
2.	30-10-2024 Wednesday	PATHOLOGY	9:20am – 10:10am	Hypothyroidism and hyperthyroidism	Dr. Nida Fatima (Even) 0333-5371164 Dr. Faiza Zafar (Odd) 0321-8821410
3.	30-10-2024 Wednesday	JOINT SESSION	11:20am-12:10pm	Patient Diabetes mellitus	Anatomy, Physiology, Medicine, Pathology & Surgery
4.	31-10-2024 Thursday	OBS & GYNAE	11:20am-12:10pm	Endocrine Disorders In Pregnancy (Diabetes Mellitus, Thyroid Disorders)	Dr. Sabeen Ashraf (Even) 0321-5332969 Dr. Saba Yousaf (Odd) 0331-5664914

SECTION – IV

Spiral Courses

Content

- **Longitudinal Themes**
    - **The Holy Quran Translation**
    - **Pak Studies/Islamiyat**
    - **Behavioral Sciences**
    - **Biomedical Ethics**
    - **Early Clinical Exposure (ECE)**

Radiology & Artificial Inteligence

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Basics of Radiology	• Categorize different tissues from most to least opaque on x-ray including: bone, soft tissue, air, metal, and fat	C2	LGIS	MCQs
	• Distinguish between the different types of contrast used in imaging exams and the potential diagnostic benefits of each	C2		MCQs

Behaveioural Sciences

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Professionalism in healthcare	• Define professionalism in the context of healthcare and explain its significance for patient care and the medical profession	C2	LGIS	MCQs
	• Identify key principles of professionalism, including integrity, respect, empathy, accountability, and commitment to lifelong learning	C2		
	• Discuss the ethical frameworks that guide professional behavior and decision-making in healthcare settings.	C2		

Family Medicine

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Approach to Patient Diabetes mellitus	• Recognize the signs and symptoms of diabetes mellitus and the significance of a thorough patient history.	C3	LGIS-1	MCQs
	• Explain the criteria for diagnosing diabetes, including fasting plasma glucose, oral glucose tolerance test, and HbA1c levels.			
	• Outline the goals of diabetes management, including glycemic control, lifestyle modifications, and prevention of complications.			

Biomedical Ethics & Professionalism

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool	
History of Medical Ethics	Discussion on Health Research ethics focusing; •Historical perspective of Tuskegee studies, Willow brook Experiment •Codes of medical ethics: traditional foundations and contemporary practice •Nuremburg code, Belmont report, Declaration of Helsinki and importance of historical background of ethics in current research trends • General ethical principles including explanation of 04 basic principles of Beneficence, non-maleficence, respect and justice. - Interpretation research ethics for; - Informed consent and confidentiality in research HR	At the end of the session students should be able to; • Explain the meaning of the term "'ethics'".**C1** • Describe the historical perspective of global development of medical ethics. **C1** • Describe the codes of medical ethics and their implications.**C1** • Recognize ethical issues relevant to the case situation and apply the ethical codes as appropriate. **C2** • Discuss the development of indigenous ethical codes in the South-East Asian Region. **C2.** • Demonstrate sensitivity to cultural diversity in medical care.**C3**	LGIS 1hr contact session in 2-4 parallel classes, Conducted by Senior faculty.	1 MCQs of level C1 to C3 will cover this session teachings in relevant block examination in pool of total 04 MCQs. Result / marks obtained will contribute towards Internal assessment (IA) in 1st Prof. MBBS exam.	Guidelines and Teachers Handbook for Introducing Bioethics to Medical and Dental Students http://nbcpakistan.org.pk/assets/may-16-bioethics-facilitator-book---may-16%2C-2017.pdf The Nuremberg Code: http://www.hhs.gov/ohrp/archive/nurcode.html 10 WMA Declaration of Helsinki: http://www.wma.net/en/30publications/10policies/b3/ CIOMS Guidelines: http://www.cioms.ch/publications/layout_guide2002.pdf . Nuffield Council on Bioethics Guidelines: http://www.sirc.org/news/nuffield.shtml

Introduction to Spiral Courses

The Holy Quran Translation

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

Bioethics

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

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

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

Professionalism

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

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

Communication Skills

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

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

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

Behavioral Sceinces

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

Family Medicine

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

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

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

Artificial Intelligence

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

Integrated Undergraduate Research Curriculum

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

Entrepreneurship

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

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

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

Digital Literacy Module

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

Early Clinical Exposure (ECE)

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

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

backgrounds. Practical experiences can enhance long-term retention of knowledge as students are able to connect theoretical learning with clinical experiences.: Early clinical experiences often involve working in multidisciplinary teams, which fosters a sense of collaboration and understanding of different roles within healthcare.

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

SECTION - V

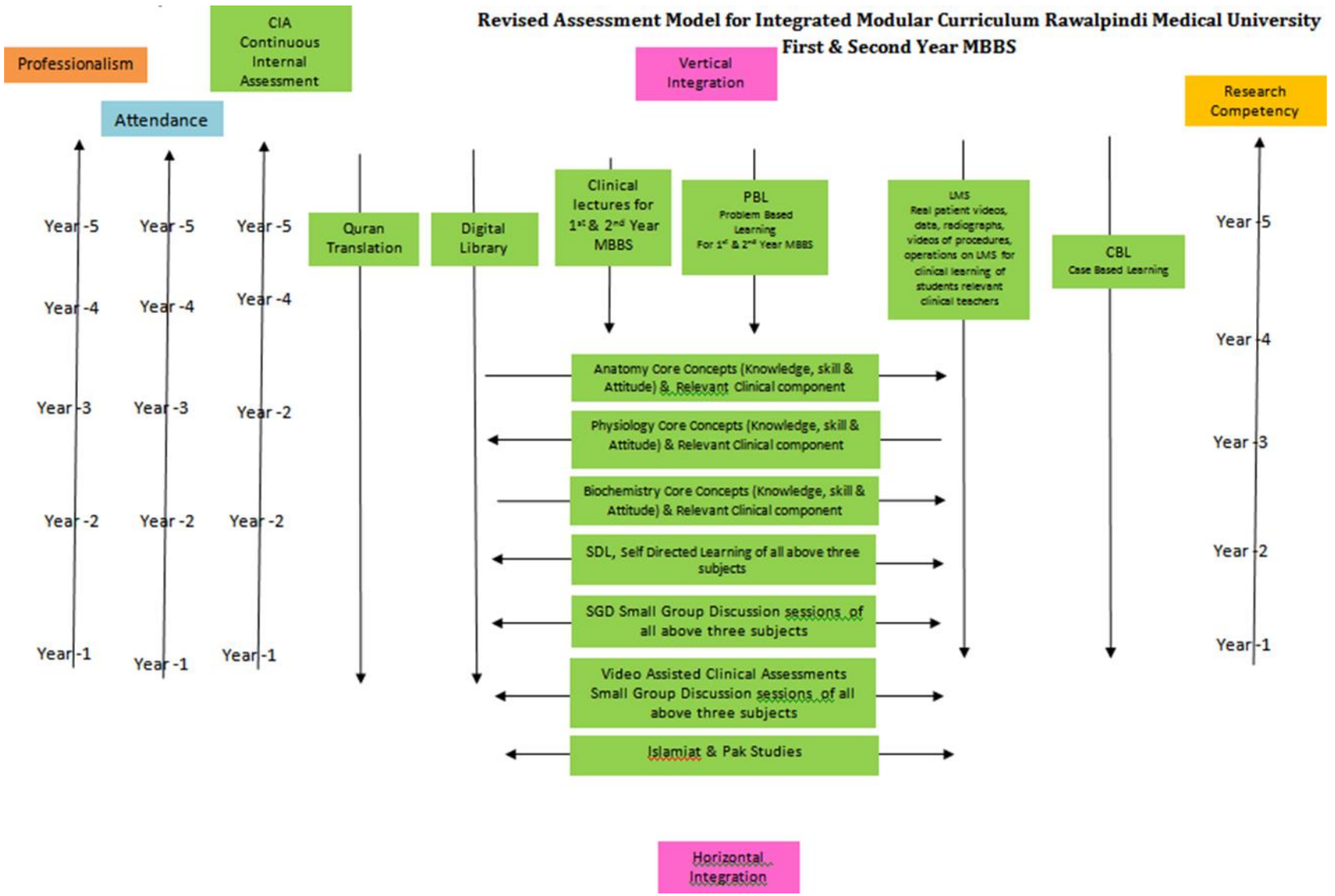
Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in Endocrinology Module**

List of Endocrinology Module Spiral Courses Lectures

Sr. #	Date/Day	Department	Time	Topic Of Lectures	Teachers Name & Contact No.
1.	07-10-2024 Monday	PAKSTUDIES	11:20am-12:10pm	Tareek e Khatm e Naboat / Muslim Milat ke Buniyad	Qari Aman Ullah
2.	09-10-2024 Wednesday	PAKSTUDIES	10:30am-11:20am	Islam Ka Mashi Nizam	Qari Aman Ullah
3.	10-10-2024 Thursday	PAKSTUDIES	10:30am-11:20am	2 Qoumi Nazria / Islami Mumliqat Qiyam	Qari Aman Ullah
4.	11-10-2024 Friday	BEHAVIOURAL SCIENCES	8:00 AM – 9:00 AM	Professionalism in healthcare	Dr. Zarnain Umar (even) Dr. SadiaYasir (odd)
5.	25-10-2024 Friday	BIOMEDICAL EHTICS	8:00 AM – 9:00 AM	History of Medical Ethics	Dr. Arsalan (Even) 0334-3911629 Dr. Maria (Odd) 0324-8895502
6.	25-10-2024 Friday	ISLAMIAYT	10:00 – 11:00AM	Rasalat	Mufti Neem Ahmed Shirazi 0300-5580299
7.	01-11-2024 Friday	FAMILY MEDICINE	11:10 AM – 12:00 PM	Approach to Patient Diabetes Mellitus	Dr. Sadia Khan (Odd) 0343-8509230



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

60% and above is passing marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%	81 - 100%

90% is eligibility criteria for appearing professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular,modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given theshare according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based),modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessement

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in Endocirnology Module

Block	Sr #	Module – 1 Endocrinology Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-III	1	Weekly LMS Based Assessments (Anatomy, Physiology & Biochemistry)	Formative	2 Hours	3 Hours 45 Minutes	3 Hours	2 Formative	6 Summative
	2	End Module Examinations (SEQ, SAQ, EMQ & MCQs Based)	Summative	2 Hours				
	3	Audio Visual (AV) OSPE (10 slides) 5 minutes per slide	Summative	50 Minutes				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures & Spiral Curriculums	Formative	60 Minutes				

Learning Resources

Subject	Resources
Anatomy	**A. Gross Anatomy** 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III **B. Histology** 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. **C. Embryology** 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition. **D. Website** 1. https://my.clevelandclinic.org/health/articles/9117-male-reproductive-system 2. https://teachmeanatomy.info/pelvis/female-reproductive-tract/ 3. https://www.kenhub.com/en/start/pelvis-and-perineum **E. Youtube** 1. https://www.youtube.com/watch?v=G0ZuCilCu3E 2. https://www.youtube.com/watch?v=50iuBgTQCrQ **F. HEC Digital Library** 1. https://www.sciencedirect.com/science/article/pii/S0015028220304350 2. https://link.springer.com/article/10.1007/s11356-021-16581-9 3. https://link.springer.com/chapter/10.1007/978-3-030-30766-0_25 4. https://onlinelibrary.wiley.com/doi/abs/10.1111/and.13712
Physiology	**A. Textbooks** 1. Textbook of Medical Physiology by Guyton and Hall 14th edition. 2. Ganong 'S Review of Medical Physiology 26th edition. **B. Reference Books** 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition. **C. Website** **1.** https://teachmephysiology.com/reproductive-system/ (Reproductive physiology)

	2. https://courses.lumenlearning.com/wm-biology2/chapter/the-ovarian-cycle-the-menstrual-cycle-and-menopause/ 3. https://zerotofinals.com/obgyn/reproductivesystem/physiologyinpregnancy/ https://www.ibbiotech.com/en/info/sperm-capacitation/ **D. Youtube** 1. https://youtu.be/2_owp8kNMus (Female Reproductive system) 2. https://youtu.be/V9a2AQSJIMc (Dr Najeeb Lectures) https://youtu.be/rYVGjbzmAtg (Dr Najeeb lectures) **E. HEC Digital Library** 1. https://www.sciencedirect.com/science/article/abs/pii/S1532045621000296 2. https://www.sciencedirect.com/science/article/abs/pii/S001502822200485X **F. Physiology Journals** 1. https://rupress.org/jgp/article/5/4/441/30794/THE-RATE-OF-DECLINE-OF-MILK-SECRETION-WITH-THE 2. https://www.annualreviews.org/doi/abs/10.1146/annurev.ph.36.030174.001515?journalCode=physiol 3. https://zerotofinals.com/obgyn/reproductivesystem/physiologyinpregnancy/ https://www.msdmanuals.com/home/women-s-health-issues/normal-pregnancy/stages-of-development-of-the-fetus
Biochemistry	**Textbooks** 1. Harper's Illustrated Biochemistry 32th edition. 2. Lipponcott biochemistry 8th edition **B. Reference Books** 1.Lehninger Principle of Biochemistry 8th edition. 2. Biochemistry by Devlin 7th edition. **C. Website** • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-function • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/gonad-functionn • https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/purine-synthesis • https://www.sciencedirect.com/topics/medicine-and-dentistry/purine-metabolism-disorder • https://www.cliffsnotes.com/study-guides/biology/biochemistry-ii/purines-and- • https://www.healio.com/hematology-oncology/learn-genomics/genomics-primer/regulation-of-gene-expression-in-eukaryote **D. Youtube** • https://www.youtube.com/watch?v=A5u_TY1A0t8 • https://www.youtube.com/watch?v=A5u_TY1A0t8

	• https://www.youtube.com/watch?v=VXWyWzbigrg • https://www.youtube.com/watch?v=e2KFVvI8Akk • https://www.youtube.com/watch?v=n7Uec8Jtr4E • https://www.youtube.com/watch?v=J9jhg90A7Lw **E. HEC Digital Library** • https://www.ncbi.nlm.nih.gov/books/NBK29/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3243375/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4215161/ • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC378357/ • https://www.nature.com/scitable/topicpage/regulation-of-transcription-and-gene-expression-in-1086/ **F. Biochemistry Journals** • https://academic.oup.com/bmb/article/11/2/126/256755 • https://www.sciencedirect.com/topics/medicine-and-dentistry/gonadal-hormone

SECTION - VI

Time Table

Integrated Clinically Oriented Modular Curriculum for Second Year MBBS

Endocrinology Module Time Table

Second Year MBBS

Session 2023-2024

Batch- 50

Endocrinology Module Team

Module Name	:	Endocrinology Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Kashif Rauf
Co-coordinator	:	Dr. Aneela Yasmeen
Reviewed by	:	Module Committee

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
4.	Chairperson Physiology	Prof. Dr. Samia Sarwar
5.	Chairperson Biochemistry	Dr. Aneela Jamil
6.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
7.	Focal Person Physiology	Dr. Sidra Hamid
8.	Focal Person Biochemistry	Dr. Aneela Jamil
9.	Focal Person Pharmacology	Dr. Zunera Hakim
10.	Focal Person Pathology	Dr. Asiya Niazi
11.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
12.	Focal Person Community Medicine	Dr. Afifa Kulsoom
13.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
14.	Focal Person Family Medicine	Dr. Sadia Khan

Module Task Force Team		
1.	Coordinator	Dr. Kashif Rauf (Demonstrator of Biochemistry)
2.	DME Focal Person	Dr. Farzana Fatima
3.	Co-coordinator	Dr. Sadia Baqir (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Nayab (PGT Biochemistry)
5.	Co-coordinator	Dr. Aneela Yasmeen (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Ifra Saeed
2.	Assistant Director DME	Dr Farzana Fatima
3.	DME Implementation Team	Prof. Dr. Ifra Saeed Dr. Farzana Fatima Dr. Saira Aijaz
4.	Editor	Muhammad Arslan Aslam

Discipline Wise Details of Modular Contents

Block	Subjects	Embryology	Histology	Histology Practical SKL. Lab.	Gross Anatomy	CBL	SDL
III	• Anatomy	• Development of pituitary & pineal gland • Developmnt of thyroid & parathyroid gland • Developmnt adrenal gland and pancreas	• Pituitary & pineal gland • Thyroid & parathyroid gland • Adrenal gland and pancreas	• Pituitary Gland • Thyroid & parathyroid gland • Adrenal gland • Pancreas	• Bones of neck. Hyoid Bone & Cervical vertebrae • Fascias of Neck • Superficial structurs of neck • Lateral-cervical region (muscles & triangles) • Latera-cervical-region (neurovascular organization) • Interior-cervical region(muscles) • Interior-cervical region (vessels of neck & cervical plexus) • Submandular region • Soft palate • Deep structures of neck • Root of neck • Thyroid &Parathyroid gland • Larynx • Pharynx • pancreas		• Bones of neck • SCM region & superficial & deep fascia • lateral cervical region • Anterior Triangle of neck & its subdivisions • Thyroid and para thyroid gland • Online SDL Evaluation • soft palate, larynx
	• Physiology	• Classification of hormones, Mechanism of action of different hormones Physiology of Thyroid hormones, Adrenal hormones, Insulin and glucagon, Blood glucose regulation, Role of Calcium & Phosphate					
	• Biochemistry	• Classification of hormones, Thyroid hormones, Adrenal hormones, Insulin and glucagon, Blood glucose regulation, Calcium revisit					
	Spiral Courses						
	• Pak Studies	• Tareek e Khatm e Naboat / Muslim Milat ke Buniyad • Islam Ka Mashi Nizam • 2 Qoumi Nazria / Islami Mumliqat Qiyam					
	• Islamiayat	• Rasalat • Itihad e Umat • Amal Bin Maroof					
	• Biomedical Ethics	• History of Medical Ethics					

	• Behavioral Sciences	• Professionalism in Healthcare
	• Radiology & Artificial Intelligence	• Basics of Radiology
	• Family Medicine	• Approach to patient diabetes mellitus
	Vertical components	
	• Peads	• Growth problems due to Endocrine causes
	• Surgery	• Diabetic foot
	• Pathology	• Hypothyroidism and hyperthyroidism
	• Obs & Gynae	• Endocrine Disorders in Pregnancy (Diabetes Mellitus, Thyroid Disorders)
	Early Clinical Exposure (ECE)	
	• Medicine	• Thyroid disorders • Hyperthyroidism • Hypothyroidism • Cushing Syndrome
	• Surgery	• Thyroid Nodule • Multi nodular Goiter • CA Thyroid • Graves Diseases
	• Eye	• Blindness • Visual field defect • Cataract
	• Otolaryngology	• Deafness • Hearing tests • Nasal Obstruction

Categorization of Modular Contents

Anatomy

Category A*	Category B**	Category C***			
		Demonstrations / SGD	**CBL**	**SKL/Practical's**	**Self-Directed Learning (SDL)**
• Special Embryology	• Special Histology	• Bones of neck • Hyoid Bone & • Cervical vertebrae • Fascias of Neck • Superficial structures of neck • Lateral-cervical region (Muscles & triangles) • Lateral-cervical-region (Neurovascular organization) • Anterior-cervical region (Muscles) • Anterior-cervical region (Vessels of neck & cervical plexus) • Submandibular region • Soft palate • Deep structures of neck • Root of neck • Thyroid & Parathyroid gland • Larynx • Pharynx • Pancreas	• Multi Nodular Goitre with Hypothyroidism • Torticollis	• pituitary gland • Thyroid & parathyroid gland • Adrenal gland • pancreas	• Bones of neck • SCM region & superficial & deep fascia • lateral cervical region • Anterior Triangle of neck & its subdivisions • Thyroid and para thyroid gland • Online SDL Evaluation • SDL Anatomysoft palate, larynx

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrator

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.	Assistant professor of Anatomy department (AP)	01
3.	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)	6*2=12
2.	Small Group Discussions (SGD)	15*2+2*1=32
3.	Practical / Skill Lab	20*1.5=30

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1 * 6 = 06 hours
2.	Small Group Discussions (SGD)	2*15 = 32 hours
3.	Practical / Skill Lab	1.5 * 4 = 06 hours
4.	Self-Directed Learning (SDL)	2 * 4 = 08 hours

Physiology

Category A	Category B	Category C
Thyroid hormone: Production, storage and release **(By Prof. Dr.Samia Sarwar / Dr. Iqra)**	Hypothalamic–pituitary axis& GH **(By Dr. Kamil)**	**CBL:** Adrenocortical Hormone
Physiology of accommodation and clinical abnormalities **(By Prof. Dr. Samia Sarwar / Dr. Uzma)**	Abnormalities of growth hormone secretion **(By Dr. Kamil)**	**PBL:**
Physiological role of thyroid hormone **(By Prof. Dr.Samia Sarwar / Dr. Iqra)**	Insulin and glucagon:	**Practical:** 1. Examination of pupillary reaction 2. Checking for color vision 3. Revision of practica
	Structure and metabolic functions **(By Dr. Fareed)**	**SGD:** 1. Signal transduction & Growth hormone. 2. Thyroid Hormones 3. Insulin and Glucose Metabolism 4. Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism 5. Insulin and Glucagon:Structure and metabolic functions (Second week) 6. Adrenal gland and its hormones (Fourth week)
Abnormalities of thyroid hormone (Goiter, hypothyroidism and hyperthyroidism) **(By Prof. Dr.Samia Sarwar / Dr. Iqra)**	Hormones of posterior pituitary gland (oxytocin and ADH) **(By Dr. Kamil)**	
` Introduction to endocrinology & Signal transduction -I **(By Dr. Shmyla)**	Regulation of blood Glucose & Diabetes mellitus **(By Dr. Fareed)**	**SDL: (ON CAMPUS)** **1.** Regulation of blood Glucose & Diabetes mellitus **2.** Abnormalities of adrenocortical hormone **3.** Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism) **(OFF CAMPUS)** **1.** Hypothalamic–pituitary axis & GH **2.** Introduction to endocrinology & Signal transduction **3.** Insulin and glucagon **4.** Aldosterone and cortisol **5.** Thyroid hormone **6.** Abnormalities of thyroid hormone (Goiter, hypothyroidism and hyperthyroidism) **7.** Calcium homeostasis (Vitamin D, parathyroid hormone and calcitonin
	Aldosterone and cortisol **(By Dr. Sheena)**	
Introduction to endocrinology & Signal transduction- II **(By Dr. Shmyla)**	Abnormalities of adrenocortical hormone **(By Dr. Sheena)**	
	Calcium homeostasis (Vitamin D, parathyroid hormone and calcitonin) **(By Dr.Fahad)**	

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resources of Department of Physiology

Sr. #	Designation of Teaching Staff / Human Resource	Total Number Of Teaching Staff
1.	Professor of Physiology department	01
2.	Assistant professor of Physiology department (AP)	01
3.	Associate professor of Physiology department	01 (DME)
4.	Demonstrators of Anatomy department	07
5.	Residents of physiology department (PGTs)	08

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1. 14 * 1= 14 hours
2.	Small Group Discussions (SGD) Case based learning (CBL)	1.5 * 4 = 6 hours + 2 hrs = 8 hours
3.	Problem based learning (PBL)	--
4.	Practical / Skill Lab	1.5 * 3 = 4.5 hours
5.	Self- Directed Learning	3x1=3hours (on campus) + 7x1=7hours (off campus) = 10hours

Biochemistry

Category A*	Category B**	Catogery C***			
LGIS	**LGIS**	**PBL**	**CBL**	**Practical's**	**SGD**
• Insulin & Glucagon	• Classification & mechanism of action of hormones, Calcium metabolism (Revisit) • Thyroid Hormones • Adrenocortical Hormones • Blood Glucose Regulation		• Thyrotoxicosis • Addison's Disease	• Blood Glucose Estimation • Glucose Tolerance Test • Glucose Tolerance Test Revision • Practical Revision/Completion of practical notebooks	• Classification & mechanism of action of Endocrine Hormones • Adrenocortical Hormones

Category A*: By HOD and Assistant Professor

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

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	Assistant professor of biochemistry department (AP)	01
2	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 (LECTURES)	2 * 8= 16hours	08
2.	Small Group Discussions (SGD)	1.5 * 5 = 7.5*4=30 hrs	6
3.	Problem Based Learning (PBL)	Zero	zero
4.	Practical / Skill Lab	1.5 * 5 = 7.5*4=30 hrs	6
5.	Self-Directed Learning (SDL)	----------	07

Endocrinology Module (First Week)
(07-10-2024 To 12-10-2024)

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)
07-10-2024 Monday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS** Introduction to endocrinology & Signal transduction I / Dr. Faizania (Even) Hypothalamic–pituitary axis& GH / Dr. Kamil (Odd)	Break	**ANATOMY LGIS** Histology of pituitary& pineal gland / Asst Prof Dr. Maria Tasleem (Even) Development of pituitary&. pineal gland / Prof. Dr Ifra Saeed (Odd)	**PAKSTUDIES (SDL)** Tareek e Khatm e Naboat / Muslim Milat ke Buniyad Qari Aman Ullah (not attended)	Break	**SGD/DISSECTION** Bones of neck Hyoid bone& Cervical Vertebrae	SDL Anatomy lateral cervical region
08-10-2024 Tuesday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS** Hypothalamic–pituitary axis& GH / Dr Kamil (Even) Introduction to endocrinology & Signal transduction I / Dr. Faizania (Odd)		**ANATOMY LGIS** Histology of pituitary & pineal gland / Asst Prof Dr. Maria Tasleem (Odd) Development of pituitary&. pineal gland / Prof. Dr Ifra Saeed (Even)	**BIOCHEMISTRY LGIS** Classification & Mechanism of action of Endocrine Hormone, / Dr.Rahat (Even) Thyroid Hormone / Dr. Almas (Odd)		**SGD/DISECTION** Superficial and deep fascias of the neck	SDL Anatomy SCM region & superficial & deep fascia
09-10-2024 Wednesday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS** Introduction to endocrinology & Signal transduction-II / Dr. Faizania (Even) Abnormalities of growth hormone secretion / Dr. Kamil (Odd)		**PAKSTUDIES** Islam Ka Mashi Nizam Qari Aman Ullah (not attended)	**RADIOLOGY** Basics of Radiology Dr Fiza (even) / Dr Zeenat (odd)		**CBL/DISSECTION** Superficial structures of neck (Stnocleido mastoid region of neck, posteripor cervical region suboccipital trangle)	SDL physiology Hypothalamic–pituitary axis& GH
10-10-2024 Thursday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS** Abnormalities of growth hormone secretion / Dr. Kamil (Even) Abnormalities of growth hormone secretion / Dr. Faizania (Odd)		**PAKSTUDIES** 2 Qoumi Nazria / Islami Mumliqat Qiyam Qari Aman Ullah (not attended)	**PBL 1 (SESSION-I)** PBL Team		**SGD/DISECTION** Lateral cervical region (Muscles)	SDL Physiology Introduction to endocrinology & Signal transduction
11-10-2024 Friday	**8:00 AM – 9:00 AM** **BEHAVIOURAL SCIENCES LGIS** Professionalism in healthcare Dr. Zarnain Umar (even) / Dr. SadiaYasir (odd)	**9:00 AM – 10:00 AM** **PHYSIOLOGY (LGIS)** Insulin and Glucagon: Structure and metabolic functions / Dr. Sidra (Even) Hormones of posterior pituitary gland (Oxytocin and ADH) / Dr. Kamil (Odd)		**10:00 – 11:00AM** **SGD/DISECTION** Lateral cervical region (Neurovasscular Organization)	**11:00AM – 12:00PM**		SDL Biochemistry Classification of endocrine hormones	
12-10-2024 Saturday	**Practical & CBL/SGD** Topic mentioned at the end	**PEADS** Growth problems due to Endocrine causes Dr. Hina Sattar	Break	**ANATOMY** Development of thyroid and parathyroid gland / Dr. Prof. Ifra Saeed (Even) Histology of thyroid and para thyroid gland / Asst Prof Dr. Maria Tasleem (Odd)	**PBL 1 (SESSION-II)** PBL Team	Break	**SGD/DISECTION** Anterior cervical region (Anterior Triangles of neck)	SDL Biochemistry Mechanism of Action of Hormones

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- Pituitary gland (Anatomy, Histology Practical) (Dr. Sadia Baqir)
- Blood glucose estimation (Biochemistry practical)
- Examination of pupillary reaction (Physiology practical)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical			Physiology Practical		Physiology SGD			Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name
Monday	C	Supervised by HOD	B	Dr. Rahat	Supervised by HOD	E	Dr. Kamil	A	Dr. Aneela	Supervised by HOD	D	Dr. Uzma
Tuesday	D		C	Dr. Khalid		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Khalid
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Topics for SGDs / CBL with Venue

- Anatomy CBL: Torticollis
- Physiology SGD: Signal transduction & Growth hormone.
- Biochemistry SGD: Classification of Endocrines Hormone & Mechanism of Action

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-60	Dr. Sara Bano	New Lecture Hall Complex # 03
B	61-120	Dr. Sadia Aman	Anatomy Museum
C	121-180	Dr. Gaiti Ara	New Lecture Hall Complex # 01
D	181- 240	Dr. Sadia Baqir	Anatomy Lecture Hall 03
E	241- 300	Dr. Tariq Furqan	Anatomy Lecture Hall 04
F	301 onwards	Dr. Minahil Haq	New Lecture Hall Complex # 04

Supervised by Prof. Dr. Ayesha Yousaf

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry))	8.	D2	(246-280)	Conference Room (Basement)	Dr. Rahat Afzal (APWMO Biochemistry)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Tariq Furrqan (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Nayab (PGT Biochemistry)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Endocrinology Module (Second Week)
(25-10-2024 To 31-10-2024)

Date / Day	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM	10:00 – 11:00AM	11:00AM – 12:00PM	Home Assignments (2HRS)
25-10-2024 Friday	**BIOMEDICAL ETHICS** History of Medical Ethics Dr. Arsalan Even / Dr. Maria Odd	**PHYSIOLOGY LGIS)** Hormones of posterior pituitary gland (Oxytocin and ADH) Dr. Kamil (Even) Insulin and Glucagon: Structure and metabolic functions Dr. Sidra (Odd)	**ISLAMIAYT** Rasalat & Itihad e Umat Mufti Naeem Shirazi	**BIOCHEMISTRY LGIS** Thyroid Hormone Dr. Almas (Even) Classification & Mechanism of action of Endocrine Hormone, Dr. Rahat (Odd)	SDL Anatomy lateral cervical region

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)
26-10-2024 Saturday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS** Regulation of blood Glucose & Diabetes mellitus Dr. Sidra (Even) Aldosterone and Cortisol Dr. Sheena (Odd)	**B r e a k**	**ANATOMY LGIS** Histology of thyroid parathyroid gland Asst Prof Dr. Maria Tasleem (Even) Development of thyroid &parathyroid gland Prof. Dr Ifra Saeed (Odd)	**PBL 2 (SESSION-I)** PBL Team	**B r e a k**	**SGD/DISSECTION** Anterior cervical region (Vessels of Neck)	SDL Physiology Insulin and Glucagon
28-10-2024 Monday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS** Aldosterone and Cortisol Dr. Sheena (Even) Regulation of blood Glucose & Diabetes mellitus Dr. Sidra (Odd)		**ISLAMIAYT** Itihad e Umat Mufti Naeem Shirazi	**SGD/DISSECTION** Root of neck (arteries, veins & nerves)		**SGD/DISSETION** Submandibular region	SDL Physiology Aldosterone and Cortisol
29-10-2024 Tuesday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS** Thyroid hormone: Production, storage and release Prof. Dr. Samia Sarwar/ Dr. Iqra (Even) Abnormalities of adrenocortical hormone Dr. Sheena (Odd)		**BIOCHEMISTRY (LGIS)** Insulin & Glucagon - I Dr. Aneela (Even) Parathyroid Hormone & Calcitonin Dr. Uzma Zafar (Odd)	**PBL 2 (SESSION-II)** PBL Team		**SGD/DISSECTION** Deep structures of neck, prevertebral muscles	SDL Anatomy Anterior Triangle of neck & its subdivisions
30-10-2024 Wednesday	**Practical & CBL/SGD** Topic mentioned at the end	**PATHOLOGY** Hypothyroidism and hyperthyroidism Dr. Rabiya (Even) Dr. Sara (Odd)		**PHYSIOLGY (LGIS)** Abnormalities of Adrenocortical hormone Dr. Sheena (Even) Thyroid hormone: Production, storage and release Prof. Dr. Samia Sarwar/ Dr. Iqra (Odd)	**JOINT SESSION** Patient Diabetes mellitus Anatomy, Physiology, Medicine, Pathology & Surgery		**SGD/DISSECTION** Soft palate	SDL Biochemistry Type I & II Diabetes Mellitus Glucose Tolerance Test Curves
31-10-2024 Thursday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS** Physiological role of thyroid hormone Prof. Dr. Samia Sarwar/ Dr. Iqra (Even) Calcium homeostasis (Vitamin D, parathyroid hormone and calcitonin) Dr. Sidra (Odd)		**ANATOMY LGIS** Development of adrenal gland and pancreas Prof. Dr Ifra Saeed (Even) Histology of adrenal gland & pancreas Asst Prof Dr. MariaTasleem (Odd)	**GYNAE & OBS** Endocrine disorders in pregnancy (diabetes mellitus thyroid disorders) Dr. Shehla Manzoor (Even) Dr. Ruqiya Saleem (Odd)		**CBL/DISECTION** Thyroid & Parathyroid glands	SDl Biochemistry Sythesis & Mechnism of Action of Adrenocortical Hormones Online clinical Evaluation

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- Thyroid & Parathyroid gland (Anatomy, Histology) (Dr. Sara Bano)
- Practical G.T.T (Biochemistry practical)
- Checking for color vision (Physiology practical) (Physiology practical)

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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		E	Dr. Kamil	A	Dr. Aneela		D	Dr. Uzma
Tuesday	D		C	Dr. Khalid		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Khalid
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Topics for SGDs / CBL with Venue

- Anatomy CBL: Multi Nodular Goitre with Hypothyroidism
- Physiology SGD: Thyroid Hormones
- Biochemistry CBL: Addison's Disease

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	**Roll No**	**Anatomy Teacher**	**Venue**	
A	01-60	Dr. Sara Bano	New Lecture Hall Complex # 03	Supervised by Prof. Dr. Ayesha Yousaf
B	61-120	Dr. Sadia Aman	Anatomy Museum	
C	121-180	Dr. Gaiti Ara	New Lecture Hall Complex # 01	
D	181- 240	Dr. Sadia Baqir	Anatomy Lecture Hall 03	
E	241- 300	Dr. Tariq Furqan	Anatomy Lecture Hall 04	
F	301 onwards	Dr. Minahil Haq	New Lecture Hall Complex # 04	

Table No. 3 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions & Biomedical Ethics Club Activity

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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Rahat Afzal (APWMO Biochemistry)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Tariq Furrqan (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Nayab (PGT Biochemistry)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Endocrinology Module (Third Week)
(01-11-2024 To 07-11-2024)

Date / Day	8:00 AM – 9:00 AM	9:00 AM – 10:00 AM		10:00 – 11:00AM		11:00AM – 12:00PM	Home Assignments (2HRS)
01-11-2024 Friday	**ISLAMIAYAT**	**PHYSIOLOGY LGIS**		**BIOCHEMISTRY LGIS**		**FAMILY MEDICINE**	SDL Physiology Thyroid Hormones
	Amal Bin Maroof	Calcium homeostasis (Vitamin D, parathyroid hormone and calcitonin)	Physiological role of thyroid hormone	Parathyroid Hormone & Calcitonin	Insulin & Glucagon - I	Approach to Patient Diabetes mellitus	
	Mufti Naeem Sherazi	Dr. Sidra (Even)	Prof. Dr. Samia Sarwar/ Dr. Iqra (Odd)	Dr. Uzma Zafar (Even)	Dr. Aneela (Odd)	Dr. Sadia Khan	

	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)
02-11-2024 Saturday	**Practical & CBL/SGD** Topic mentioned at the end	Early Clinical Exposure (ECE)						SDL Biochemistry Hypoglycemia Diabetic Ketoacidosis & Hyperosmolar Hyperglycemic State

04-11-2024 Monday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY LGIS**		**Break**	**ANATOMY LGIS**		**BIOCHEMISTRY LGIS**		**Break**	**SGD/DISSECTION**	Anatomy SDL Temporal and Infra temporal region, Pterygopalatine fossa
		Abnormalities of thyroid hormone (Goiter, hypothyroidism and hyperthyroidism)	Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism)		Histology of adrenal gland and pancreas	Development of adrenal gland and pancreas	Adrenocortical Hormones - I	Insulin & Glucagon - II		Larynx & trachea	
		Prof. Dr.Samia Sarwar/ Dr. Iqra (Even)	Dr. Sidra (Odd)		Assist. Prof. Dr. Maria (Even)	Prof. Dr. Ifra Saeed (Odd)	Dr. Kashif (Even)	Dr. Aneela (Odd)			
05-11-2024 Tuesday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY (LGIS)**			**BIOCHEMISTRY LGIS**		**BIOCHEMISTRY LGIS**			**SGD/DISSECTION**	SDL Anatomy Thyroid and para thyroid gland Online clinical Evaluation
		Bone pathophysiology (rickets, osteomalacia, osteoporosis, hypo and hyperparathyroidism)	Abnormalities of thyroid hormone (Goiter, hypothyroidism and hyperthyroidism)		Insulin & Glucagon - II	Adrenocortical Hormones - I	Blood Glucose Regulation	Adrenocortical Hormones - II		Pancrease	
		Dr. Sidra (Even)	Prof. Dr. Samia Sarwar/ Dr. Iqra(Odd)		Dr. Aneela (Even)	Dr. Kashif (Odd)	Dr. Uzma Zafar (Even)	Dr. kashif (Odd)			
06-11-2024 Wednesday	**Practical & CBL/SGD** Topic mentioned at the end	**BIOCHEMISTRY LGIS**			**SGD/DISECTION**					**SGD/DISSECTION**	SDL Physiology Abnormalities of
		Adrenocortical Hormones - II	Blood Glucose Regulation		Adrenal gland (revisit)					Alimentary layer Pharynx, esophagus	
		Dr. Kashif (Even)	Dr. UzmaZafar(Odd)								
07-11-2024 Thursday	**Practical & CBL/SGD** Topic mentioned at the end	**PHYSIOLOGY SDL No.0I**			**SGD/DISECTION**					**SGD/DISSECTION**	SDL Anatomysoft palate, larynx
		Regulation of blood Glucose & Diabetes mellitus			Disection/ Spotting					Disection/ Spotting	
		Dr Fareed (Even)	Dr Maryam (Odd)								

Table No. 1 (Time: 12:20pm – 02:00pm)

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

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

Topics for Skill Lab with Venue

- Endocrinology, Adrenal gland & Pancrease (Anatomy, Histology Practical) (Dr. Sadia Aman)
- G.T.T / Revision (Biochemistry practical)
- CBL: Adrenocortical hormones (Practical batch) student's presentations Lab

Topics for SGDs / CBL with Venue

- Physiology SGD: Insulin and Glucose Metabolism
- Biochemistry CBL: Thyrotoxicosis

Schedule for Practical / Small Group Discussion

Day	Histology Practical		Biochemistry Practical		Supervised by HOD	Physiology Practical		Physiology SGD		Supervised by HOD	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. Kamil	A	Dr. Aneela	Supervised by HOD	D	Dr. Uzma
Tuesday	D		C	Dr. Khalid		A	Dr. Aneela	B	Dr. Shazia		E	Dr. Almas
Wednesday	E		D	Dr. Uzma		B	Dr. Shazia	C	Dr. Nayab		A	Dr. Romessa
Thursday	B		A	Dr. Almas		D	Dr. Iqra	E	Dr. Iqra		C	Dr. Khalid
Saturday	A		E	Dr. Romessa		C	Dr. Nayab	D	Dr. Kamil		B	Dr. Rahat

Table No. 2 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Anatomy Teacher	Venue
A	01-60	Dr. Sara Bano	New Lecture Hall Complex # 03
B	61-120	Dr. Sadia Aman	Anatomy Museum
C	121-180	Dr. Gaiti Ara	New Lecture Hall Complex # 01
D	181- 240	Dr. Sadia Baqir	Anatomy Lecture Hall 03
E	241- 300	Dr. Tariq Furqan	Anatomy Lecture Hall 04
F	301 onwards	Dr. Minahil Haq	New Lecture Hall Complex # 04

Supervised by Prof. Dr. Ayesha Yousaf

Table No. 3 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 (Demonstrator Biochemistry)	6.	C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Nayab Zonish (PGT Physiology)
2.	A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah (Demonstrator of Physiology)	7.	D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Iqra Ayub (PGT Physiology)
3.	B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Romessa (Demonstrator Biochemistry)	8.	D2	(246-280)	Conference Room (Basement)	Dr. Rahat Afzal (APWMO Biochemistry)
4.	B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Tariq Furrqan (Senior Demonstrator of Anatomy)	9.	E1	(281-315)	New Lecture Hall no.01	Dr. Nayab (PGT Biochemistry)
5.	C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Ali Zain (PGT Physiology)	10	E2	(315 onwards)	Lecture Hall no.04	Dr. Jawad Hassan (Demonstrator Physiology)

Table No. 6 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Tentative Schedule for LMS Based Weekly Online Assessments for Second Year MBBS (Endocrinology Module) Batch 50

The online assessment for Endocrinology Module for Second Year MBBS will be as per following schedule:

Class	Module	Day & Date	Time of Assessment	Focal person	Department Responsible
Second Year MBBS	Endocrinology Module	Monday 28th October,2024	9:00 pm-9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 29th October,2024	9:00 pm-9:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 30th October,2024	9:00 pm-9:30pm	Dr Aneela Jamil	Biochemistry

Note: All dates are subject to change.

Endocrinology Module (Fourth Week)
(08-11-2024 To 18-11-2024)

Date / Days	Tentative Schedule for Endocrinology Sesnes Module Assessment	Time
08-11-2024 Friday	**Assessment week**	08:00am - 02:00pm
09-11-2024 Saturday		08:00am - 02:00pm
11-11-2024 Monday		08:15am - 09:15am
12-11-2024 Tuesday		08:15am - 09:15am
13-11-2024 Wednesday		08:15am - 09:15am
Thursday		08:15am - 09:15am
15-11-2024 Friday	**Block-III Assessment**	08:00am - 02:00pm
16-11-2024 Saturday		08:00am - 02:00pm
18-11-2024 Monday		08:00am - 02:00pm

Note: Timetable Subject to Change According to The Current Circumstances.

SECTION-VII

Table of Specification (TOS) For Endocrinology Module Examination

Blue Print of Assessment for First Year & Second Year MBBS

Table of Specification

Tools of Asssessment: Cognitive: MCQ- Multiple Choice Questions, EMQs- Extended Matching Questions, SAQ- Short Answer Questions, SEQ- Short Essay Questions Psychomotor: AvOSPE- Audio Visual Assisted Objective Structured Pactical Examination, labOSPE- Laboratory Based Objective Structured Practical Examination, IOSPE- Integrated Objective Structured Practical Examination, COSPE- Clinically Oriented Objective Structed Practical Examination Affect: AED Reflective Writing- Artificial Intelligence, Entraprenureship, Digital Literacy based reflective writing, OSVE- Objective Structured Viva Assessment

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 MCQs					OSPE						Grand Total	Total Block Time
							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	6.5 HRS
	Physiology	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS
	Biochemistry	21	6	3	30	30 min	14	4	2	20	60	6 HRS	90	6.5 HRS

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

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

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

Marks per Item

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

OSPE Time=1 Round of 40 Students =80 min

3 Round of 40 Students =240 min

OSVE=Time per student=5mins

Annexure I

(Sample MCQ, SAQ, SEQ Papers, AV OSPE, OSPE & Video Assisted OSPE)

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

Rawalpindi Medical University Department of Anatomy
MCQs 2nd Year MBBS
Endocrinology Module

1. A patient presents with hoarseness of voice. On indirect laryngoscopy, he is unable to abduct the vocal cords. The muscle paralysed is
    a. posterior cricoarytenoid
    b. vocalis
    c. cricothyroid
    d. aryepiglotticus
    e. thyroepiglottic

2. During dissection of the pharynx a medical student observes a structure passing through the gap between superior and middle constrictors of pharynx. This structure is
    a. auditory tube
    b. glossopharyngeal nerve
    c. recurrent laryngeal nerve
    d. levatorveli palatini
    e. internal laryngeal nerve

3. The only muscle of the soft palatethat is supplied by the 5th cranial nerve is
    a. musculus uvulae
    b. platoglossus
    c. tensor vali palati
    d. palatopharyngeus
    e. levatorpalati

4. Muscles are important in opening the Eustachian tube for maintenance of barometric pressure. The nasopharyngeal opening of the auditory tube contains
    a. Salpingopharyngeus
    b. levator vali palatini
    c. Palato glossus
    d. Palato pharyngeus
    e. musculus uvulae

5. A dengue patient presented with epistaxis. The doctor found that it was an anterior bleed from
    a. pterygoid plexus
    b. woodruff's plexus
    c. pharyngeal plexus
    d. kiessel back's plexus
    e. palatal plexus

Rawalpindi Medical University Department of Anatomy
SEQs 2nd Year MBBS
Endocrinology Module

Q.1 A surgeon is performing total thyroidectomy for a patient of Thyroid carcinoma.

a. What is the vascular supply of thyroid and parathyroid glands? (3)
b. How can damage to right recurrent laryngeal nerve be avoided? (1)
c. What are the features of recurrent laryngeal nerve damage? (1)

Q.3 A patient has been diagnosed with pituitary adenoma.

a. Describe the development of pituitary gland. (2.5)
b. Draw the structures that are related to the pituitary gland. (1.5)
c. Which structure can be damaged because of the tumour? (1)

Rawalpindi Medical University Department of Physiology
MCQs 2nd Year MBBS
Endocrinology Module

1. Pituitary adenoma causes lesion of:

a. Optic nerve

b. Optic chiasm

c. Optic tract

d. Optic radiation

e. Visual cortex

2. Following is true regarding Presbyopia:

a. occurs in infants

b. occurs because of progressive denaturation of the lens proteins

c. the lens grows & becomes far more elastic

d. power of accommodation increases

e. ability of the lens to change shape increases with age

3. The sour taste is caused by:

a. ketones

b. alcohol

c. amides

d. glycols

e. acids

4. In the utricle, tip links in hair cells are involved in:

a. formation of perilymph
b. depolarization of the stria vascularis
c. movements of the basement membrane
d. perception of sound
e. regulation of distortion-activated ion channels

5. A young boy was diagnosed with congenital anosmia, a rare disorder in which an individual is born without the ability to smell. Odorant receptors are:

a. located in the olfactory bulb
b. located on dendrites of tufted cells
c. located on neurons that project directly to the olfactory cortex
d. located on neurons in the olfactory epithelium
e. located on sustentacular cells

Rawalpindi Medical University Department of Physiology
SEQs 2nd Year MBBS
Endocrinology Module

Q.1 Give a brief account of formation and functions of aqueous humor. What is glaucoma? (2,2,1)

Q.3 Enlist factors affecting Anti-Diuretic Hormone secretion? What do you know about Diabetes insipidus? (3,2)

Q.2 Name the hormones produced by adrenal gland. Enlist the physiological actions of epinephrine. (2,3)

Rawalpindi Medical University Department of Biochemistry
MCQs 2nd Year MBBS
Endocrinology Module

1. Progesterone is a precursor in the formation of which one of the following:
    a. Mineralocorticoids
    b. Insulin
    c. Angiotensin II
    d. Follicle – stimulating hormone (FSH)
    e. Luteinizing hormone

2. Adrenal steroid hormone:
    a. Is synthesized in adrenal medulla
    b. Precursor is tyrosine
    c. Synthesis is not regulated
    d. Synthesis is stimulated by ACTH
    e. Are not synthesized from pregnenolone

3. Parathyroid hormone leads to:
    a. Low calcium in urine
    b. Low phosphate in urine
    c. Increase calcium in urine
    d. Both calcium and phosphate are increased in urine
    e. Both calcium and phosphate are decreased in plasma

4. Blood glucose level is decreased by the following hormone:
    a. Glucagon
    b. Insulin
    c. Thyroxin
    d. Cortisol
    e. Growth hormone

SEQ

Q. Describe role of insulin and glucagon in blood glucose regulation. 05

EMQs 2nd Year MBBS
Endocrinology Module

Options:

A. Graves' disease

B. Hashimoto's thyroiditis

C. Subacute thyroiditis

D. Papillary thyroid carcinoma

E. Follicular thyroid carcinoma

F. Medullary thyroid carcinoma

G. Anaplastic thyroid carcinoma

H. Thyroid storm

I. Myxedema coma

J. Toxic multinodular goiter

Questions:

1. A 30-year-old female presents with weight loss, heat intolerance, palpitations, and exophthalmos. Her thyroid-stimulating hormone (TSH) levels are low, and her free T4 levels are high.

   What is the most likely diagnosis?

2. A 45-year-old male presents with a painless, rapidly enlarging neck mass. Fine-needle aspiration biopsy reveals malignant cells, and histopathology shows the presence of amyloid stroma.

   What is the most likely diagnosis?

3. A 50-year-old female with a history of long-standing hypothyroidism presents with lethargy, hypothermia, bradycardia, and generalized edema.

What is the most likely diagnosis?

4. A 35-year-old female presents with a tender, swollen thyroid gland and symptoms of fever, malaise, and neck pain radiating to the jaw. Laboratory findings show elevated erythrocyte sedimentation rate (ESR) and low TSH levels.

   What is the most likely diagnosis?

5. A 60-year-old female presents with symptoms of hyperthyroidism. She has a nodular thyroid gland on examination. Ultrasound reveals multiple autonomously functioning thyroid nodules.

   What is the most likely diagnosis?

Answers:

1. **A. Graves' disease**
2. **F. Medullary thyroid carcinoma**
3. **I. Myxedema coma**
4. **C. Subacute thyroiditis**
5. **J. Toxic multinodular goiter**

Rawalpindi Medical University Department of Bioethics
MCQs 2nd Year MBBS
Endocrinology Module

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
   a. Bio-piracy
   b. Biosafety
   c. Bioethics
   d. Bio-patents
   e. Bio-logistic

2. The right of patients having self-decision is called.
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

3. Following is not code of ethics.
   a. Integrity
   b. Objectivity
   c. Confidentiality
   d. Behaviour
   e. Autonomy

4. -------in the context of medical ethics, if it's fair and balanced
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

5. ------Principle requiring that physicians provide, positive benefits
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

Rawalpindi Medical University Department of Anatomy
OSPE 2nd Year MBBS
Endocrinology Module

Station No. 1 Time Allowed: 1 Min 30secs

Histology sketch copy will be assessed for

a. Complete index (1)
b. Complete and signed diagrams (1)
c. 2 ID points mentioned with each diagram (1)

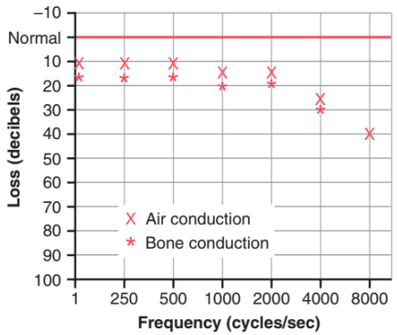
Station No. 2 Time Allowed: 1 Min 30 secs

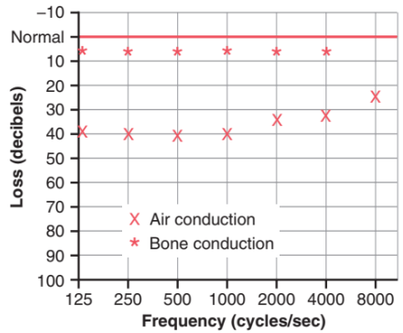
a. Identify red and give its nerve supply. (1)
b. Identify green and write down its action. (1)
c. Identify yellow and write down the name of the structure opening here (1)

Rawalpindi Medical University Department of Physiology
OSPE 2nd Year MBBS
Endocrinology Module

Station No. 1 Time Allowed: 3 Minutes

1. A man consulted his doctor for difficulty in hearing, his doctor decided to perform Tuning Fork test. Which tuning fork will he select ; (1)
2. Match the audio grams for given scenarios (2)

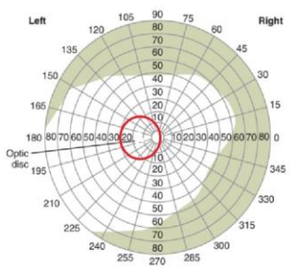




Scenario- 1: Rinnes negative in right ear
Scenario- 2: Weber Lateralized in right ear

Station No. 2 Time Allowed: 3 Minutes

1. Identify the apparatus & give its use. (0.5)
2. Give two precautions for this test. (0.5)
3. This tracing was obtained after examining a patient with visual disturbances, Interpret the graph provided. (2)



Rawalpindi Medical University Department of Biochemistry
OSPE 2nd Year MBBS
Endocrinology Module

Station No. 1 Time Allowed: 2 Mins

	Patient value	Reference range
T3	1.4 nmol/L	1.2-2.8nmol/L
T4	95 nmol/L	77-155 nmol/L
TSH	10 mU/L	0.4-4 mU/L

1. Interpret the above laboratory report. 01
2. Give any two causes. 02

Station No. 1 Time Allowed: 2 Mins

1. What are indications of Oral Glucose Tolerance Test? 03

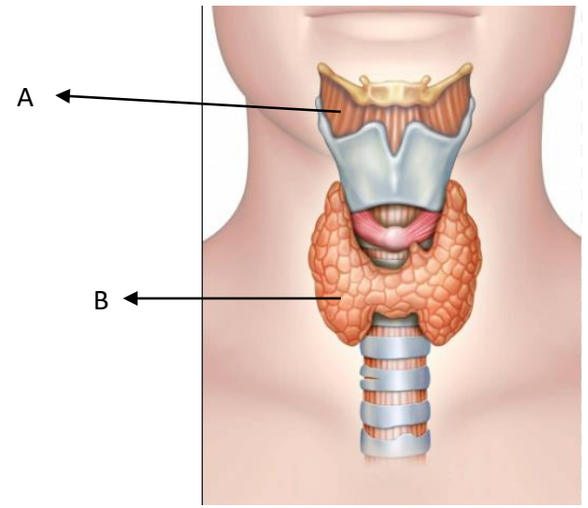
AV OSPE
Department of Anatomy

Q.No.1 Identify

1) A

2) B

Q.No.2 Give Blood Supply of stucture B?

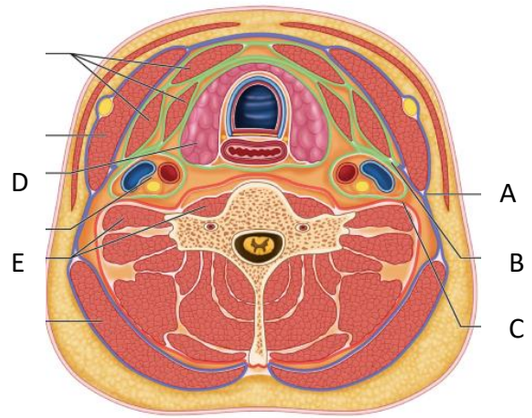


AV OSPE
Department of Anatomy

Cross Sectional

Q.No.1 Identify

1) A
2) B
3) C
4) D
5) E



Log Book

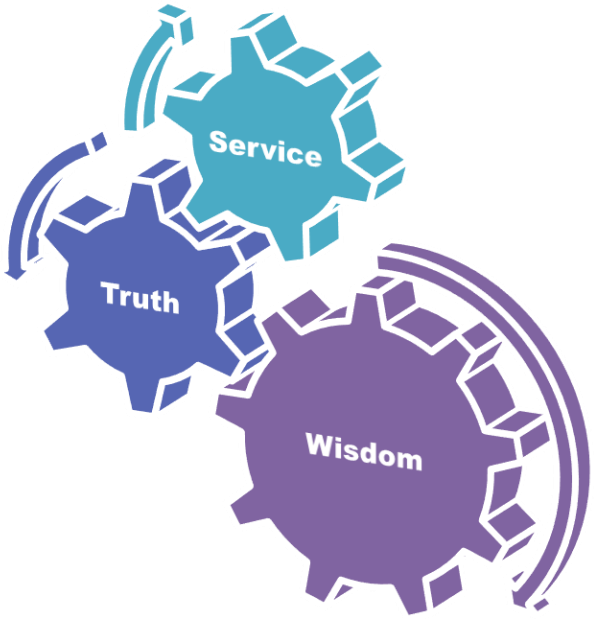


Clinically Oriented Integrated Modular Curriculum

Rawalpindi Medical University

2nd Year

RMU Motto



Mission Statement

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

Vision and Values

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

Goals of the Undergraduate Integrated Modular Curriculum

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

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

Student's Statement of Intent and Vision

Please state why you have joined this program….

_____
_____
_____
_____
_____
_____
_____
_____

Please state where you want to see yourself at the end of this year and at the time you will pass out from the program.(vision statement)

_____
_____
_____
_____
_____
_____

Your personal growth plan as per ACCME guidelines

_____
_____
_____
_____
_____

Date & Time:_____

Students signature:_____

Contents

Student's Statement of Intent and Vision 3

Introduction 9

Student's Profile 10

Verification Certificate 11

Anatomy Large Group Interactive Session (LGIS) Attendance 13

Physiology Large Group Interactive Session (LGIS) Attendance 14

Physiology Large Group Interactive Session (LGIS) Attendance 15

Biochemistry Large Group Interactive Session (LGIS) Attendance 16

Small Group Discussion (SGD) Evaluation 18

Marking Cognitive Activity 18

Small Group Discussion (SGD) Evaluation 19

Marking Cognitive Activity 19

Small Group Discussion (SGD) Evaluation 20

Marking Cognitive Activity 20

Case based Learning (CBL) Evaluation 21

Problem Based Learning (PBL) Evaluation 22

Skill Lab (SKL) Evaluation 24

Skill Lab (SKL) Evaluation 25

Skill Lab (SKL) Evaluation 26

Tutorial Evaluation Proforma 27

Block_____ Academic Performance 28

Anatomy Large Group Interactive Session (LGIS) Attendance 34

Physiology Large Group Interactive Session (LGIS) Attendance 35

Physiology Large Group Interactive Session (LGIS) Attendance 36

Biochemistry Large Group Interactive Session (LGIS) Attendance 37
Small Group Discussion (SGD) Evaluation 38
Small Group Discussion (SGD) Evaluation 39
Small Group Discussion (SGD) Evaluation 40
Small Group Discussion (SGD) Evaluation 41
Case based Learning (CBL) Evaluation 42
Problem Based Learning (PBL) Evaluation 43
Skill Lab (SKL) Evaluation 45
Skill Lab (SKL) Evaluation 46
Skill Lab (SKL) Evaluation 47
Tutorial Evaluation Proforma 48
Block_____ Academic Performance 49
Anatomy Large Group Interactive Session (LGIS) Attendance 55
Physiology Large Group Interactive Session (LGIS) Attendance 56
Physiology Large Group Interactive Session (LGIS) Attendance 57
Biochemistry Large Group Interactive Session (LGIS) Attendance 58
Small Group Discussion (SGD) Evaluation 59
Small Group Discussion (SGD) Evaluation 60
Small Group Discussion (SGD) Evaluation 61
Small Group Discussion (SGD) Evaluation 62
Case Based Learning (CBL) Evaluation 63
Problem Based Learning (PBL) Evaluation 64
Skill Lab (SKL) Evaluation 66
Skill Lab (SKL) Evaluation 67

Skill Lab (SKL) Evaluation 68
Tutorial Evaluation Proforma 69
Block_____ Academic Performance 70
Anatomy Large Group Interactive Session (LGIS) Attendance 76
Physiology Large Group Interactive Session (LGIS) Attendance 77
Physiology Large Group Interactive Session (LGIS) Attendance 78
Biochemistry Large Group Interactive Session (LGIS) Attendance 79
Small Group Discussion (SGD) Evaluation 80
Small Group Discussion (SGD) Evaluation 81
Small Group Discussion (SGD) Evaluation 82
Small Group Discussion (SGD) Evaluation 83
Case Based Learning (CBL) Evaluation 84
Problem Based Learning (PBL) Evaluation 85
Skill Lab (SKL) Evaluation 87
Skill Lab (SKL) Evaluation 88
Skill Lab (SKL) Evaluation 89
Tutorial Evaluation Proforma 90
Block_____ Academic Performance 91
Anatomy Large Group Interactive Session (LGIS) Attendance 97
Physiology Large Group Interactive Session (LGIS) Attendance 98
Physiology Large Group Interactive Session (LGIS) Attendance 99
Biochemistry Large Group Interactive Session (LGIS) Attendance 100
Small Group Discussion (SGD) Evaluation 101
Small Group Discussion (SGD) Evaluation 102

Small Group Discussion (SGD) Evaluation 103
Small Group Discussion (SGD) Evaluation 104
Case Based Learning (CBL) Evaluation 105
Problem Based Learning (PBL) Evaluation 106
Skill Lab (SKL) Evaluation 108
Skill Lab (SKL) Evaluation 109
Skill Lab (SKL) Evaluation 110
Tutorial Evaluation Proforma 111
Block_____ Academic Performance 112
Anatomy Large Group Interactive Session (LGIS) Attendance 118
Physiology Large Group Interactive Session (LGIS) Attendance 119
Physiology Large Group Interactive Session (LGIS) Attendance 120
Biochemistry Large Group Interactive Session (LGIS) Attendance 121
Small Group Discussion (SGD) Evaluation 122
Small Group Discussion (SGD) Evaluation 123
Small Group Discussion (SGD) Evaluation 124
Small Group Discussion (SGD) Evaluation 125
Case Based Learning (CBL) Evaluation 126
Problem Based Learning (PBL) Evaluation 127
Skill Lab (SKL) Evaluation 129
Skill Lab (SKL) Evaluation 130
Skill Lab (SKL) Evaluation 131
Tutorial Evaluation Proforma 132
Block_____ Academic Performance 133

Early Clinical Exposure 138
How To Write Reflective Diaries 158
Gibbs' Model of the Reflective Cycle 159
References And Further Reading: 160

Introduction

A log book is structured book in which certain types of educational activities and information is recorded, usually by hand. Logbooks are used all over the world from undergraduate to postgraduate training, in human, veterinary and dental medicine, nursing schools and pharmacy, either in paper or electronic format.

` Logbooks provide a clear setting of learning objectives and give trainees and clinical teachers a quick overview of the requirements of training and an idea of the learning progress. Logbooks are especially useful if different sites are involved in the training to set a (minimum) standard of training. Logbooks assist Teachers and students to see at one glance which learning objectives have not yet been accomplished and to set a learning plan. The analysis of logbooks can reveal weak points of training and can evaluate whether students have fulfilled the minimum requirements of training.

Logbooks facilitate communication between the students and teachers. Logbooks help to structure and standardize learning . Logbooks have to be an integrated part of the curriculum and the daily routine. Continuous measures of quality management are necessary.

Reference

Brauns KS,Narciss E,Schneyinck C,Böhme K,Brüstle P, Holzmann UM, etal. Twelve tips for successfully implementing logbooks in clinical training. Med Teach. 2016 Jun 2; 38(6): 564–569.

Student's Profile

Paste Photograph
(2x2 Size)

Name:_____ Roll No._____

Batch:_____

Class:_____

Session:_____

Contact Detail: ----------

Phone:_____ Mobile:_____

Email:_____

Hostelite/Dayscholar:_____

Parents / Guardian Contact #(Mobile)_____ Landline_____

Postal Address:_____ Guardian Email:_____

_____

Department Of Medical Education
Rawalpindi Medical University
Rawalpindi

DME/NO:_____ Date: _____

Verification Certificate

It is certified that Mr. / Miss_____ Roll No._____ of Class_____ Session_____ has carried out the necessary practical work as per courses of studies for the year_____ as shown in the practical schedule of this journal.

University Roll No._____

Prof. Dr. Samia Sarwar
Chairperson of Physiology
Rawalpindi Medical University
Rawalpindi

Prof Dr Ayesha Yousaf
Chairperson of Anatomy
Rawalpindi Medical University
Rawalpindi

Dr. Aneela Jamil
Chairperson of Biochemistry
Rawalpindi Medical University
Rawalpindi

Dr. Rabia Khalid
Quality Enhancement Cell
Rawalpindi Medical University
Rawalpindi

Dr. Sidra Hamid
Assistant Director DME
Assistant Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Ifra Saeed
Professor of Anatomy
Additional Director DME
Rawalpindi Medical University
Rawalpindi

Module Title_____

Date Of Commencement_____

Date Of Completion_____

Anatomy Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					
41.					
42.					
43.					
44.					
45.					
46.					
47.					
48.					
49.					
50.					
51.					
52.					

Biochemistry Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Subject	Topic	Teacher	Sign of Faculty
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation

Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation

Marking Cognitive Activity

Module- ---------- Subject - Physiology

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation

Marking Cognitive Activity

Module- ---------- Subject - Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Case based Learning (CBL) Evaluation
Marking Cognitive Activity

Module ----------

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Problem Based Learning (PBL) Evaluation
Marking Cognitive Activity

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Research Activity Evaluation
Marking Cognitive Activity

Module----------

IUGRC

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Physiology

Date	Topic Discusse	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____- Subject Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Tutorial Evaluation Proforma

Module ----------

S. No.	Presentation-I	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-II	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-III	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	
	Grand Total		

Block_____ Academic Performance

	Subject	Anatomy	Physiology	Biochemistry	Clinical(PERL)	The Quran Translation
Attendance						
	LGIS					
	SGD					
	CBL/PBL					
	SDL					
	Skill Lab					
	IUGRC LGIS					
	Biomedical Ethics LGIS					
	Family Medicine LGIS					
	The Holy Quran Translation LGIS					
	Free lancing LGIS					
	Artificial Intelligence LGIS					
	Clinical LGIS					
	Others					
Assessment						
	---------- Module Assessment					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

	---------- Module result					
	OSPE					
	Video Assisted Quiz					
	Online SDL					
	Online Clinical					
	Online LMS					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

Verification Certificate

Dr. Aneela Jamil
Chairperson of Biochemistry
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Samia Sarwar
Chairperson of Physiology
Rawalpindi Medical University
Rawalpindi

Prof Dr Ayesha Yousaf
Chairperson of Anatomy
Rawalpindi Medical University
Rawalpindi

Dr. Rabia Khalid
Quality Enhancement Cell
Rawalpindi Medical University
Rawalpindi

Dr. Sidra Hamid
Assistant Director DME
Assistant Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Ifra Saeed
Professor of Anatomy
Additional Director DME
Rawalpindi Medical University

Reflective Entry: I

Please reflect on your performance in this block, your strengths and your weak areas. How you can improve (write 3 points on how you will work on in next block to improve your performance).Reflect on how this block result can be changed or improved if you are given another chance to prepare for this block.

Date & Time:_____

Students signature:_____

Module Title_____

Date Of Commencement_____

Date Of Completion_____

Anatomy Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					
41.					
42.					
43.					
44.					
45.					
46.					
47.					
48.					
49.					
50.					
51.					
52.					

Biochemistry Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Subject	Topic	Teacher	Sign of Faculty
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Physiology

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Case based Learning (CBL) Evaluation
Marking Cognitive Activity

Module ----------

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Problem Based Learning (PBL) Evaluation
Marking Cognitive Activity

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Research Activity Evaluation
Marking Cognitive Activity

Module----------

IUGRC

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Physiology

Date	Topic Discusse	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____- Subject Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Tutorial Evaluation Proforma

Module ----------

S. No.	Presentation-I	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-II	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-III	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	
	Grand Total		

Block_____ Academic Performance

	Subject	Anatomy	Physiology	Biochemistry	Clinical(PERL)	The Quran Translation
Attendance						
	LGIS					
	SGD					
	CBL/PBL					
	SDL					
	Skill Lab					
	IUGRC LGIS					
	Biomedical Ethics LGIS					
	Family Medicine LGIS					
	The Holy Quran Translation LGIS					
	Free lancing LGIS					
	Artificial Intelligence LGIS					
	Clinical LGIS					
	Others					
Assessment						
	---------- Module Assessment					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

	---------- Module result					
	OSPE					
	Video Assisted Quiz					
	Online SDL					
	Online Clinical					
	Online LMS					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

Verification Certificate

Dr. Aneela Jamil
Chairperson of Biochemistry
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Samia Sarwar
Chairperson of Physiology
Rawalpindi Medical University
Rawalpindi

Prof Dr Ayesha Yousaf
Chairperson of Anatomy
Rawalpindi Medical University
Rawalpindi

Dr. Rabia Khalid
Quality Enhancement Cell
Rawalpindi Medical University
Rawalpindi

Dr. Sidra Hamid
Assistant Director DME
Assistant Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Ifra Saeed
Professor of Anatomy
Additional Director DME
Rawalpindi Medical University

Reflective Entry: 2

Please reflect on your performance in this block, your strengths and your weak areas. How you can improve (write 3 points on how you will work on in next block to improve your performance).Reflect on how this block result can be changed or improved if you are given another chance to prepare for this block.

Date & Time:_____

Students signature:_____

Module Title_____

Date Of Commencement_____

Date Of Completion_____

Anatomy Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					
41.					
42.					
43.					
44.					
45.					
46.					
47.					
48.					
49.					
50.					
51.					
52.					

Biochemistry Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Subject	Topic	Teacher	Sign of Faculty
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Physiology

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Case Based Learning (CBL) Evaluation
Marking Cognitive Activity

Module ----------

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Problem Based Learning (PBL) Evaluation
Marking Cognitive Activity

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Research Activity Evaluation
Marking Cognitive Activity

Module----------

IUGRC

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Physiology

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____- Subject Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Tutorial Evaluation Proforma

Module ----------

S. No.	Presentation-I	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-II	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-III	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	
	Grand Total		

Block_____ Academic Performance

	Subject	Anatomy	Physiology	Biochemistry	Clinical(PERL)	The Quran Translation
Attendance						
	LGIS					
	SGD					
	CBL/PBL					
	SDL					
	Skill Lab					
	IUGRC LGIS					
	Biomedical Ethics LGIS					
	Family Medicine LGIS					
	The Holy Quran Translation LGIS					
	Free lancing LGIS					
	Artificial Intelligence LGIS					
	Clinical LGIS					
	Others					
Assessment						
	---------- Module Assessment					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

	---------- Module result					
	OSPE					
	Video Assisted Quiz					
	Online SDL					
	Online Clinical					
	Online LMS					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

Verification Certificate

Dr. Aneela Jamil
Chairperson of Biochemistry
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Samia Sarwar
Chairperson of Physiology
Rawalpindi Medical University
Rawalpindi

Prof Dr Ayesha Yousaf
Chairperson of Anatomy
Rawalpindi Medical University
Rawalpindi

Dr. Rabia Khalid
Quality Enhancement Cell
Rawalpindi Medical University
Rawalpindi

Dr. Sidra Hamid
Assistant Director DME
Assistant Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Ifra Saeed
Professor of Anatomy
Additional Director DME
Rawalpindi Medical University

Reflective Entry: 3

Please reflect on your performance in this block, your strengths and your weak areas. How you can improve (write 3 points on how you will work on in next block to improve your performance).Reflect on how this block result can be changed or improved if you are given another chance to prepare for this block.

Date & Time:_____

Students signature:_____

Module Title_____

Date Of Commencement_____

Date Of Completion_____

Anatomy Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					
41.					
42.					
43.					
44.					
45.					
46.					
47.					
48.					
49.					
50.					
51.					
52.					

Biochemistry Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Subject	Topic	Teacher	Sign of Faculty
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Physiology

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Case Based Learning (CBL) Evaluation
Marking Cognitive Activity

Module ----------

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Problem Based Learning (PBL) Evaluation
Marking Cognitive Activity

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Research Activity Evaluation
Marking Cognitive Activity

Module----------

IUGRC

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Physiology

Date	Topic Discusse	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____- Subject Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Tutorial Evaluation Proforma

Module ----------

S. No.	Presentation-I	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-II	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-III	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	
	Grand Total		

Block_____ Academic Performance

	Subject	Anatomy	Physiology	Biochemistry	Clinical(PERL)	The Quran Translation
Attendance						
	LGIS					
	SGD					
	CBL/PBL					
	SDL					
	Skill Lab					
	IUGRC LGIS					
	Biomedical Ethics LGIS					
	Family Medicine LGIS					
	The Holy Quran Translation LGIS					
	Free lancing LGIS					
	Artificial Intelligence LGIS					
	Clinical LGIS					
	Others					
Assessment						
	---------- Module Assessment					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

	---------- Module result					
	OSPE					
	Video Assisted Quiz					
	Online SDL					
	Online Clinical					
	Online LMS					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

Verification Certificate

Dr. Aneela Jamil
Chairperson of Biochemistry
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Samia Sarwar
Chairperson of Physiology
Rawalpindi Medical University
Rawalpindi

Prof Dr Ayesha Yousaf
Chairperson of Anatomy
Rawalpindi Medical University
Rawalpindi

Dr. Rabia Khalid
Quality Enhancement Cell
Rawalpindi Medical University
Rawalpindi

Dr. Sidra Hamid
Assistant Director DME
Assistant Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Ifra Saeed
Professor of Anatomy
Additional Director DME
Rawalpindi Medical University

Reflective Entry: 4

Please reflect on your performance in this block, your strengths and your weak areas. How you can improve (write 3 points on how you will work on in next block to improve your performance).Reflect on how this block result can be changed or improved if you are given another chance to prepare for this block.

Date & Time:_____

Students signature:_____

Module Title_____

Date Of Commencement_____

Date Of Completion_____

Anatomy Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					
41.					
42.					
43.					
44.					
45.					
46.					
47.					
48.					
49.					
50.					
51.					
52.					

Biochemistry Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Subject	Topic	Teacher	Sign of Faculty
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Physiology

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Case Based Learning (CBL) Evaluation
Marking Cognitive Activity

Module ----------

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Problem Based Learning (PBL) Evaluation
Marking Cognitive Activity

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Research Activity Evaluation
Marking Cognitive Activity

Module----------

IUGRC

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Physiology

Date	Topic Discusse	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____- Subject Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Tutorial Evaluation Proforma

Module ----------

S. No.	Presentation-I	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-II	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-III	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	
	Grand Total		

Block_____ Academic Performance

	Subject	Anatomy	Physiology	Biochemistry	Clinical(PERL)	The Quran Translation
Attendance						
	LGIS					
	SGD					
	CBL/PBL					
	SDL					
	Skill Lab					
	IUGRC LGIS					
	Biomedical Ethics LGIS					
	Family Medicine LGIS					
	The Holy Quran Translation LGIS					
	Free lancing LGIS					
	Artificial Intelligence LGIS					
	Clinical LGIS					
	Others					
Assessment						
	---------- Module Assessment					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

	---------- Module result					
	OSPE					
	Video Assisted Quiz					
	Online SDL					
	Online Clinical					
	Online LMS					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

Verification Certificate

Dr. Aneela Jamil
Chairperson of Biochemistry
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Samia Sarwar
Chairperson of Physiology
Rawalpindi Medical University
Rawalpindi

Prof Dr Ayesha Yousaf
Chairperson of Anatomy
Rawalpindi Medical University
Rawalpindi

Dr. Rabia Khalid
Quality Enhancement Cell
Rawalpindi Medical University
Rawalpindi

Dr. Sidra Hamid
Assistant Director DME
Assistant Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Ifra Saeed
Professor of Anatomy
Additional Director DME
Rawalpindi Medical University

Reflective Entry: 5

Please reflect on your performance in this block, your strengths and your weak areas. How you can improve (write 3 points on how you will work on in next block to improve your performance).Reflect on how this block result can be changed or improved if you are given another chance to prepare for this block.

Date & Time:_____

Students signature:_____

Module Title_____

Date Of Commencement_____

Date Of Completion_____

Anatomy Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

Physiology Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Topic	Teacher	Signature
27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					
41.					
42.					
43.					
44.					
45.					
46.					
47.					
48.					
49.					
50.					
51.					
52.					

Biochemistry Large Group Interactive Session (LGIS) Attendance

Sr No.	Date	Time	Subject	Topic	Teacher	Sign of Faculty
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Physiology

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Small Group Discussion (SGD) Evaluation
Marking Cognitive Activity

Module- ---------- Subject - Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Case Based Learning (CBL) Evaluation
Marking Cognitive Activity

Module ----------

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Problem Based Learning (PBL) Evaluation
Marking Cognitive Activity

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Research Activity Evaluation
Marking Cognitive Activity

Module----------

IUGRC

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Anatomy

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____ Subject - Physiology

Date	Topic Discusse	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Skill Lab (SKL) Evaluation
Marking Cognitive Activity

Module_____- Subject Biochemistry

Date	Topic Discussed	Punctuality	Knowledge	Communication Skills	Professionalism	Team Work	Total Marks	Sign of Facilitator
		Marks Distribution						
		(2)	(2)	(2)	(2)	(2)	(10)	

Tutorial Evaluation Proforma

Module ----------

S. No.	Presentation-I	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-II	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	

S. No.	Presentation-III	Marks Distribution	Obtained
1	Confidence	2	
2	Content	2	
3	Time management	2	
4	Creativity/ innovation	2	
5	Question & Answer Session	2	
		Total Marks Distribution	
	Grand Total		

Block_____ Academic Performance

	Subject	Anatomy	Physiology	Biochemistry	Clinical(PERL)	The Quran Translation
Attendance						
	LGIS					
	SGD					
	CBL/PBL					
	SDL					
	Skill Lab					
	IUGRC LGIS					
	Biomedical Ethics LGIS					
	Family Medicine LGIS					
	The Holy Quran Translation LGIS					
	Free lancing LGIS					
	Artificial Intelligence LGIS					
	Clinical LGIS					
	Others					
Assessment						
	---------- Module Assessment					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

	---------- Module result					
	OSPE					
	Video Assisted Quiz					
	Online SDL					
	Online Clinical					
	Online LMS					
	Signature Of Co-Coordinator					
	Module Coordinator Name: _____ Module Coordinator Signature :_____					

Verification Certificate

Dr. Aneela Jamil
Chairperson of Biochemistry
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Samia Sarwar
Chairperson of Physiology
Rawalpindi Medical University
Rawalpindi

Prof Dr Ayesha Yousaf
Chairperson of Anatomy
Rawalpindi Medical University
Rawalpindi

Dr. Rabia Khalid
Quality Enhancement Cell
Rawalpindi Medical University
Rawalpindi

Dr. Sidra Hamid
Assistant Director DME
Assistant Professor of Physiology
Rawalpindi Medical University
Rawalpindi

Prof. Dr. Ifra Saeed
Professor of Anatomy
Additional Director DME
Rawalpindi Medical University

Reflective Entry: 6

Please reflect on your performance in this block, your strengths and your weak areas. How you can improve (write 3 points on how you will work on in next block to improve your performance).Reflect on how this block result can be changed or improved if you are given another chance to prepare for this block.

Date & Time:_____

Students signature:_____

Early Clinical Exposure

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Annexure I

Operational Definitions And Criteria For Assessment

Professionalism is a critical component of medical education, and medical students are expected to demonstrate high levels of professionalism throughout their educational journey. Professionalism is a set of qualities, behaviors, and attitudes that are essential for providing excellent patient care, adhering to ethical standards, and working effectively with colleagues. Some key traits of professional medical students include accountability, integrity, empathy, and a commitment to ongoing learning.

Assessing the professionalism of medical students is essential to ensure that they are meeting the expectations of their future patients and colleagues. The criteria for assessment should include a holistic evaluation of a student's performance, including their communication skills, ethical decision-making, leadership abilities, and academic achievement. Evaluators may also consider factors such as their attitudes towards teamwork, patient-centered care, and cultural competency. Ultimately, it is crucial to ensure that medical students are held to the highest standards of professionalism, both during their education and throughout their careers.

Assessing professionalism in medical students is an important process to ensure that these students meet the standards required of them to become competent doctors. One of the key criteria for assessing professionalism in medical students is the ability to demonstrate ethical behavior. This includes respecting patients' rights, maintaining confidentiality, and acting with integrity. Medical students need to demonstrate a strong commitment to ethical values, as they are in a position of trust and responsibility.

Another important criterion for assessing professionalism in medical students is their ability to communicate effectively with patients, families, and colleagues. **Communication skills** are essential for medical students, as they must be able to build a rapport with their patients, listen actively to their concerns, and effectively convey information about diagnoses, treatments, and follow-up care. Medical students must be able to communicate clearly and effectively in order to provide high-quality patient care.

Overall, assessing professionalism in medical students involves considering a range of factors, including ethical behavior, communication skills, clinical competence, and personal attributes such as empathy and humanism. By carefully evaluating these criteria, educators and clinical supervisors can provide medical students with the guidance and support they need to develop into responsible, competent doctors who are committed to providing the best possible care to their patients.

Punctuality is the characteristic of being able to complete a required task or fulfill an obligation before or at a previously designated time. "Punctual" is often used synonymously with "on time". There is great importance of punctuality in medical profession. Benefits of punctuality are Professionalism, improved patient outcomes, improved patient satisfaction and reduced healthcare costs

Types of punctuality assessment criteria include:

A. External assessment

1. Attendance records

2. Timeliness of submission of assignments

3. Timeliness of arrival to classes, meetings, clinical settings

B. Internal assessment

1. Time management skills

2. Ability to prioritize tasks

3. Responsibility towards patients and colleagues

Challenges to punctuality in medical profession are unpredictability of medical profession, workload, stress ,attitude and culture.Role of educators in reinforcing punctuality is by providing clear expectations, fostering a culture of punctuality ,encouraging accountability and providing feedback and support.

As the name implies, teamwork in health care employs the practices of collaboration and enhanced communication to expand the traditional roles of health workers and to make decisions as a unit that works toward a common goal.

Teamwork and team training is now seen as essential part of medical education. Because learning how to communicate effectively and work together can be time consuming, learning teamwork within the context of medical curricula will make students better prepared.

Learning the fundamentals of teamwork and collaborative care helps students better understand patient needs – especially in areas where social and health issues abound. The World Health Organization recommends that students begin using the principles of teamwork in their education immediately. What is helpful is that many programs teach problem-based learning, allowing students to work together, share information, and solve clinical problems as a team.

Types of Team work include Interprofessional Teamworkand Intra-professional Teamwork.Benefits of Teamwork in Medical Education include Improved communication, Facilitating knowledge transfer, Enhancing patient care

Criteria for the Assessment of Teamwork

A. Collaboration

B. Leadership

C. Communication

D. Accountability

E. Conflict resolution

Advantages of Teamwork Assessment are Improved evaluation of student, Improved feedback, Improved curriculum development and Conclusion. Whether it's cooperating with colleagues or taking on group projects, the ability to work well in a team is essential for achieving success. Professionals who possess good teamwork skills are often more productive, have better problem-solving capabilities, and create a positive work environment.

In summary, communication skills, punctuality, professionalism, and team work are crucial skills for success in any profession. These skills help to strengthen relationships, promote positive work culture, and contribute to the overall success of your organization.

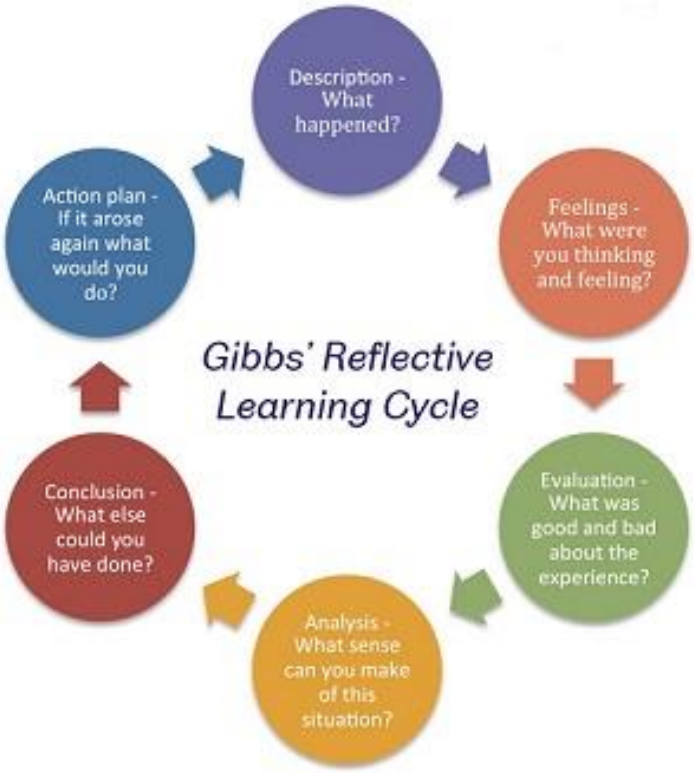
Punctuality	Knowledge	Communication Skills	Professionalism	Team Work
02 Marks Distribution	02 Marks Distribution	02 Marks Distribution	02 Marks Distribution	02 Marks Distribution
Assessment of Punctuality 1.Arrives in time 2.Completes assignments in time 3.Attendance record 4.Regularity in classes	Assessment of participation & preparation 1.Raises hands 2.Actively involved in discussion 3.Actively performs in skill labs 4.Gives others chance to participate as well	Assessment of communication skills 1.Speaks fluently and clearly 2.Speaks with confidence 3.Stays politely 4.Listens carefully	Assessment of professionalism 1.Wears overall 2.Comes prepared for class 3.Respects others(cadavers during dissection) 4.Brings all essential tools and required books 5.Carefully handles apparatus in labs	Assessment of Team work 1.Raises hands 2.Actively collaborates in assigned tasks 3.Gives others chance to participate as well 4. Have patience and stays polite during conflicts

References And Suggested Readings

1. Ziring D, Danoff D, Grosseman S, Langer D, Esposito A, Jan MK, Rosenzweig S, Novack D. How do medical schools identify and remediate professionalism lapses in medical students? A study of US and Canadian medical schools. Academic Medicine. 2015 Jul 1;90(7):913-20.
2. Kaushar M. Study of impact of time management on academic performance of college students. Journal of Business and Management. 2013;9(6):59-60. 13.
3. Nancarrow SA, Booth A, Ariss S, Smith T, Enderby P, Roots A. Ten principles of good interdisciplinary team work. Human resources for Health. 2013 Dec;11(1):1-1.
4. Facilitation has been taken from Chat GPT software.

Annexure II

How To Write Reflective Diaries



Gibbs' Model of the Reflective Cycle

Below is a six stage approach to reflective writing using Gibbs' (1988) model:

Stage One: Description	
What happened?	• Decide on something that happened during your placement, something that taught you about yourself as a nurse. It may have been new to your experience. • Give an account of it, describing everything **relevant** that went on. • Keep to the point, avoid all unnecessary detail. • Your purpose at this stage is to give your reader a clear picture of what went on.
Stage Two: Feelings	
What did you feel about it? What did you think about?	• You are bound to have feelings about what happened. You may have felt anxious, especially if what happened was new to you. The important thing is to show how you managed to do what was expected of you despite your anxiety. • Try to describe/explain your feelings. • What was affecting them? – the actions of others (experienced staff, the patient, family); knowledge that you held (something which patient had disclosed to you earlier, personal thoughts/opinion on the issue)? • Were you thinking - 'That's a useful thing to do' or 'I wouldn't do that or why are they doing that…' ? • Did your thoughts and feelings change during the scenario? If so, why? • Did your thoughts and feelings affect your actions at the time? • Looking back, have your views changed?
Stage Three: Evaluation	
What was good or bad about the experience?	• What do you think went well in the situation? Did you learn anything useful as a result of taking part in what went on? • Did anything give you cause for concern – either in what others did or what you did? Was there something which you would not wish to experience again? • Was there anything that the patient/the family said that made you think or taught you something?
Stage Four: Analysis	

What sense can you make of it all?	• Using secondary sources (books, journals, websites etc), this is where you explore some of the key issues raised in the scenario. • You can show how well you are keeping up with 'evidence based' practice. • Show the knowledge you have about a particular patient/client problem/need. • Show that you understand what causes the problem/need. • Explain how nurses can help. • Show that you understand the prescribed medication/other therapies. • Show that you recognise that patients/clients are individuals and may not respond to care in the way the textbooks/journal articles lead you to expect.
Stage Five: Conclusion	
What else could you have done?	• Could you have learned anything by talking to the patient/client/the family about the experience? • Was there anything you should have noticed, that you should have done/reported/asked about/read about? • Was there anything you could have discussed with your mentor/supervisor/tutor? • Is there any literature that you now think you ought to look at – or any advice you could look for?
Stage Six: Action Plan	
	• How has the experience helped you to improve your practice? • Has it revealed your strengths (as well as your weaknesses!)? • How would you respond in a similar situation? Do you feel more confident? • What advice would you give to other learners in similar situations when you are a qualified nurse responsible for looking after learners on placement in your clinical area? • Will you be better able to communicate with patients/clients/families because of what you experienced?

References And Further Reading:

Adapted from: Gibbs, G. (1988) *Learning by Doing: A guide to teaching and learning methods*. Further Education Unit. Oxford: Oxford Polytechnic.

https://www.tcd c c.ie/students/reflection/resources/

Log Book

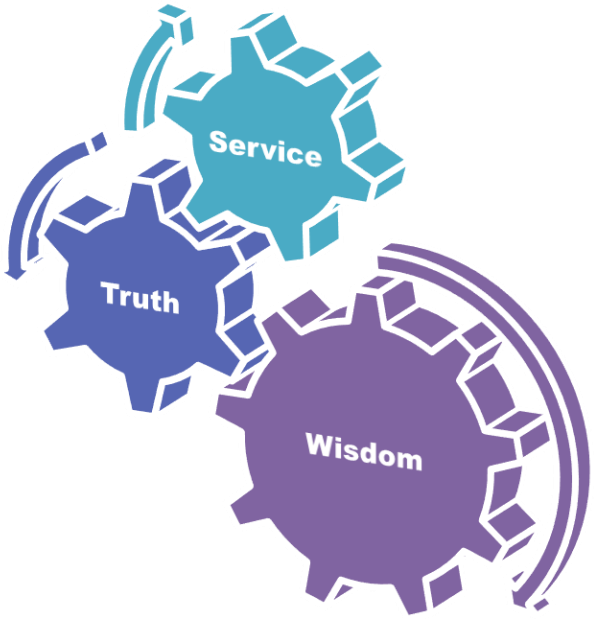


Early Clinical Exposure

2nd Year

Rawalpindi Medical University

RMU Motto



Mission Statement

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

Vision and Values

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

Goals of the Undergraduate Integrated Modular Curriculum

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

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

Introduction

A log book is structured book in which certain types of educational activities and information is recorded, usually by hand. Logbooks are used all over the world from undergraduate to postgraduate training, in human, veterinary and dental medicine, nursing schools and pharmacy, either in paper or electronic format.

` Logbooks provide a clear setting of learning objectives and give trainees and clinical teachers a quick overview of the requirements of training and an idea of the learning progress. Logbooks are especially useful if different sites are involved in the training to set a (minimum) standard of training. Logbooks assist Teachers and students to see at one glance which learning objectives have not yet been accomplished and to set a learning plan. The analysis of logbooks can reveal weak points of training and can evaluate whether students have fulfilled the minimum requirements of training.

Logbooks facilitate communication between the students and teachers. Logbooks help to structure and standardize learning. Logbooks have to be an integrated part of the curriculum and the daily routine. Continuous measures of quality management are necessary.

Reference

Brauns KS,Narciss E,Schneyinck C,Böhme K,Brüstle P, Holzmann UM, etal. Twelve tips for successfully implementing logbooks in clinical training. Med Teach. 2016 Jun 2; 38(6): 564–569.

Student's Profile

Paste Photograph
(2x2 Size)

Name:_____ Roll No._____

Batch:_____

Class:_____

Session:_____

Contact Detail: ----------

Phone:_____ Mobile:_____

Email:_____

Hostelite/Dayscholar:_____

Parents / Guardian Contact #(Mobile)_____ Landline_____

Postal Address:_____ Guardian Email:_____

_____

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher

Proforma For Early Clinical Exposure for Second Year MBBS

Roll Number: _____

Sr. No	Date	Time	Module	Batch	Topic of the Session	Subject	Unit	Name & Sign of Teacher