Study Guide

Renal Module-I

Department of Medical Education

2025

Second Year MBBS

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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 - I.
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
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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
Dr Samia Sarwar, Dr Ifra Saeed, Dr Ayesha Yousaf, Dr Aneela, Dr. Arsalan Manzoor & Dr Farzana Fatima	2024-2025	6th	Developed for Second Year MBBS. Horizontally and vertically integrated Learning objectives updated, Research curriculum revamped Bioethics, Family Medicine curriculum incorporated along with Professionalism. Entrepreneurship, Leadership, ITC, Artificial Intelligence, Video Graphy, Expository Writing, Social in Medicine curriculum incorporated

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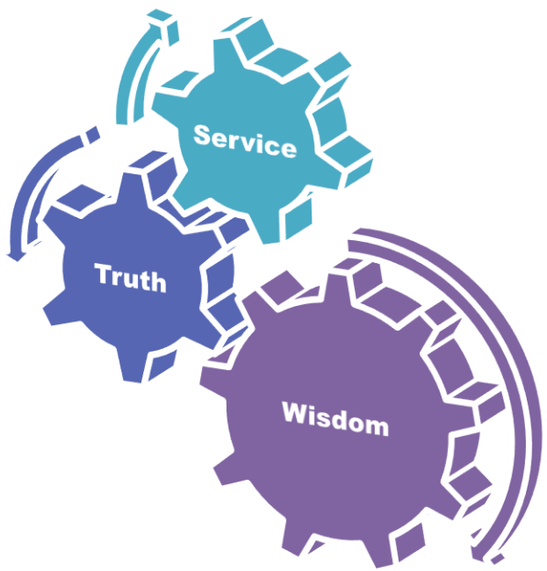
University Moto, Vision, Values & Goals

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:

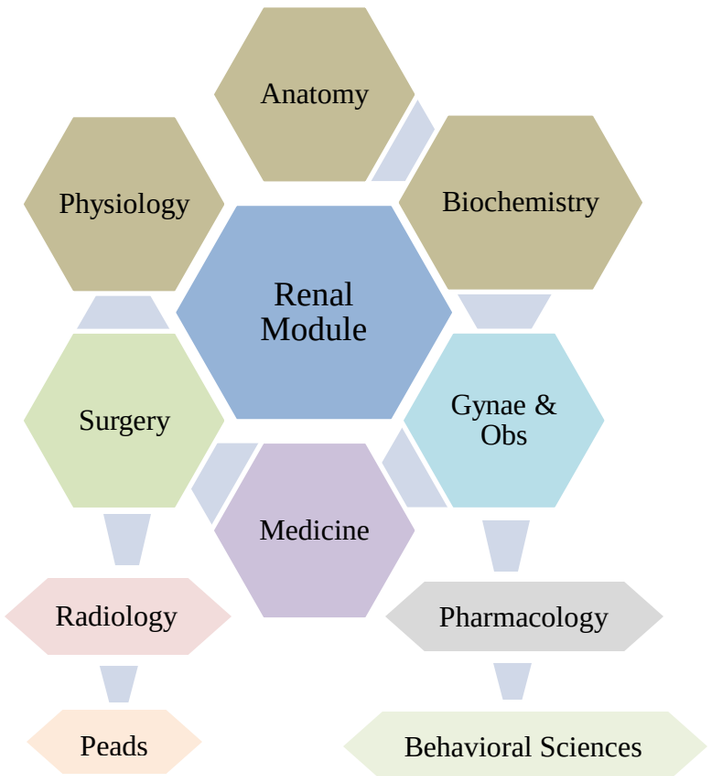
- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional 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 2025

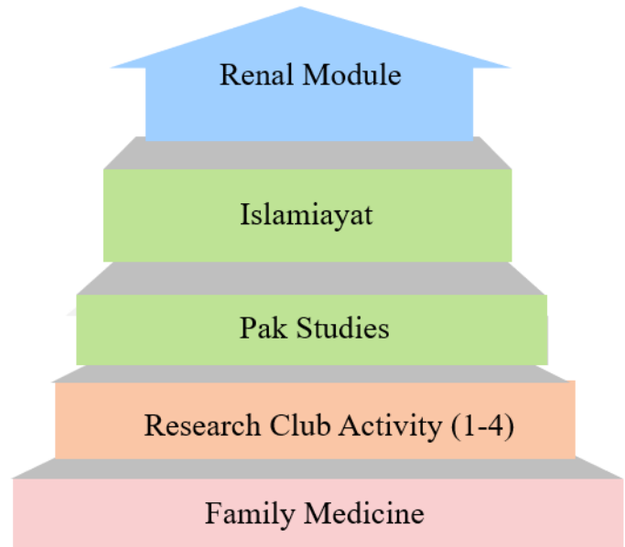
Study Guide

Renal Module-I

Integration



Disciplines in Renal Module



Spiral / General Education Cluster Courses

Discipline Wise Details of Modular Content

<table>
<tr><th colspan="5">Integration</th></tr>
<tr><th colspan="5">Themes</th></tr>
<tr><th>Block</th><th>Module</th><th>Embryology</th><th>Histology</th><th>Gross Anatomy</th></tr>
<tr><td rowspan="8">IV</td><td>• Anatomy</td><td>Embryology
• Kidney
• Ureter
• Urinary Bladder
• Urethra</td><td>Histology
• Kidney
• Ureter
• Urinary Bladder</td><td>• Posterior Abdominal Wall & Organs of Urinary System</td></tr>
<tr><td>• Biochemistry</td><td colspan="3">• 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</td></tr>
<tr><td>• Physiology</td><td colspan="3">• 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</td></tr>
<tr><td colspan="4">Spiral Courses</td></tr>
<tr><td>• Islamiyat</td><td colspan="3">• The literal and civic meaning of Prophethood and the need for Prophethood
• The meaning of the Akharat, its necessity, and wisdom
• Aqida Akhirat, its meaning, necessity, and wisdom</td></tr>
<tr><td>• Pak Studies</td><td colspan="3">• The Objectives and Goals of the Creation of Pakistan
• Nazria e Pakistan or Quid e Azam
• The foundation of the Muslim community</td></tr>
<tr><td>• Research Club Activity (1-4)</td><td colspan="3">• Synopsis Writing
• Questionnaire Development
• Data Analysis
• Manuscript Writing</td></tr>
</table>

	• Family Medicine	• Renal Failure
	Vertical Integration	
	• Radiology	• Prenatal Ultrasonography • Contrast Nephropathy
	• Behavioral Sciences	• Perception • Thinking and Motivation
	• Medicine	• Acute renal failure • CRF & Rehabilitation of patient with CRF • Potassium imbalance and its management
	• Surgery	• Investigations of urinary tract • Hydronephrosis / Pyonephrosis
	• Obstetrics & Gynecology	• Physiological Changes in the Renal System in Pregnancy & UTI
	• Pharmacology	• Introduction to diuretics
	• Peads	• UTI
	• Joint Session	• Nephrotic Syndrome (Peads, Medicine, Anatomy, Physiology & Biochemistry)
	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

Renal Module-I Team

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

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Convener Curriculum	Prof. Dr. Naeem Akhter
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
5.	Additional Director (Assessment) DME	Dr. Arsalan Manzoor Mughal
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar
7.	Chairperson Biochemistry	Dr. Aneela Jamil
8.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
9.	Focal Person Physiology	Dr. Sidra Hamid
10.	Focal Person Biochemistry	Dr. Aneela Jamil
11.	Focal Person Pharmacology	Dr. Zunera Hakim
12.	Focal Person Pathology	Dr. Asiya Niazi
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom
15.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
16.	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. Tariq Furqan (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Sana Latif (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Jawad Hassan (Senior Demonstrator of Physiology)

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

Module II – Renal Module-I

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

Module Outcomes

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

Knowledge

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

Skills

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

Attitude

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

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

SECTION - I

Terms & Abbreviations

Contents

Tables & Figures

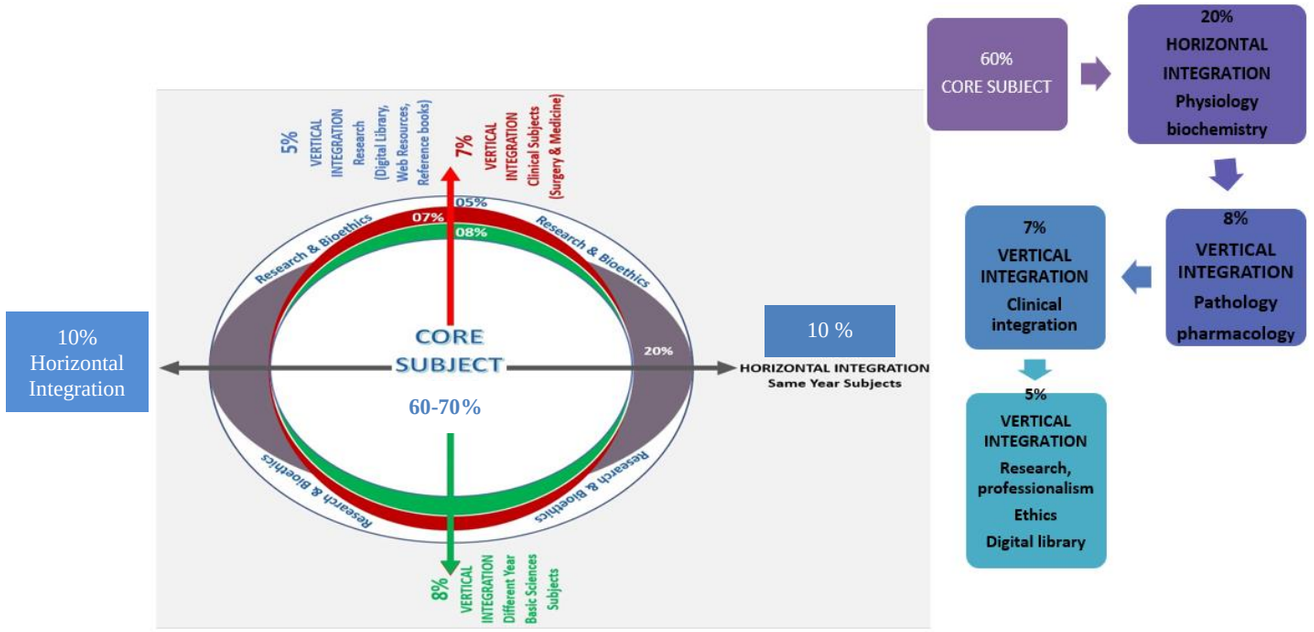
Table1. Domains of Learning According to Blooms Taxonomy

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.



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)
(Knowledge)
Anatomy Large Group Interactive Session (LGIS)

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

M2-Renal-A-003	Histology of kidney I (Cortex & Medulla)	• Discuss the structural components of the nephron.	Must know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• Discuss the histology of filtration barrier.	Must know	C2		
		• Understand the bio-physiological aspects of filtration	Must know	C2		
		• Distinguish the key microscopic components of the renal cortex and medulla.	Must know	C2		
		• Differentiate the histological appearance of proximal tubule, loop of Henley, distal convoluted tubule and collecting duct.	Must know	C2		
		• Correlate the clinical conditions	Should know	C3		
		• Understand the preventive and curative health care measures	Should know	C2		
		• Practice the principles of Bioethics	Nice to know	C3		
		• Apply strategic use of AI in health care	Nice to know	C3		
		• Read relevant research article	Nice to know	C3		
M2-Renal-A-004	Histology of kidney II (Collecting System)	• Enumerate the component cells of the juxta glomerular apparatus.	Should know	C1	Skill labs	OSPE MCQ SAQ VIVA
		• Discuss the component cells of the juxtaglomerular apparatus	Must know	C1		
		• Discuss the effect of diabetes & hypertension on glomerular filtration rate	Should know	C2		
		• Understand the effect of hypertension on renin angiotensin release	Should know	C3		
M2-Renal-A-005	Histology of Urinary Bladder	• Describe histological characteristics of urinary bladder.	Must know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• Explain the concept of umbrella cells and Uroplakins.	Must know	C2		
		• Explain the concept of internalization	Must know	C2		
		• Understand the bio-physiological effects of urinary epithelium	Must know	C2		
		• Compare the histological changes of empty and full bladder.	Must know	C2		
		• Correlate the clinical conditions	Should know	C2		
		• Understand the preventive and curative health care measures	Nice to Know	C2		
		• Practice the principles of Bioethics	Nice to Know	C2		
		• Apply strategic use of AI in health care	Nice to Know	C2		
		• Read relevant research article	Nice to Know	C2		
M2-Renal-A-006	Histology of ureter & urethra	• Describe the microscopic structure of ureter	Must know	C2	Skill labs	OSPE MCQ
		• Discuss the histological features of urethra	Must know	C2		

		• Distinguish the transition in epithelium in different types of urethra	Must know	C2		SAQ VIVA
		• Correlate the clinical conditions	Should know	C3		
		• Understand the preventive and curative health care measures	Nice to Know	C3		
		• Practice the principles of Bioethics	Nice to Know	C3		
		• Apply strategic use of AI in health care	Nice to Know	C3		
		• Read relevant research article	Nice to Know	C3		

(Knowledge)

Anatomy Small Group Discussion (SGDs)

Code	Topics	Learning Objectives Students Should Be Able To	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-A-007	Posterior abdominal wall I (Fascia & Muscles)	• Describe the fascia of posterior abdominal wall	Must know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• Tabulate the muscles of posterior abdominal wall with reference to, origin, insertion, nerve supply and action.	Must know	C2		
		• Describe the relations of Psoas major muscle.	Should Know	C2		
		• Correlate the clinical conditions (Psoas Abscess)	Should know	C3		
		• Understand the preventive and curative health care measures	Should Know	C3		
		• Map Root of mesentery on SP/Model	Should Know	C3		
		• Practice the principles of Bioethics	Should Know	C3		
		• Apply Strategic use of AI in health care	Nice to know	C3		
M2-Renal-A-008	Posterior abdominal wall II (Nerves)	• Trace the nerves present on posterior abdominal wall	Must know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• DI Discuss the formation of nerves	Must know	C2		
		• Discuss the formation of lumbosacral plexus	Must know	C2		
		• Correlate the clinical conditions (Lumbar symphathectomy)	Should know	C3		
		• Understand the preventive and curative health care measures	Nice to Know	C3		

		• Practice the principles of Bioethics	Nice to Know	C3		
		• Apply Strategic use of AI in health care	Nice to Know	C3		
		• Read relevant research articles	Nice to Know	C3		
M2-Renal-A-009	Posterior abdominal wall III (vessels) & Lumbar Vertebrae	• Enlist branches of Abdominal Aorta.	Must know	C1	Skill labs	OSPE MCQ SAQ VIVA
		• Describe the tributaries of inferior vena cava.	Must know	C2		
		• Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk.	Must know	C2		
		• Differentiate between typical and atypical lumbar vertebrae.	Must know	C2		
		• Identify different parts of lumbar vertebrae.	Must know	C2		
		• Discuss the attachments of lumbar vertebrae.	Nice to Know	C2		
		• Correlate the clinical conditions (abdominal aortic aneurysm)	Should know	C3		
		• Understand the preventive and curative health care measures	Must know	C3		
		• Map Abdominal aorta, Inferior Vena cava & Portal vein on simulated patient (SP)/Model	Must know	C3		
		• Practice the principles of Bioethics	Nice to Know	C3		
		• Apply Strategic use of AI in health care	Nice to Know	C3		
		• Read relevant research articles	Nice to Know	C3		
M2-Renal-A-0010	Kidney	• Discuss the site and extent of kidneys	Must know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• Differentiate right from left kidney	Must know	C2		
		• Understand the bio-physiological aspects of kidney	Must know	C2		
		• Discuss the renal capsule and its role in support of kidney.	Must know	C2		
		• Describe the structure of cortex and medulla	Must know	C2		
		• Describe peritoneal relationship of both kidneys.	Must know	C2		
		• Describe visceral relationship of both kidneys	Must know	C2		
		• Explain blood supply of both kidneys with emphasis on	Must know	C2		

		renal artery.				
		• Discuss the venous drainage of both kidneys.	Must know	C2		
		• Correlate the clinical conditions (perinephric abscess, nephroptosis, renal cysts and renal colic)	Should know	C3		
		• Understand the preventive and curative health care measures	Nice to know	C3		
		• Map the kidney on the back (Morrison's Parrallelogram) on SP/Model	Nice to know	C3		
		• Practice the principles of Bioethics	Nice to know	C3		
		• Apply Strategic use of AI in health care	Nice to know	C3		
		• Read relevant research articles	Nice to know	C3		
M2-Renal-A-0011	Ureter	• Discuss extent and course of ureter in abdomen and pelvis in males and females	Must know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• Explain peritoneal reflections of ureter in both sexes.	Must know	C2		
		• Describe relations of ureter.	Should know	C2		
		• Describe the arterial, venous and lymphatic drainage of ureter.	Nice to know	C2		
		• Correlate the clinical conditions (ureteric colic)	Nice to know	C3		
		• Understand the preventive and curative health care measures	Must know	C3		
		• Map Ureter from the back on SP/Model	Nice to Know	C3		
		• Practice the principles of Bioethics	Nice to Know	C3		
		• Apply Strategic use of AI in health care	Nice to Know	C3		
		• Read relevant research articles	Nice to Know	C3		
M2-Renal-A-0012	Supra renal gland	• Describe the location & visceral relations of right and left supra renal glands	Must know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• Understand the bio-physiological aspects of kidney	Must know	C2		
		• Discuss supra renal cortex and medulla	Must know	C2		
		• Discuss vessels and nerves of supra renal gland	Must know	C2		

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

		• Apply Strategic use of AI in health care	Nice to know	C3		
		• Read relevant research articles	Nice to know	C3		
M2-Renal-A-0014	Cross Sectional Anatomy	• Identify different structures at different levels of vertebral coloumn;L2,L3,L4,L5	Must know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• Correlate the clinical conditions at the given level	Should know	C3		
		• Understand the preventive and curative health care measures	Nice to Know	C3		
		• Practice the principles of Bioethics	Nice to Know	C3		
		• Apply Strategic use of AI in health care	Nice to Know	C3		
		• Read relevant research articles	Nice to Know	C3		
M2-Renal-A-0015	Radiology	• Identify structures on a normal X-ray abdomen	Should know	C2	Skill labs	OSPE MCQ SAQ VIVA
		• Identify kidney and its associated structures on contrast studies.	Should know	C2		
		• Appreciate filling defects.	Must know	C2		
		• Mark anatomical landmarks.	Must know	C2		
		• Understand the preventive and curative health care measures	Should know	C3		
		• Practice the principles of Bioethics	Nice to know	C3		
		• Apply Strategic use of AI in health care	Nice to Know	C3		
		• Read relevant research articles	Nice to know	C3		
		• Correlate the clinical conditions	Nice to know	C3		

(Knowledge)
Anatomy Self Directed Learning (SDL)

Code	Topics	Learning Objectives Students Should Be Able To	Learning resources
M2-Renal-A-0016	Posterior abdominal wall I (Fascia & Muscles)	• Describe the fascia of posterior abdominal wall • Tabulate the muscles of posterior abdominal wall with reference to, origin, 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
M2-Renal-A-0017	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
M2-Renal-A-0018	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
M2-Renal-A-0019	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.	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 515-517,523-524). ❖ https://www.youtube.com/watch?v=ZVlVquVYGDo

		• 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	
M2-Renal-A-0020	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
M2-Renal-A-0021	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
M2-Renal-A-0022	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
M2-Renal-A-0023	Urethra	• Describe different parts of male and female urethra. • Explain blood supply, innervation and lymphatics of urethra in both sexes	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 595). ❖ https://www.youtube.com/watch?v=EQUdo

		• Discuss the clinically significant differences between male and female urethra • Read a relevant research article	392wg0

(Psychomotor)
Histology Practicals Skill Laboratory (SKL)

Code	Topic	At The End Of Practical Students Should Be Able To	Calgary Gauge	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-A-0024	Kidney	• Identify the histological slide of kidney.	Must know	C3	Skill Lab	OSPE
		• Illustrate the histological structure of Kidney.	Should know	C2		
		• Enlist two points of identification.	Must know	C2		
		• Focus the slide	Must know	C3		
M2-Renal-A-0025	Ureter	• Identify the histological slide of ureter	Must know	C2	Skill Lab	OSPE
		• Illustrate the histological structure of ureter.	Should know	C2		
		• Enlist two points of identification.	Must know	C1		
		• Focus the slide	Must know	C3		
M2-Renal-A-0026	Urinary bladder	• Identify the histological slide of urinary bladder.	Must know	P	Skill Lab	OSPE
		• Illustrate the histological structure of urinary bladder	Should know	C2		
		• Enlist two points of identification.	Must know	C1		
		• Focus the slide	Must know	P		

Anatomy LGIS Syllabus of Learning Management System (LMS)

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

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

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

Anatomy SGDs Syllabus of Learning Management System (LMS)

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

	(Nerves)	• Discuss the formation of lumbosacral plexus	Must know	C2	(Chapter 5, Page 527-532). ❖ https://www.youtube.com/watch?v=5ZnlcZrC-XY
		• Correlate the clinical conditions (Lumbar symphathectomy)	Should know	C3	
		• Understand the preventive and curative health care measures	Nice to Know	C3	
		• Practice the principles of Bioethics	Nice to Know	C3	
		• Apply Strategic use of AI in health care	Nice to Know	C3	
		• Read relevant research articles	Nice to Know	C3	
M2-Renal-A-0035	Posterior abdominal wall III (vessels) & Lumbar Vertebrae	• Enlist branches of Abdominal Aorta.	Must know	C1	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 541-544, 544-547). https://www.youtube.com/watch?v=pSDYlPzNg4s
		• Describe the tributaries of inferior vena cava.	Must know	C2	
		• Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk.	Must know	C2	
		• Differentiate between typical and atypical lumbar vertebrae.	Must know	C2	
		• Identify different parts of lumbar vertebrae.	Must know	C2	
		• Discuss the attachments of lumbar vertebrae.	Nice to Know	C2	
		• Correlate the clinical conditions (abdominal aortic aneurysm)	Should know	C3	
		• Understand the preventive and curative health care measures	Must know	C3	
		• Map Abdominal aorta, Inferior Vena cava & Portal vein on simulated patient (SP)/Model	Must know	C3	
		• Practice the principles of Bioethics	Nice to Know	C3	
		• Apply Strategic use of AI in health care	Nice to Know	C3	
		• Read relevant research articles	Nice to Know	C3	
M2-Renal-A-0036	Kidney	• Discuss the site and extent of kidneys	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 515-
		• Differentiate right from left kidney	Must know	C2	
		• Understand the bio-physiological aspects of kidney	Must know	C2	

		• Discuss the renal capsule and its role in support of kidney.	Must know	C2	517,523-524). https://www.youtube.com/watch?v=ZVlVquVYGDo
		• Describe the structure of cortex and medulla	Must know	C2	
		• Describe peritoneal relationship of both kidneys.	Must know	C2	
		• Describe visceral relationship of both kidneys	Must know	C2	
		• Explain blood supply of both kidneys with emphasis on renal artery.	Must know	C2	
		• Discuss the venous drainage of both kidneys.	Must know	C2	
		• Correlate the clinical conditions (perinephric abscess, nephroptosis, renal cysts and renal colic)	Should know	C3	
		• Understand the preventive and curative health care measures	Nice to know	C3	
		• Map the kidney on the back (Morrison's Parrallelogram) on SP/Model	Nice to know	C3	
		• Practice the principles of Bioethics	Nice to know	C3	
		• Apply Strategic use of AI in health care	Nice to know	C3	
		• Read relevant research articles	Nice to know	C3	
M2-Renal-A-0037	Ureter	• Discuss extent and course of ureter in abdomen and pelvis in males and females	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 517-518,525). https://www.youtube.com/watch?v=1P0utMb5nkg
		• Explain peritoneal reflections of ureter in both sexes.	Must know	C2	
		• Describe relations of ureter.	Should know	C2	
		• Describe the arterial, venous and lymphatic drainage of ureter.	Nice to know	C2	
		• Correlate the clinical conditions (ureteric colic)	Nice to know	C3	
		• Understand the preventive and curative health care measures	Must know	C3	
		• Map Ureter from the back on SP/Model	Nice to Know	C3	
		• Practice the principles of Bioethics	Nice to Know	C3	
		• Apply Strategic use of AI in health care	Nice to Know	C3	

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

M2-Renal-A-0040	Urethra	• Describe different parts of male and female urethra.	Must know	C2	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 595). https://www.youtube.com/watch?v=EQUdo392wg0
		• Explain blood supply, innervation and lymphatics of urethra in both sexes	Must know	C2	
		• Discuss the clinically significant differences between male and female urethra	Must know	C2	
		• Correlate the clinical conditions	Should know	C3	
		• Understand the preventive and curative health care measures	Must know	C3	
		• Practice the principles of Bioethics	Nice to know	C3	
		• Apply Strategic use of AI in health care	Nice to know	C3	
		• Read relevant research articles	Nice to know	C3	
M2-Renal-A-0041	Cross Sectional Anatomy	• Identify different structures at different levels of vertebral coloumn;L2,L3,L4,L5	Must know	C2	• Gross Anatomy :- KLM clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034 UWORLD Step 1 (Volume 3) 2023-2024
		• Correlate the clinical conditions at the given level	Should know	C3	
		• Understand the preventive and curative health care measures	Nice to Know	C3	
		• Practice the principles of Bioethics	Nice to Know	C3	
		• Apply Strategic use of AI in health care	Nice to Know	C3	
		• Read relevant research articles	Nice to Know	C3	
M2-Renal-A-0042	Radiology	• Identify structures on a normal X-ray abdomen	Should know	C2	• Gross Anatomy :- KLM clinically oriented anatomy edition 10 • USMLE Q Bank Step 1 (Volume 1) 2023-2034 UWORLD Step 1 (Volume 3) 2023-2024
		• Identify kidney and its associated structures on contrast studies.	Should know	C2	
		• Appreciate filling defects.	Must know	C2	
		• Mark anatomical landmarks.	Must know	C2	
		• Understand the preventive and curative health care measures	Should know	C3	
		• Practice the principles of Bioethics	Nice to know	C3	

		• Apply Strategic use of AI in health care	Nice to Know	C3	
		• Read relevant research articles	Nice to know	C3	
		• Correlate the clinical conditions	Nice to know	C3	

Anatomy Practicals Syllabus of Learning Management System (LMS)

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

(Knowledge)
Physiology Large Group Interactive Session (LGIS)

Code	Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Calgary Gauge	Grade	Learning Domain	Teaching Strategy	Assessment Tools
M2-Renal-P-001	Body fluid compartments, Volume & osmolarity of ECF &ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality,Osmosis and Osmotic pressure	Should know Must know Must know Must know	B A A A	C1 C2 C2 C1	LGIS	SAQ MCQ VIVA
M2-Renal-P-002	Physiology of Renal system,Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	Should know Should know Must know Must know	B B A A	C2 C2 C2 C1	LGIS SGD	SAQ MCQ VIVA
M2-Renal-P-003	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	Must know Must know Should know Must know Should know	A A B A B	C1 C1 C2 C1 C2	LGIS SGD	SAQ MCQ VIVA
M2-Renal-P-004	**A.** Regulation of GFR & RBF-I (Determinants of GFR & RBF) Regulation of GFR & RBF-II,Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	Must know Must know	A A	C1 C1	LGIS SGD	SAQ MCQ VIVA
M2-Renal-P-005	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	Must know Must know Must know Must know Must know	A A A A A	C1 C1 C2 C1 C2	LGIS SGD	SAQ MCQ VIVA
M2-Renal-P-006	Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in ○ Proximal tubule ○ Loop of Henle ○ Distal tubule & collecting tubule. Active and passive transport mechanisms	Must know Must know Must know Must know Must know	A A A A A	C1 C2 C1 C1 C2	LGIS Group presentations	SAQ MCQ VIVA

M2-Renal-P-007	Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	Must know Should know Must know	A B A	C1 C2	LGIS SGD Group presentations	SAQ MCQ VIVA
M2-Renal-P-008	**A.** Clearance methods to quantify kidney function Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	Must know Should know Must know Must know	A B A A	C1 C1 C1 C1 C1 C2	LGIS SGD	SAQ MCQ VIVA

(Knowledge)
Physiology Small Group Discussion (SGDs)

Code	Topic	Learning Objectives Students Should Be Able To	Calgary Guage	Grade	Learning Domain	Teaching Strategy	Assessment Tools
M2-Renal-P-009	GFR & RBF	• Explain factors effecting GFR	Must Know	A	C2	SGD	MCQ SEQ VIVA OSPE
		• Discuss determinants of RBF	Must Know	A	C2		
		• Explain autoregulatory mechanism of GFR & RBF	Must Know	A	C2		
M2-Renal-P-0010	Micturition	• Describe the physiological anatomy & nervous connections of urinarybladder	Should Know	B	C1	SGD	MCQ SEQ VIVA OSPE
		• Explain Micturition reflex	Must Know	A	C2		
		• Discuss abnormalities of Micturition	Must Know	A	C2		
M2-Renal-P-0011	Clearance methods	• Define Renal clearance	Should Know	B	C1	SGD	MCQ SEQ VIVA OSPE
		• Enumerate & Explain clearance methods to quantify renal functions	Must Know	A	C1		
		• Explain filtration fraction	Nice to Know	C	C2		
M2-Renal-P-0012	Acid basebalance	• Describe mechanism of action of buffer systems of body fluid	Must Know	A	C1	SGD	MCQ SEQ VIVA OSPE
		• Discuss buffering power of respiratory & renal system	Must Know	A	C2		
		• Explain the acid base disorders	Must Know	A	C2		

(Knowledge)
Physiology Self Directed Learning (SDL)

Code	Topics Of SDL	Learning Objective	References
M2-Renal-P-0013	Body fluid compartments, Volume & osmolarity of ECF &ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality,Osmosis and Osmotic pressure	❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition 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)
M2-Renal-P-0014	Physiology of Renal system, Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	• Ganong's Review of Medical Physiology.25TH Edition. Renal Physiology (Chapter 37, Page 671) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 624-636) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. 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)
M2-Renal-P-0015	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)

M2-Renal-P-0016	**B.** Regulation of GFR & RBF-I (Determinants of GFR & RBF) **C.** Regulation of GFR & RBF-II, Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	❖ A. ❖ Ganong's Review of Medical Physiology.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)
M2-Renal-P-0017	RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback Mechanism • Macula-densa Feedback Mechanism	❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 28,Page 473) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 331,333,337) ❖ B. ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 337,342) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Filtration and Blood Flow. (Chapter 28,Page 476,483)
M2-Renal-P-0018	Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in • Proximal tubule • Loop of Henle • Distal tubule & collecting tubule. • Active and passive transport mechanisms	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 679) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 267) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 636,643) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 29,Page 487-497) . (Chapter 30,Page 498) . (Chapter 31,Page 508) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 343,355)
		• Concept of Glomerulo tubular Balance	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07

M2-Renal-P-0019	Regulation of tubular reabsorption	• Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	(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)
M2-Renal-P-0020	**B.** Clearance methods to quantify kidney function **C.** Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, • Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	❖ A. ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 255) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19,Page 643- 647) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. (Chapter 27, Page 469,483) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 360-364) ❖ B. ❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 691) ❖ Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19,Page 648) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 26, Page 324-328)

(Pschomotor)
Physiology Practicals Skill Laboratory (SKL)

Code	Practical	At The End Of This Skill Lab, Student Should Be Able To Illustrate:	Calgary Guage	Grade	Learning Domain	Teaching Strategy	Assessment Tools
M2-Renal-P-0021	Specific gravity of Urine	• Apparatus identification	Must Know	A	C1	Skill lab	OSPE
		• Principle	Must Know	A	C1		
		• Procedure	Must Know	A	P, A		
		• Precautions	Should Know	B	C1		
		• Use of urinometer	Should Know	B	C1		
		• Recall normal values of specific gravity	Nice to Know	C	C1		

Physiology Syllabus of Learning Management System (LMS)

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

		• Specific gravity of urine and Importance of thirst.			
M2-Renal-P-0029	Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in Proximal tubule • Loop of Henle • Distal tubule & collecting tubule. • Active and passive transport mechanisms	Must Know (A)/ Should know (B)	LGIS&SDL	MCQs

(Knowledge)

Biochemistry Large Group Interactive Session (LGIS)

Code	Topic	Learning Objectives At the End of Lecture Students Should Be Able To	Calgary	Learning Domain	Teaching Strategy	Learning Resources	Assessment Tool
M2-Renal-B-001	Introduction to protein metabolism	• Understand protein turn-over, amino acid pool and entry of amino acid into cell. • Read a relevant research article • Use HEC digital library	Should Know Nice to know Nice to know	C2 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-002	Nitrogen balance	• Describe positive and negative nitrogen balance • Read a relevant research article • Use HEC digital library	Should Know Nice to know Nice to know	C2 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-003	General reactions of amino acids	• Discuss reactions of amino acids • Interpret the clinical importance of transaminases • Apply the use of Artificial intelligence in healthcare • Read a relevant research article • Use HEC digital library	Should Know Must Know Nice to know Nice to know Nice to know	C2 C3 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva

M2-Renal-B-004	Metabolism of ammonia	• Explain sources of NH_3 formation and its transport • Discuss causes and effects of Hyperammonemia • Explain mechanism of ammonia toxicity • Understand the curative and preventive healthcare measures • Read a relevant research article • Use HEC digital library	Should Know Must Know Should Know Nice to know Nice to know Nice to know	C2 C2 C3 C3 C2 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-005	Urea cycle	• Describe the location, steps and regulation of Urea cycle • Read a relevant research article • Use HEC digital Library	Should Know Nice to know Nice to know	C2 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-006	Disorders of urea cycle	• Describe Disorders of the urea cycle • Understand the curative and preventive healthcare measures • Apply the use of artificial intelligence in healthcare	Should Know Nice to know Nice to know	C2 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-007	Metabolism of glycine	• Explain Glycine metabolism and • related disease • Practice principles of bioethics • Read a relevant research article • Use HEC digital library	Should Know Must Know Nice to know Nice to know Nice to know	C2 C2 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
	Metabolism of phenyl	• Explain Phenyl alanine & tyrosine metabolism	Should Know Must Know Nice to know	C2 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition	MCQs, SAQs & Viva

M2-Renal-B-008	alanine and tyrosine	• Discuss related inherited disorders • Understand the curative and preventive healthcare measures • Use HEC digital library	Nice to know	C3		• Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	
M2-Renal-B-0010	Metabolism of Tryptophan	• Explain Tryptophan metabolism • Discuss related inherited disorders • Practice principles of bioethics • Understand the curative and preventive healthcare measures. • Use HEC digital library	Should Know Must Know Nice to know Nice to know Nice to know	C2 C3 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-0011	Metabolism of methionine	• Describe metabolism of sulfur containing amino acids • Discuss related disorders • Practice principles of bioethics • Understand the curative and preventive healthcare measures. • Use HEC digital library	Should Know Must Know Nice to know Nice to know Nice to know	C2 C2 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-0012	Metabolism of branched chain amino acids	• Explain Metabolism of branched chain amino acids • Discuss related inherited disorders • Practice principles of bioethics • Understand the curative and preventive healthcare measures. • Use HEC digital library	Should Know Must Know Nice to know Nice to know Nice to know	C2 C2 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-0013	Metabolism of polyamines	• Discuss Synthesis of polyamines and • their clinical significance • Practice principles of bioethics • Understand the curative and preventive healthcare measures.	Should Know Must Know Nice to know Nice to know	C2	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition	MCQs, SAQs & Viva

		• Read a relevant research article • Use HEC digital library	Nice to know Nice to know			• Google scholar articles https://scholar.google.com/	
M2-Renal-B-0014	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 • Understand the curative and preventive healthcare measures. • Read a relevant research article • Use HEC digital library	Must Know Must know Must know Nice to know Nice to know Nice to know	C2 C2 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-0015	Water	• Explain Distribution of water in different compartments of body • Interpret Dehydration & over hydration • Understand the curative and preventive healthcare measures. • Read a relevant research article • Use HEC digital library	Should Know Must Know Nice to know Nice to know Nice to know	C2 C3 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-0016	Electrolytes Sodium (Na)	• Describe Daily requirements, sources and functions of sodium • Explain causes and effects of hyponatremia & hypernatremia • Understand the curative and preventive healthcare measures. • Apply the use of artificial intelligence in healthcare • Read a relevant research article • Use HEC digital library	Should Know Must Know Nice to know Nice to know Nice to know Nice to know	C2 C3 C3 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-0017	Potassium	• Describe Daily requirements, sources and functions of potassium	Should Know Must Know	C2 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition	

		• Explain causes and effects of hypokalemia & hyperkalemia • Understand the curative and preventive healthcare measures. • Apply the use of artificial intelligence in healthcare • Read a relevant research article • Use HEC digital library	Nice to know Nice to know Nice to know Nice to know	C3 C3 C3 C3		• Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva
M2-Renal-B-0018	Chloride (Cl) & Bicarbonate (HCO_3)	• Describe Daily requirements, sources, functions & their deficiency and toxic effects on body • Understand the curative and preventive healthcare measures. • Apply the use of artificial intelligence in healthcare • Read a relevant research article • Use HEC digital library	Should Know Must Know Nice to know Nice to know Nice to know Nice to know	C2 C2 C3 C3 C3 C3	LGIS	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs, SAQs & Viva

(Knowledge)
Biochemistry Small Group Discussion (SGDs)

Code	Topic	Learning Objectives At the End of Tutorial Students Should Be Able To	Calgary Category	Learning Domain	Learning Resources	Teaching Strategy	Assessment Tool
M2-Renal-B-0019	Phenylalanine Metabolism	Explain Metabolism of phenylalanine	Should Know	C2	• Harper's Textbook Of biochemistry 32nd Edition • Lippincott Biochemistry 8th edition (chapter 19) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854183/	SGD	MCQs, SAQs & Viva
M2-Renal-B-0020	Serum Electrolytes Sodium & Potassium Metabolism	Describe causes and effects of hypo and hyper natremia, hypo and hyperkalemia	Should Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition	SGD	MCQs, SAQs & Viva

					• Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9th edition (Chapter 02 • Google scholar articles https://scholar.google.com/		

(Knowledge)
Biochemistry Self Directed Learning (SDL)

Code	Topics Of SDL	Learning Objectives	Calgary Category	Learning Resources
M2-Renal-B-0021	Phenylalanine and Tyrosine	• Clinical disorders related to Phenylalanine and tyrosine metabolism	Must Know	• Lippincott Biochemistry 8th edition (chapter 19 page - 271) • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854183/
M2-Renal-B-0022	Ammonia	• Discuss Related inherited disorders	Must Know	• Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477) • https://link.springer.com/article/10.1007/BF00998474
M2-Renal-B-0023	Arginine & Branched Chain Amino Acid Metabolism	• Explain Metabolism of branched chain amino acids • Discuss related inherited disorders	Should Know Nice to Know	• Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477) • https://link.springer.com/article/10.1007/BF00998474
M2-Renal-B-0024	Clinical Aspects of 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	Must Know Must Know Nice to Know	• Lippincott Biochemistry 8th edition (chapter 01 page – 20-24) • Harper's illustrated biochemistry 32nd edition (Chapter 02 , Water and pH, page 11-13) • https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/acid-base-balance
M2-Renal-B-0025	Hypo and Hypernatremia	• Describe Daily requirements, sources and functions of sodium • Explain causes and effects of hyponatremia & hypernatremia	Should Know Must Know	• Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9th edition (Chapter 02 page 46) • https://www.sciencedirect.com/topics/medicine-and-dentistry/sodium-metabolism
M2-Renal-B-0026	Hypo and Hyperkalemia	• Describe Daily requirements, sources and functions of potassium.	Should know	• Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9th edition (Chapter 02 page 47)

		• Explain causes and effects of hypokalemia & hyperkalemia	Must Know	• https://www.sciencedirect.com/topics/medicine-and-dentistry/potassium-metabolism

(Psychomotor)

Biochemistry Practicals Skill Laboratory (SKL)

Code	Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Calgary Category	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-B-0027	Urine analysis I	• Examine urine for its color, odor, pH and specific gravity • Perform tests on urine to detect its normal constituents	Should Know Should Know	C1 p	Skill Lab	OSPE
M2-Renal-B-0030	Urine analysis II	• Perform tests to detect abnormal constituents of urine (proteins, ketone bodies, bile salts)	Should Know	P	Skill Lab	OSPE
M2-Renal-B-0031	Estimation of urea	• Understand the clinical significance of urea levels in health and disease. • Describe methods for estimating urea • Perform estimation of urea	Must Know Should know Should Know	C2 C2 P	Skill Lab	OSPE

M2-Renal-B-0032	Estimation of creatinine	• Understand how the kidneys remove creatinine from the blood through urine. • Understand the clinical significance of creatinine levels in health and disease. • Describe methods for estimating creatinine • Perform estimation of creatinine	Should Know Must Know Should Know Should Know	C1 C2 C2 p	Skill Lab	OSPE

Biochemistry Syllabus of Learning Management System (LMS)

Code	Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Calgary Category	Learning Domain	Learning Resources	Assessment Tool
M2-Renal-B-0033	Introduction to protein metabolism	Understand protein turn-over, amino acid pool and entry of amino acid into cell.	Should Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0034	Nitrogen balance	Describe positive and negative nitrogen balance	Should Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0035	General reactions of amino acids	Discuss reactions of amino acids Interpret the clinical importance of transaminases	Should Know Must Know	C2 C3	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles	MCQs

					https://scholar.google.com/	
M2-Renal-B-0036	Urea cycle And its disorders	Describe the location, steps and regulation of Urea cycle Describe Disorders of the urea cycle	Should Know Should know	C2 C3	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0037	Metabolism of glycine	Explain Glycine metabolism and related disease	Should Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0038	Metabolism of tyrosine	Explain tyrosine metabolism Discuss related inherited disorders	Should Know	C2 C3	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0039	Metabolism of Tryptophan	Explain Tryptophan metabolism Discuss related inherited disorders	Should Know Must Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0040	Metabolism of methionine	Describe metabolism of sulfur containing amino acids Discuss related disorders	Should Know Must Know	C2 C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0041	Metabolism of branched chain amino acids	Explain Metabolism of branched chain amino acids Discuss related inherited disorders	Should Know Must Know	C2 C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition	MCQs

					• Google scholar articles https://scholar.google.com/	
M2-Renal-B-0042	Metabolism of polyamines	Discuss Synthesis of polyamines and their clinical significance	Should Know Must Know	C2	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Google scholar articles https://scholar.google.com/	MCQs
M2-Renal-B-0043	Phenylalanine Metabolism	Explain phenylalanine Metabolism in detail Highlight the Disorders	Should Know Nice to Know	C2 C3	• Harper's Textbook Of biochemistry 32nd Edition • Lippincott Biochemistry 8th edition (chapter 19) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854183/	MCQs
M2-Renal-B-0044	Ammonia	Explain sources of NH_3 formation and its transport Describe Metabolism Discuss Ammonia Toxicity interpret the related disorders	Must Know Must Know Must Know Nice to Know	C3 C2 C3 C3	• Lippincott illustrated Biochemistry 8th Edition • Harper's Textbook of Biochemistry 32nd Edition • Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477) https://link.springer.com/article/10.1007/BF00998474 https://www.youtube.com/watch?v=JX6wPV4JHJ4&t=77s https://www.ncbi.nlm.nih.gov/books/NBK546677/	MCQs
M2-Renal-B-0045	Phenylalanine and Tyrosine	Clinical disorders related to Phenylalanine and tyrosine metabolism	Must Know	C2	• Lippincott Biochemistry 8th edition (chapter 19 page – 271) • https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3854183/	MCQs
M2-Renal-B-0046	Arginine & Branched Chain Amino Acid Metabolism	Explain Metabolism of branched chain amino acids Discuss related inherited disorders	Should Know Must Know	C1 C2	• Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477) • https://link.springer.com/article/10.1007/BF00998474	MCQs

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **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

Large Group Interactive Sessions (LGIS)

Surgery

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-VI(S)-001	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		
M2-Renal-VI(S)-002	Hydronephrosis / Pyonephrosis	• Define hydronephrosis and pyonephrosis, including their etiology and pathophysiology.	C2	LGIS	MCQs
		• Identify clinical presentations, diagnostic modalities, and management strategies for both conditions, emphasizing the importance of early recognition and intervention to prevent renal damage.	C2		
		• Understand the pathophysiology, diagnosis, and management strategies for congenital anomalies like VUR and PUJO, including both surgical and non-surgical approaches.	C2		

Medicine

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-VI(M)-001	Acute renal failure	• Understand the etiology, pathophysiology, and clinical manifestations of ARF	C2	LGIS	MCQs
		• Recognizing the diagnostic criteria and appropriate investigations for ARF	C2	LGIS	MCQs
M2-Renal-VI(M)-002	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
M2-Renal-VI(M)-003	Potassium imbalance and its management	• Understand the physiological role of potassium in the body and recognize the clinical manifestations of hypo- and hyperkalemia.	C2	LGIS	MCQs
		• Develop competence in diagnosing and managing potassium imbalances, including appropriate treatment modalities and monitoring strategies.	C2	LGIS	MCQs

Obstetrics & Gynaecology

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-VI(OBG)-001	Physiological changes in the renal system in pregnancy & UTI	• The anatomic and functional changes in the renal system in pregnancy	C2	LGIS	MCQs
		• The changes in indices of renal function during pregnancy	C2		

Pharmacology

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-VI(Pharm)-001	Introduction to diuretics	• Understanding the mechanism of action of diuretics in altering renal function to promote urine production.	C2	LGIS	MCQs
		• Identifying the major classes of diuretics, their pharmacokinetics, clinical indications, and potential side effects.	C2		
		• Exploring the role of diuretics in managing conditions such as hypertension, edema, and congestive heart failure	C2		

Peads

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-VI(Peads)-001	UTI	• Define Urinary Tract Infection (UTI) and its classification (e.g., uncomplicated vs. complicated).	C2	LGIS	MCQs
		• Explain the mechanism of infection, including the role of pathogens, host defense mechanisms, and predisposing factors.	C2		
		• Understand the differences between gram-positive and gram-negative organisms causing UTIs.	C2		

Behavioral Sciences

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

Radiology

Code	Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
M2-Renal-VI(R)-001	Prenatal Ultrasonography	• Interpret normal ultrasonography of renal system	C2	LGIS	MCQs
		• Discuss features of different congenital abnormalities of renal system	C2		
M2-Renal-VI(R)-002	Contrast Nephropathy	• Understand the diverse manifestations of nephropathy, including diabetic nephropathy and IgA nephropathy	C2	LGIS	MCQs

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 Islamiayat

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M1-GIT-SI(ISL)-001	The literal and civic meaning of Prophethood and the need for Prophethood	• Understand the literal and civic meanings of Prophethood, including its role in guiding ethical behavior, morality, and the establishment of a just society, and relate these principles to medical practice and patient care.	C2	LGIS	SAQ
		• Discuss the necessity of Prophethood in providing a moral and spiritual framework for human guidance,	C2		
M1-GIT-SI(ISL)-002	The meaning of the Akharat, its necessity, and wisdom	• Understand the concept of the Akhirat (Hereafter), its significance in Islamic teachings, and how it influences ethical decision-making and moral responsibility in both personal and professional life, including medical practice.	C2	LGIS	SAQ
		• Discuss the necessity of belief in the Akhirat for shaping human behavior, motivating compassion and accountability, and explore the wisdom behind the concept in fostering a sense of duty and integrity in the healthcare profession.	C2		
M1-GIT-SI(ISL)-003	Aqida Akhirat, its meaning, necessity, and wisdom	• Understand the concept of Aqida Akhirat (belief in the Hereafter), its meaning, and how this belief shapes moral and ethical principles, including its relevance to fostering responsibility and compassion in the medical profession.	C2	LGIS	SAQ
		• Discuss the necessity of Aqida Akhirat in providing a sense of purpose, accountability, and motivation for positive actions, and explore the wisdom behind its teachings in guiding medical professionals toward ethical decision-making and patient care.	C2		

The Pak Studies

Code	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
M1-GIT-SI(PKS)-001	The Objectives and Goals of the Creation of Pakistan	• Understand the historical context, objectives, and vision behind the creation of Pakistan, including the principles of social justice, religious freedom, and political autonomy that led to its establishment	C2	LGIS	SAQ
		• Discuss how the goals of Pakistan's creation, such as providing a platform for the welfare of Muslims and promoting equality, can be linked to ethical principles and responsibilities within the medical profession and society at large.	C2		
M1-GIT-SI(PKS)-002	Nazria e Pakistan or Quid e Azam	• Understand the Nazria-e-Pakistan (Ideology of Pakistan) as articulated by Quaid-e-Azam Muhammad Ali Jinnah, focusing on its emphasis on religious freedom, social justice, and the rights of minorities in the newly formed state.	C2	LGIS	SAQ
M1-GIT-SI(PKS)-003	The foundation of the Muslim community	• Understand the Historical and Theological Foundation of the Muslim Community:	C2	LGIS	SAQ
		• Discuss the Role of Social Responsibility in the Muslim Community:	C2		

Integrated Undergraduate Research Curriculum (IUGRC)

Code	Topic	Learning Objectives	Cognitive Domain	Teaching Strategy	Assessment Tool
M2-Renal-SI(IUGRC)-001	**Research Club Activity 1** Synopsis Writing	• Organize research idea or general thought into a topic that can be configured into research problem • Formulating a research question according to FINER Criteria • Formulate appropriate research questioning using PEO/PICO/PICOT format • Understand the concept of literature review • Cognizant with concept of publication ethics Outline steps of synopsis writing according to SJRMC Guidelines	C3 C3 C2 C2 C2 C2	LGIS	MCQs
M2-Renal-SI(IUGRC)-002	**Research Club Activity 2** Questionnaire Development	• Understand about questionnaires used in research • Categorize types of questions used in research their advantages and disadvantages • Identify Designs and stages of development of questionnaire • Interpret Simple rules for writing a good questionnaire • Appraise Parts and Layout of questionnaire	C2 C2 C3 C2 C3	LGIS	MCQs
M2-Renal-SI(IUGRC)-003	**Research Club Activity 3** Data Analysis	• Make variables on computer • Feed data under variables on computers • Summarize data on computer including text, tabulations & graphics • Perform Descriptive analysis of data on computer	C2 C3 C2 C3	LGIS	MCQs

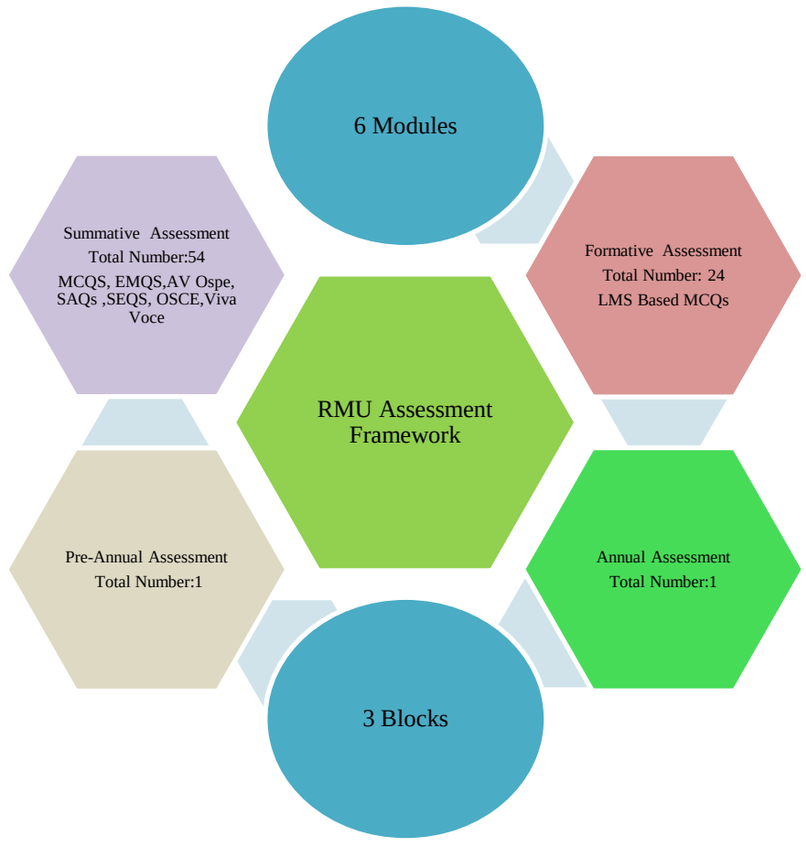
		• Organize, and save data in a suitable way. • Calculate/recode variables and prepare data for analysis. • Conduct descriptive and basic inferential statistics. • Be familiar with SPSS presentation of statistical output. • Create and edit graphical displays of data.	C3 C2 C2 C3		
M2-Renal-SI(IUGRC)-004	**Research Club Activity 4** Manuscript Writing	• Interpret & apply basic principles of manuscript writing of research report • Perceive authorships requirements or rules of drafting manuscript of a research report for publication in indexed journal • Write discussion section of draft • Explain conclusion, recommendation and acknowledge part of research report • clarify types of citations included in discussion section	C3 C2 C2 C2 C2	LGIS	MCQs

Family Medicine

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

SECTION - V

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 assessmentinstrument 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 andfaculty 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 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	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)

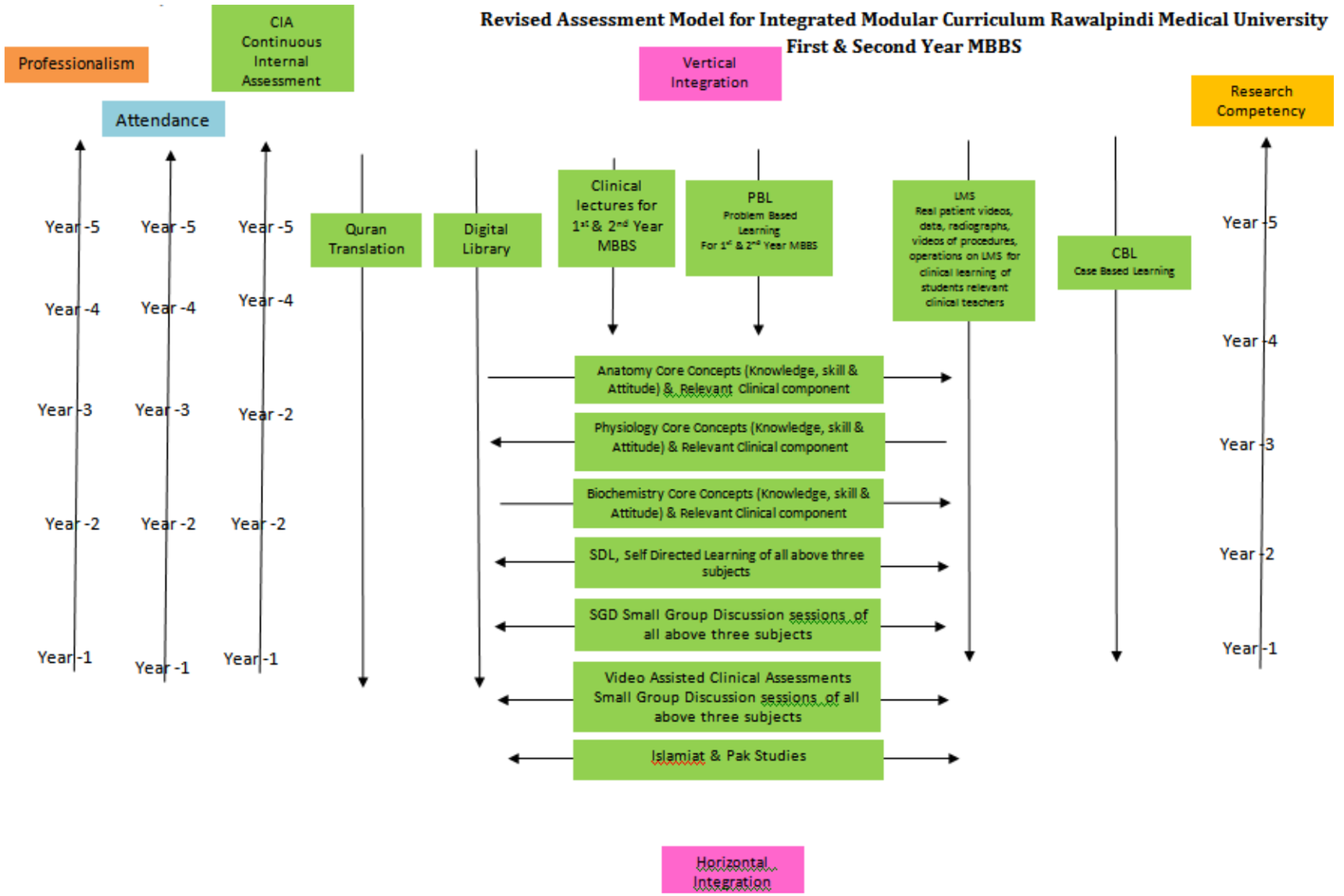
Continuous Internal Assessment means the assessment based on tests and assignments given to the students during an academic period.

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 skillsThere 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)

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

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

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

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

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

Total Time of Anatomy Assessments for Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module - I	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Renal Module-I	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -IV	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Reproduction Module-I	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
CNS Module-I	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -V	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Special Senses Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Endocrinology-I Module	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -VI	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Pre-Annual Examination		……	7 Hours & 45 Minutes
Second Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

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

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

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

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

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

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

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

Total Time of Physiology Assessments for Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module - I	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Renal Module-I	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -IV	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Reproduction Module-I	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
CNS Module-I	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -V	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Special Senses Module	2 Hours & 35 minutes	30 Minutes	**3 Hours & 05 Minutes**
Endocrinology-I Module	2 Hours & 35 minutes	60 Minutes	**3 Hours & 35 Minutes**
Block -VI	**5 Hours & 30 Minutes**		**5 Hours & 30 Minutes**
Pre-Annual Examination		……	7 Hours & 45 Minutes
Second Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

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

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

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

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

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

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

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

Total Time of Biochemistry Assessments for Second Year MBBS:

Module	Summative Assessment Time	Formative Assessment Time	Total Assessments Time
GIT Module - I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Renal Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -IV	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Reproduction Module-I	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
CNS Module-I	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -V	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Special Senses Module	2 Hours & 35 minutes	30 Minutes	3 Hours & 05 Minutes
Endocrinology-I Module	2 Hours & 35 minutes	60 Minutes	3 Hours & 35 Minutes
Block -VI	5 Hours & 30 Minutes		5 Hours & 30 Minutes
Pre-Annual Examination		……	7 Hours & 45 Minutes
Second Professional		……	3 Hours & 45 Minutes
Grand Total	**31 Hours & 30 Minutes**	**4 hours and 30 minutes**	**48 Hours**

Total Teaching Hours vs Total Assessment Hours

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

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

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

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

Block	Sr. #	Module – 3 Reproduction Module-I Components	Type of Assessments	Total Assessments Time		No. of Assessments
				Assessment Time	Formative Assessment Time	
Block –V	1	Mid Module Examination (MCQs Based)	Formative	15 Minutes	45 Minutes	2 Formative
	2	End Module Examination (MCQs Based)	Formative	30 Minutes		
	Total			**45 Minutes**		**2 Assessments**
	Sr. #	**Module – 4 CNS Module-I Components**	**Type of Assessments**	**Total Assessments Time**		**No. of Assessments**
				Assessment Time	Formative Assessment Time	
	1	Mid Module Examination (MCQs Based)	Formative	15 Minutes	45 Minutes	2 Formative
	2	End Module Examination (MCQs Based)	Formative	30 Minutes		
	Total			**45 Minutes**		**2 Assessments**

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

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

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

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

Total Teaching Hours vs Total Assessment Hours

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

3.2.4 Pre- Annual Assessment (PAA)

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

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

- Total Marks: 845

Total marks =800 Marks			
Subjects		% Weightage of subjects	Marks distribution as per weightage
	Anatomy	28%	240 Marks
	Physiology	28%	240 Marks
	Biochemistry	28%	240 Marks
	Integrated Subjects Community Medicine & Public Health/Research Behavioural Sciences Pathology Pharmacology Radiology Family Medicine Surgery Medicine Gynae & Obs Orthopedics Pediatrics Surgery 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 IV Marks	BLOCK V Marks	BLOCK VI Marks	Total Marks
845 Marks	285 Marks	285 Marks	275 Marks	845 Marks

B - Subject wise marks breakup in Blocks

Subjects	Block IV	Block V	Block VI	Total Marks
Anatomy	80 Marks	80 Marks	80 Marks	240 Marks (28%)
Physiology	80 Marks	80 Marks	80 Marks	240 Marks (28%)
Biochemistry	80 Marks	80 Marks	80 Marks	240 Marks (28%)
Integrated Subjects	45 Marks	45 Marks	35 Marks	125 Marks (16%)

C - Subject wise Break up of Marks for Second year MBBS - Block -IV

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

(Core subjects + Integrated Subjects) 285 Marks	Total			240 marks	
	Integrated Subjects			45 Marks	
	Community Medicine /Research	6 Marks			
	Behavioural Sciences	3 Marks			
	Pathology	2 Marks			
	Pharmacology	3 Marks			
	Radiology	2 Marks			
	Gynae & Obs	4 Marks			
	Medicine	2 Marks			
	Family Medicine	2 Marks			
	Paediatrics	4 Marks			
	Surgery	2 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
Total marks		240+ 45 = 285 marks			

D - Subject wise Break up of Marks for Second year MBBS - Block -V

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

285 Marks	Community Medicine /Research	4 Marks		45 Marks	
	Family Medicine	3 Marks			
	Orthopedics	3 Marks			
	Radiology	3 Marks			
	Medicine	3 Marks			
	Gynae & Obs	3 Marks			
	Behavioural Sciences	4 Marks			
	Pathology	2 Marks			
	ECE		5 Marks		
	ALPHA and GEC		5 Marks		
Total marks		240+ 45 = 285 marks			

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

Block	**Subjects**	**Theory (Knowledge)**	**Practical (Skill/attitude)**	**Total marks**	**Total marks (Core subjects + Integrated Subjects)**
Block VI	Anatomy	50	30	80 marks	
	Physiology	50	30	80 marks	
	Biochemistry	50	30	80 marks	
Total marks (Core subjects + Integrated Subjects)	Total			240 marks	240+35 = 275 marks
	Integrated Subjects			35 Marks	
	Community Medicine	2 Marks			
	Behavioural Sciences	2Marks			
	Medicine	3 Marks			
	Family medicine	3 Marks			
	Gynae & Obs	2 Marks			

275 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 - I) & Module 2(Renal Module-I) - Block -IV

Block -IV Theory Component (Knowledge)

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

Block -IV Practical Component (Skill & Attitude)

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

G- Modular distribution of Marks for Module 3 (Reproduction Module-I) & Module 4(CNS Module-I) - Block -V

Block -V Theory Component (Knowledge)

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

Block -V Practical Component (Skill & Attitude)

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

H - Modular distribution of Marks for Module 5 (Special Senses Module) &Module 6 (Endocrinology Module) - Block -VI

Block -VI Theory Component (Knowledge)

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

Block -VI Practical Component (Skill & Attitude)

Subjects	LabOSPE			I OSPE			OSCE			Total stations	Total marks
	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks	Number of Stations of Module -1	Number of Stations of Module -2	Marks		
Anatomy	02	01	15	-	01	5	01	01	10	6	30
Physiology	02	01	15	01	-	5	01	01	10	6	30
Biochemistry	02	01	15	-	01	5	01	01	10	6	30
ECE	-		-	-		-		01	5	1	5

ALPHA-Research	-		-	-		-		01	5	1	5
Total	9		45	3		15	8		40	20	100

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

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

Block -V	Theory component (Knowledge)				Practical component (Skill & Attitude)			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 -VI	Theory component (Knowledge)				Practical component (Skill & Attitude)			Total time required for Block – III pre-annual assessment is 8 hrs and 15 minutes
	MCQs	SAQs	SEQs	EMQs	Lab OSPE	I OSPE	OSCE	
Total number of questions	100	6	3	3	9	3	8	

Time required for each component	100 x 1 min	6 x 10 min	3 x 10 min	3 x 5 min	9 x2.5 min	3 x 2.5 min	8 x 2.5 min	
	100 mins	60 mins	30 mins	25 mins	22.5 mins	7.5 mins	20 mins	
Total time	100+60+30+25 = 225 mins (4hrs and 15 mins)				22.5+7.5+20 = 50 mins/ round of 20 students 4 hrs			
					If the OSPE is conducted simultaneously at 4 venues: In 50 minutes, 20 students can complete the OSPE at each venue, totaling 80 students across all venues. With 5 rounds at 4 venues, the entire class can complete the OSPE within 4 hours.			

3.2.5 Annual Professional Assessment (APA)

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

Regulations

- Final Annual Assessment shall be open to any student who:
  - Has been enrolled/registered and completed one academic year preceding the concerned Final Annual Assessment in Rawalpindi Medical University.
  - Has his/her name submitted to the Controller of Examinations for assessment purposes by the Principal of the College and meets all prerequisites for the assessment.
  - Has his/her internal assessment marks for all Blocks submitted to the Controller of Examinations by the Principal of the College along with the admission form.
  - Produces good character certificate the following certificates duly verified by the Principal:
- Candidates not meeting the above requirements shall not be allowed to appear in the Final Annual Assessment but may sit for the supplementary examination if they fulfill all remaining requirements and stay enrolled as regular students up to the next examination.
- To pass the Final Annual Assessment, students must achieve at least 50% in both the Written and Oral/Practical/Clinical assessments, as well as a 50% aggregate score

  simultaneously.

- Candidates scoring 85% or above in any paper will be awarded a "distinction" in that Block, provided they achieve at least 80% in the Written component. Candidates must pass all papers in the Final Annual Assessment concurrently to receive any distinctions.
- A candidate who fails one or more papers in the Final Annual Assessment may temporarily join the next professional class until the supplementary examination but will not be promoted permanently without passing all papers.
- Students taking the supplementary examination for the Second time due to an absence in the annual examination, if failing any paper, will be retained in their current class.
- Any student failing to clear the Second or Second Final Annual Assessment MBBS within four attempts will be ineligible to continue or reapply for MBBS or BDS admission.
- Examination applications must be submitted to the Controller of Examination via the College Principal, with the required fee and documentation.
- College must submit question papers, internal assessment marks, and attendance records for each block to the Examinations Department of Rawalpindi Medical University.
- Revised internal assessments are only permissible for detained students. Continuous assessment records must be maintained by college departments.
- Examination fees are to be paid through the Principal, using a bank draft, pay order, or crossed cheque made out to the Treasurer, Rawalpindi Medical University.
- One annual and one supplementary examination for Second and Second Final Annual Assessment MBBS are allowed per academic session. Under exceptional circumstances, such as national emergencies, a special examination may be arranged with the Syndicate and Board of Governors' approval.

Reference: UHS INTEGRATED CURRICULUM VERSION 2

Statutes:

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

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

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

Behavioral Sciences, Pathology, Pharmacology, associated Clinical Subjects

c. **Spirally Integrated subjects-** General Education Cluster (GEC), ALPHA (Artificial Intelligence, Leadership, Professionalism, Humanities and Arts), Early Clinical Exposure (ECE) and Research.

- **Assessments:** There will be three papers in Second Annual Professional Examination and four papers in the Second Annual professional Examination.

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

a. Second Professional Examination Total Marks = G00*

i. Block I Assessment Total Marks = 300

ii. Block II Assessment Total Marks = 300

iii. Block III Assessment Total Marks = 300

b. Second Professional Examination- 1000 Marks*

i. Block I Assessment Total Marks = 300

ii. Block II Assessment Total Marks = 300

iii. Block III Assessment Total Marks = 300

iv. GEC Assessment (Islamic Studies C Pakistan Studies) Total Marks = 100

*Marks Adopted from University of Health Sciences (UHS)

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

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

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

- **Block Assessment Components**: the components of Block Assessment shall be as follows:
  - **a. One theory Paper (K)** having two sections

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

    ii. **Section:2** will have Structured Essay Questions of 5 marks each and time allocated for 1 SEQ will be 10 minutes.

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

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

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

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

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

ii. **Objective Structured Viva Examinations (OSVE):** This section will consist of table viva for each core subject. Students will be evaluated by internal and external examiner using a structured marking rubric, with each viva carries15 marks.

Second year MBBS	**Number of**	**Number of iOSPE Stations**	**Number of OSCE Stations**	**Number of tables VIVA**

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

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

Table of Abbreviation

CIA	Continuous Internal Assessment
I-OSPE	Integrated OSPE
LabOSPE	Laboratory Objective Structured Practical Examination
OSCE	Objective Structured Clinical Examinations
OSVE	Objective Structured Viva Examinations
ECE	Early Clinical Exposure

ALPHA	(Artificial Intelligence, Leadership, Professionalism, Humanities C Arts
GEC	General Education Cluster
K	Knowledge

Annual Assessment Plan of Second Year MBBS 2025 (Batch 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 IV 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
Block V 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
BlockVI 90 Marks	Anatomy	30 marks	15 marks	15 marks	90 Marks
	Physiology	30 marks	15 marks	15 marks	
	Biochemistry	30 marks	15 marks	15 marks	
				Total marks	**270 Marks**

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

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

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

Note:

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

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

Annual Second Professional Examinations 2025

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

A: Second Professional Examination (70%)

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

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

B: Blockwise Distribution of Marks

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

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

C: Subject Wise Marks Breakup in Blocks

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

D: Subject Wise Distribution of Marks for Second Year MBBS

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

210 Marks	• Community Medicine /Research	4 Marks		**29 Marks**	
	• Family Medicine	1 Marks			
	• Orthopedics	2 Marks			
	• Radiology	2 Marks			
	• Medicine	3 Marks			
	• Gynae C Obs	1 Marks			
	• Behavioural Sciences	4 Marks			
	• Pathology	2 Marks			
	• ECE		5 Marks		
	• ALPHA and GEC		5 Marks		
Total marks		**181+29 = 210 marks**			

Block	**Subjects**	**Theory**	**Practical**	**Total marks**	**Total marks Core Subject + Integrated Subjects**
Block VI	Anatomy	25 marks	30 marks	55 marks	**183+27 = 210 marks**
	Physiology	48 marks	35 marks	83 marks	
	Biochemistry	15 marks	30 marks	45 marks	
	Total	88	95	**183 marks**	
	Integrated Subjects			**27 Marks**	
	• Community Medicine	3 Marks			
	• Behavioural Sciences	2 Marks			
	• Medicine	2 Marks			
	• Family medicine	1 Marks			
	• Gynae C Obs	1 Marks			
	• Radiology	1 Marks			
	• Pediatrics	1 Marks			
210 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 IV (GIT / Renal) 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 V (Reproduction, CNS) 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 VI (Special Senses, Endocrinology)	Section I- MCQ	75	75 30	LabOSPE iOSPE	4 3	20 15	210

Total Annual marks=210	Section II- SEQ	6		OSCE OSVE	5 3	25 45	
CIA = G0 Marks	Continuous Internal Assessment (30%)		45	Continuous Internal Assessment (30%)		45	90
Total Annual marks + CIA =210+G0= 300	**Total Marks**		**150**	**Total Marks**		**150**	300
						Grand Total Marks	**G00**

F: 2nd Professional Examination 2025 (Batch 51)

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

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

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

G: 2nd Professional Examination 2025 (Batch 51)

Block V Assessment

Reproduction, CNS Module-I

Theme	**Subject**	**Theory**			**Practical**			**OSVE**		**Total Marks per subject**	
		No of MCQs (1 marks each)	**No of SEQs (5 marks each)**	**Marks**	**No of Stations of LabOSPE (5 marks each)**	**No of Stations of iOSPE (5 marks each)**	**No of Stations of OSCE (5 marks each)**	**OSVE (15 Marks)**	**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: 2nd Professional Examination 2025 (Batch 51)
Block VI Assessment
Special Senses, Endocrinology 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	
	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	13
	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 - V

Time Table

Integrated Clinically Oriented Modular Curriculum for Second Year MBBS

Renal Module-I Time Table

Second Year MBBS

Session - 2025

Batch- 52

Renal Module-I Team

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

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Ifra Saeed
3.	Convener Curriculum	Prof. Dr. Naeem Akhter
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
5.	Additional Director (Assessment) DME	Dr. Arsalan Manzoor Mughal
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar
7.	Chairperson Biochemistry	Dr. Aneela Jamil
8.	Focal Person Anatomy Second Year MBBS	Dr. Maria Tasleem
9.	Focal Person Physiology	Dr. Sidra Hamid
10.	Focal Person Biochemistry	Dr. Aneela Jamil
11.	Focal Person Pharmacology	Dr. Zunera Hakim
12.	Focal Person Pathology	Dr. Asiya Niazi
13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom
15.	Focal Person Quran Translation Lectures	Dr. Uzma Zafar
16.	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. Tariq Furqan (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Sana Latif (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Jawad Hassan (Senior Demonstrator of Physiology)

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

Discipline Wise Details of Modular Content

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

	• Family Medicine	• Renal Failure
	Vertical Integration	
	• Radiology	• Prenatal Ultrasonography • Contrast Nephropathy
	• Behavioral Sciences	• Perception • Thinking and Motivation
	• Medicine	• Acute renal failure • CRF & Rehabilitation of patient with CRF • Potassium imbalance and its management
	• Surgery	• Investigations of urinary tract • Hydronephrosis / Pyonephrosis
	• Obstetrics & Gynecology	• Physiological Changes in the Renal System in Pregnancy & UTI
	• Pharmacology	• Introduction to diuretics
	• Peads	• UTI
	• Joint Session	• Nephrotic Syndrome (Peads, Medicine, Anatomy, Physiology & Biochemistry)
	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	• Psoas Abcess • Ureteric Stones • Hydroureter • Atonic Bladder • Adrenogenital Syndrome • Vertebral Venous Plexus • Listhesis

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

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

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	2 * 05 = 10 hours
2.	Small Group Discussions (SGD)	1.5*7=10.5 hours
4.	Practical / Skill Lab	1.5 * 15 = 22.5 hours

Contact Hours (Students)

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

Categorization of Modular Content of Physiology

Category A*	**Category B****	**Category C*****				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
Regulation of GFR & RBF – I, (Determinants of GFR and RBF **(Prof Dr Samia Sarwar/Dr. Faizania)**	Excretion of dilute urine **(Dr. Sidra)**		Accute Glomerular Nephritis	Estimation of specific gravity of urine Examination of 9th, 10th, 11th & 12th cranial nerves Examination of 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-I (First Week)
(21-04-2025 To 26-04-2025)

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
21-04-2025 Monday	**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	
		Dr. Sheena (Even)	Dr. Faizania (Odd)		Development of kidney & Ureter	kidney I					
					Prof. Dr. Ifra (Even)	Prof. Dr Ayesha / Ass. Prof. Dr. Maria (Odd)	Dr. Aneela / Dr. Uzma (Even)	Dr. Kashif Rauf (Odd)			
22-04-2025 Tuesday	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**ANATOMY (LGIS)**		**BIOCHEMISTRY (LGIS)**			**DISSECTION/SGD**	SDL Physiology Volume & osmolarity of ECF& ICF, Abnormalities of fluid volume & regulation
		Physiology of Renal system, Glomerular filtration rate	Body fluid compartments Volume & Osmolarity of ECF & ICF		Histology	Embryology	Glycine Phenylalanine & Tryosine Metabolism	Amino Acids Pool, Protein Turnover, Nitrogen balance & Chemical Reaction of Amino Acids		Vessels of Posterior Abdominal Wall Lumbar Vertebra	
		Dr. Faizania (Even)	Dr. Sheena (Odd)		Kidney-I	Development of kidney & Ureter					
					Prof. Dr Ayesha / Ass. Prof. Dr. Maria (Even)	Prof. Dr. Ifra (Odd)	Dr. Kashif Rauf (Even)	Dr. Aneela / Dr. Uzma (Odd)			
23-04-2025 Wednesday	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**ANATOMY (LGIS)**		**BIOCHEMISTRY (LGIS)**			**RESEARCH CLUB ACTIVITY- 1**	SDL Biochemistry Clinical Disorders Related to Phenylalanine & Tyrosine
		Abnormalities of fluid volume & regulation Edema	Regulation GFR & RBF-I (Determinats of GFR & RBF)		Histology	Embryology	Urea cycle & its Disorders	Glutamine, Histidine, Threonine & Polyamines Metabolism		Synopsis Writing	
		Dr. Sheena (Even)	Prof. Dr. Samia Sarwar / Dr. Aneela (Odd)		Development of urinary bladder and urethra	kidney II					
					Prof. Dr. Ifra (Even)	Ass. Prof. Dr. Maria (Odd)	Dr. Aneela / Dr. Uzma (Even)	Dr. Kashif Rauf (Odd)		Dr. Khuala Noreen	
24-04-2025 Thursday	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**RADIOLOGY**		**BIOCHEMISTRY (LGIS)**			**DISSECTION/CBL**	SDL Biochemistry Clinical Disorders of Ammonia Metabolism
		Regulation GFR & RBF-I (Determinats of GFR & RBF)	Abnormalities of fluid volume & regulation Edema		Prenatal Ultrasonography		Glutamine, Histidine, Threonine & Polyamines	Urea cycle & its Disorders		Kidney	
		Prof. Dr. Samia Sarwar / Dr. Aneela (Even)	Dr. Sheena (Odd)		Dr. Hina Hafeez (Odd)	Dr. Saba Binte Kashmir (Even)	Dr. Kashif (Even)	Dr. Aneela /Dr. Uzma (Odd)			
25-04-2025 Friday	**RADIOLOGY**	**PHYSIOLOGY (LGIS)**			**ISLAMIYAT**		**PAK STUDIES**			SDL Anatomy Psoas Abcess	
	Contrast Nephropathy	Excretion of dilute urine	Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation of GFR and RBF		4) The literal and civic meaning of Prophethood and the need for Prophethood		5) The Objectives and Goals of the Creation of Pakistan				
	Dr. Hina Hafeez (Even) / Dr. Saba Binte Kashmir (Odd)	Dr. Sidra Hamid (Even)	Prof. Dr. Samia Sarwar/Dr. Uzma (Odd)		Mufti Naeem Sherazi		Qari Amaan Ullah				
26-04-2025 Saturday	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		Break	**PBL 1 (SESSION-I)**		**BEHAVIORAL SCIENCES**		Break	**DISSECTION/CBL**	SDL Anatomy Radiological Identification
		Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation of GFR and RBF	Excretion of dilute urine		PBL Team		Perception			Ureter	
		Prof. Dr. Samia Sarwar/Dr. Uzma (Even)	Dr. Sidra Hamid (Odd)								

Table No. 1 (Time: 08:00am – 09:20am)

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

- Histology of Kidney (Anatomy/ Histology-practical) venue Histology Laboratory-Dr. Sadia Baqir
- Serum estimation of Urea & Creatinine (Biochemistry practical) venue- Biochemistry Laboratory
- Estimation of specific gravity of urine (Physiology –practical) Physiology Laboratory

Schedule for Practical

Day	Histology Practical		Biochemistry Practical			Physiology Practical			Physiology SGD		Biochemistry SGD	
	Batch	**Teacher Name**	**Batch**	**Teacher Name**		**Batch**	**Teacher Name**		**Batch**	**Teacher Name**	**Batch**	**Teacher Name**
Monday	**C**	Supervised by HOD	**B**	Dr. Rahat	Supervised by HOD	**E**	Dr. Fareed	Supervised by HOD	**A**	Dr. Aneela	**D**	Dr. Uzma
Tuesday	**D**		**C**	Dr. Almas		**A**	Dr. Aneela		**B**	Dr. Shazia	**E**	Dr. Romessa
Wednesday	**E**		**D**	Dr. Uzma		**B**	Dr. Shazia		**C**	Dr. Fahd Anwar	**A**	Dr. Sana Latif
Thursday	**B**		**A**	Dr. Sana Latif		**D**	Dr. Jawad		**E**	Dr. Fareed	**C**	Dr. Almas
Saturday	**A**		**E**	Dr. Romessa		**C**	Dr. Fahd Anwar		**D**	Dr. Jawad	**B**	Dr. Rahat

Topics for SGDs / CBL with Venue

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

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions

Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	**A1**	(01-35)	Lecture Hall no.05 Physiology	Dr. Romessa (Demonstrator Biochemistry)	6.	**C2**	(176-210)	New Lecture Hall Complex Lecture Theater # 01	Dr. Nazia (Demonstrator Physiology)
2.	**A2**	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator Physiology)	7.	**D1**	(210-245)	New Lecture Hall Complex Lecture Theater # 04	Dr. Mahnoor (PGT Physiology)
3.	**B1**	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Almas Aijaz (APWMO Biochemistry)	8.	**D2**	(246-280)	New Lecture Hall Complex Lecture Theater # 04	Dr. Minahil Haq (Senior Demonstrator Anatomy)
4.	**B2**	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Sadia Baqir (APWMO Anatomy)	9.	**E1**	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Rahat (APWMO Biochemistry)
5.	**C1**	(141-175)	New Lecture Hall Complex Lecture Theater # 01	Dr. Ali Zain (PGT Physiology)	10	**E2**	(315 onwards)	Lecture Hall no.04 (Basement)	Dr. Afsheen (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Subgroup	Anatomy Teacher	Venue
A	01- 60	A1: Roll No (1 – 15) A2: Roll No (16 – 30) A3: Roll No (31 – 45) A4: Roll No (46 – 60)	Dr. Sara bano (Assistant Professor)	New Lecture Hall Complex 01
B	61-120	B1: Roll No (61 – 75) B2: Roll No (76 – 90) B3: Roll No (91 – 105) B4: Roll No (06 – 120)	Dr. Sadia Aman (Assistant Professor)	New Lecture Hall Complex 02
C	121-180	C1: Roll No (121 – 135) C2: Roll No (136 – 150) C3: Roll No (151 – 165) C4: Roll No (166 – 180)	Dr. Minahil Haq (Senior. Demonstrator)	New Lecture Hall Complex 04
D	181- 240	D1: Roll No (181 – 195) D2: Roll No (196 - 210) D3: Roll No (211 – 225) D4: Roll No (226 – 240)	Dr. Tariq Furqan (Senior. Demonstrator)	Anatomy Lecture Hall 04
E	241- 300	E1: Roll No (241 – 255) E2: Roll No (256 – 270) E3: Roll No (271 – 285) E4: Roll No (286 – 300)	Dr. Sana Sameen (PGT Anatomy)	Anatomy Lecture Hall 03
F	301- onwards	F1: Roll No (301 – 315) F2: Roll No 316 – 330) F3: Roll No 331 – 345) F4: Roll No (346 – onwards)	Dr. Maryam Sohail (PGT Anatomy)	New Lecture Hall Complex 3
Supervised by Prof. Dr. Ayesha Yousaf				

Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs

Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Aneela Yasmeen (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Shazia Nosheen (APWMO)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Fahd Anwar (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Jawad (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Fareed (Demonstrator)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Student Sports Week	**28th April – 03rd May 2025**

Time Table for Renal Module-I (Second Week)
(05-05-2025 To 10-05-2025)

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
05-05-2025 Monday	**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	**RESEARCH CLUB ACTIVITY- 2**	SDL Physiology Physiology of Renal system
		Excretion of Concemtrated urine (Counter Current Multiplier)	Tubular Reabsorbtion & Scretion along Various parts of nephron		Histology kidney II	Embryology Development of urinary bladder and urethra	Ammonia Toxicity	Arginine & Branched Chain Amino Acid Metabolism		Questionnaire Development	
		Dr. Sidra Hamid (Even)	Dr. Faizania (Odd)		Ass. Prof. Dr. Maria (Even)	Prof. Dr. Ifra (Odd)	Dr. Aneela / Dr. Uzma (Even)	Dr. Kashif Rauf (Odd)		Dr. Khuala Noreen	
06-05-2025 Tuesday	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**BEHAVIORAL SCIENCES**		**BIOCHEMISTRY (LGIS)**			**RESEARCH CLUB ACTIVITY- 3**	SDl Physiology Excretion of Concemtrated & Diluted urine
		Tubular Reabsorbtion & Scretion along Various parts of nephron	Excretion of Concemtrated urine (Counter Current Multiplier)		Thinking and Motivation		Arginine & Branched Chain Amino Acid Metabolism	Ammonia Toxicity		Data Analysis	
		Dr. Faizania (Even)	Dr. Sidra Hamid (Odd)				Dr. Kashif (Even)	Dr. Aneela / Dr. Uzma (Odd)		Dr. Khuala Noreen	
07-05-2025 Wednesday	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**MEDICINE**		**BIOCHEMISTRY (LGIS)**			**PBL 1 (SESSION-II)**	SDL Biochemistry Disorders Related to Branched Chain Amino Acid Metabolism
		Excretion of concentrated urine (Counter current exchanger)	Regulation of tubular reabsorbtion		Acute renal failure		Sodium & Chloride Metabolism	Acid Base Imbalance I		PBL Team	
		Dr. Sidra Hamid (Even)	/Dr. Faizania (Odd)		Dr. Saima Meer (Even)	Dr. Mudassar (Odd)	Dr Nayab (Even)	Dr. Aneela (Odd)			
08-05-2025 Thursday	**Practical &CBL/SGD** Topics & venue mentioned at the end. Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**SURGERY**		**BIOCHEMISTRY (LGIS)**			**DISSECTION/SGD**	SDL Biochemistry Clinical Aspects of Acid Based Disorders
		Regulation of tubular reabsorbtion	Excretion of concentrated urine (Counter current exchanger)		Investigations of urinary tract		Acid Base Imbalance I	Sodium & Chloride Metabolism		Urinary bladder	
		Prof. Dr. Samia Sarwar/Dr. Faizania) (Even)	Dr. Sidra Hamid (Odd)		Dr. Faraz Basharat (Even)	Dr. Muhammad Ameen (Odd)	Dr. Aneela (Even)	Dr Nayab (Odd)			
09-05-2025 Friday	**8:00 AM – 9:00 AM**	**9:00 AM – 10:00AM**			**10:00AM – 11:00 AM**		**11:00AM – 12:00PM**			SDL Anatomy Uritric Stone, Hydro Uretor,	
	MEDICINE	**PHYSIOLOGY (LGIS)**			**PAK STUDIES**		**ISLAMIYAT**				
	CRF & Rehabilitation of patient with CRF	Control of ECF osmolarity	Clearence Method to Quantify kidney function		6) Nazria e Pakistan or Quid e Azam		5) The meaning of the Akharat, its necessity, and wisdom				
	Dr. Saima Meer (Even) / Dr. Mudassar (Odd)	Dr. Sheena (Even)	Dr. Faizania (Odd)		Qari Amaan Ullah		Mufti Naeem Sherazi				
10-05-2025 Saturday	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		Break	**ANATOMY**		**SURGERY**		Break	**DISSECTION/SGD**	SDL Anatomy Atonic Bladder, Supra Pubic Puncture Land Mark
		Clearence Method to Quantify kidney function	Control of ECF osmolarity		Histology Ureter, Bladder & Urethra	Histology Ureter, Bladder & Urethra	Hydronephrosis / Pyonephrosis			Suprarenal Gland & Urethra	
		Dr. Faizania (Even)	Dr. Sheena (Odd)		Prof. Dr. Ifra (Even)	Prof. Dr. Ayesha /Asst. Prof. Dr. Maria (Odd)	Dr. Muhammad Ali (Even)	Dr. Ahmed Sajjad (Odd)			

Table No. 1 (Time: 08:00am – 09:20am)

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

- 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

Schedule for Practical

Day	Histology Practical		Biochemistry Practical			Physiology Practical			Physiology SGD		Biochemistry SGD	
	Batch	**Teacher Name**	**Batch**	**Teacher Name**		**Batch**	**Teacher Name**		**Batch**	**Teacher Name**	**Batch**	**Teacher Name**
Monday	**C**	Supervised by HOD	**B**	Dr. Rahat	Supervised by HOD	**E**	Dr. Fareed	Supervised by HOD	**A**	Dr. Aneela	**D**	Dr. Uzma
Tuesday	**D**		**C**	Dr. Almas		**A**	Dr. Aneela		**B**	Dr. Shazia	**E**	Dr. Romessa
Wednesday	**E**		**D**	Dr. Uzma		**B**	Dr. Shazia		**C**	Dr. Fahd Anwar	**A**	Dr. Sana Latif
Thursday	**B**		**A**	Dr. Sana Latif		**D**	Dr. Jawad		**E**	Dr. Fareed	**C**	Dr. Almas
Saturday	**A**		**E**	Dr. Romessa		**C**	Dr. Fahd Anwar		**D**	Dr. Jawad	**B**	Dr. Rahat

Topics for SGDs / CBL with Venue

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

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions

Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	**A1**	(01-35)	Lecture Hall no.05 Physiology	Dr. Romessa (Demonstrator Biochemistry)	6.	**C2**	(176-210)	New Lecture Hall Complex Lecture Theater # 01	Dr. Nazia (Demonstrator Physiology)
2.	**A2**	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator Physiology)	7.	**D1**	(210-245)	New Lecture Hall Complex Lecture Theater # 04	Dr. Mahnoor (PGT Physiology)
3.	**B1**	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Almas Aijaz (APWMO Biochemistry)	8.	**D2**	(246-280)	New Lecture Hall Complex Lecture Theater # 04	Dr. Minahil Haq (Senior Demonstrator Anatomy)
4.	**B2**	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Sadia Baqir (APWMO Anatomy)	9.	**E1**	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Rahat (APWMO Biochemistry)
5.	**C1**	(141-175)	New Lecture Hall Complex Lecture Theater # 01	Dr. Ali Zain (PGT Physiology)	10	**E2**	(315 onwards)	Lecture Hall no.04 (Basement)	Dr. Afsheen (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Subgroup	Anatomy Teacher	Venue
A	01- 60	A1: Roll No (1 – 15) A2: Roll No (16 – 30) A3: Roll No (31 – 45) A4: Roll No (46 – 60)	Dr. Sara bano (Assistant Professor)	New Lecture Hall Complex 01
B	61-120	B1: Roll No (61 – 75) B2: Roll No (76 – 90) B3: Roll No (91 – 105) B4: Roll No (06 – 120)	Dr. Sadia Aman (Assistant Professor)	New Lecture Hall Complex 02
C	121-180	C1: Roll No (121 – 135) C2: Roll No (136 – 150) C3: Roll No (151 – 165) C4: Roll No (166 – 180)	Dr. Minahil Haq (Senior. Demonstrator)	New Lecture Hall Complex 04
D	181- 240	D1: Roll No (181 – 195) D2: Roll No (196 - 210) D3: Roll No (211 – 225) D4: Roll No (226 – 240)	Dr. Tariq Furqan (Senior. Demonstrator)	Anatomy Lecture Hall 04
E	241- 300	E1: Roll No (241 – 255) E2: Roll No (256 – 270) E3: Roll No (271 – 285) E4: Roll No (286 – 300)	Dr. Sana Sameen (PGT Anatomy)	Anatomy Lecture Hall 03
F	301- onwards	F1: Roll No (301 – 315) F2: Roll No 316 – 330) F3: Roll No 331 – 345) F4: Roll No (346 – onwards)	Dr. Maryam Sohail (PGT Anatomy)	New Lecture Hall Complex 3
Supervised by Prof. Dr. Ayesha Yousaf				

Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs

Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Aneela Yasmeen (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Shazia Nosheen (APWMO)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Fahd Anwar (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Jawad (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Fareed (Demonstrator)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Time Table for Renal Module-I (Third Week)
(12-05-2025 To 17-05-2025)

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
12-05-2025 Monday	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**BIOCHEMISTRY (LGIS)**		**GYNAE & OBS**			**JOINT SESSION**	SDL Physiology Excretion of dilute and Excretion of concentrated urine
		Regulation of ECF K^+ &Regulation of ECF, Ca^{++}, PO_4^{-3}& Mg^{+2}concentration	Micturition Reflex & Abnormalities of Micturition		Acid Base Imbalance II	Potassium Metabolism	Physiological Changes in the Renal System in Pregnancy & UTI			Nephrotic Syndrome	
		Dr. Sheena (Even)	Dr. Faizania (Odd)		Dr. Aneela (Even)	Dr. Nayab (Odd)	Dr. Humaira Noureen (Even)	Prof. Tallat Farkanda (Odd)		Peads, Medicine, Anatomy, Physiology & Biochemistry	
13-05-2025 Tuesday	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**		B r e a k	**BIOCHEMISTRY**		**PHARMACOLOGY**		B r e a k	**RESEARCH CLUB ACTIVITY- 4**	SDL Physiology Clearance methods to quantify kidney function.
		Micturition Reflex & Abnormalities of Micturition	Regulation of ECF K^+ &Regulation of ECF, Ca^{++}, PO_4^{-3}& Mg^{+2}concentration		Potassium Metabolism	Acid Base Imbalance II	Introduction to diuretics			Manuscript Writing	
		Dr. Faizania (Even)	Dr. Sheena (Odd)		Dr. Nayab (Even)	Dr Aneela (Odd)	Dr. Uzma (Even)	Dr. Haseeba (Odd)		Dr. Khuala Noreen	
14-05-2025 Wednesday	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**PBL 2 (SESSION-I)**		**FAMILY MEDICINE**			**DISSECTION/SGD**	SDL Biochemistry Hypo & Hypernatremia
		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 Referred to Table No. 2		Renal Failure			Surface Marking / Radiogrph/ Cross Sectional Anatomy	
		Dr. Sheena (Even)	Dr. Sidra Hamid (Odd)				Dr. Sidra Hamid (Even)	Dr Sadia (Odd)			
15-05-2025 Thursday	**Practical &CBL/SGD** Topics & venue mentioned at the end Batches, Teachers & Venue Mentioned in Table No. 1	**PHYSIOLOGY (LGIS)**			**PEADS**		**MEDICINE**			**PBL 2 (SESSION-II)**	SDL Biochemistry Clinical Conditions related to Potassium Metabolism
		Physiology of acid base balanced respiratory & renal regulation of acid base balance	Renal Machanism for control of ECF, Nervous & hormonal factors for body Fluid		UTI		Potassium imbalance and its management			PBL Team Referred to Table No. 2	
		Dr. Sidra Hamid (Even)	Dr. Sheena (Odd)				Dr. Saima Meer (Even)	Dr. Mudassar (Odd)			
16-05-2025 Friday	**8:00 AM – 9:00 AM**	**9:00 AM – 10:00AM**			**10:00AM – 11:00 AM**		**11:00AM – 12:00PM**				
	PAK STUDIES	**PHYSIOLOGY (LGIS)**			**PHYSIOLOGY (LGIS)**		**ISLAMIYAT**			SDL Anatomy Chromafin System Adreno Genital Syndrome	
	7) The foundation of the Muslim community	Renal failure & hemodialysis	Acid base disorders		Acid base disorders	Renal failure & hemodialysis Diuretics	6) Aqida Akhirat, its meaning, necessity, and wisdom				
	Qari Amaan Ullah	Dr. Sheena (Even)	Dr. Sidra Hamid (Odd)		Dr. Sidra Hamid (Even)	Dr. Sheena (Odd)	Mufti Namee Sherazi				
17-05-2025 Saturday	Early Clinicaly Exposure (ECE)										SDL Anatomy Vertebral Venous Plexus, Listhesis (Role of Ligaments and Paraspinal Muscles)

Table No. 1 (Time: 08:00am – 09:20am)

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

- Histology of Kidney (Anatomy/ Histology-practical) venue Histology Laboratory-Dr. Sadia Baqir
- Serum estimation of Urea & Creatinine (Biochemistry practical) venue- Biochemistry Laboratory
- Estimation of specific gravity of urine (Physiology –practical) Physiology Laboratory

Schedule for Practical

Day	Histology Practical		Biochemistry Practical			Physiology Practical			Physiology SGD		Biochemistry SGD	
	Batch	Teacher Name	Batch	Teacher Name		Batch	Teacher Name		Batch	Teacher Name	Batch	Teacher Name
Monday	**C**	Supervised by HOD	**B**	Dr. Rahat	Supervised by HOD	**E**	Dr. Fareed	Supervised by HOD	**A**	Dr. Aneela	**D**	Dr. Uzma
Tuesday	**D**		**C**	Dr. Almas		**A**	Dr. Aneela		**B**	Dr. Shazia	**E**	Dr. Romessa
Wednesday	**E**		**D**	Dr. Uzma		**B**	Dr. Shazia		**C**	Dr. Fahd Anwar	**A**	Dr. Sana Latif
Thursday	**B**		**A**	Dr. Sana Latif		**D**	Dr. Jawad		**E**	Dr. Fareed	**C**	Dr. Almas
Saturday	**A**		**E**	Dr. Romessa		**C**	Dr. Fahd Anwar		**D**	Dr. Jawad	**B**	Dr. Rahat

Topics for SGDs / CBL with Venue

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

Table No. 2 Batch Distribution with Venues and Teachers Name for Problem Based Learning (PBL) Sessions

Sr No.	Batches	Roll No	Venue	Teachers	Sr No.	Batches	Roll No	Venue	Teachers
1.	**A1**	(01-35)	Lecture Hall no.05 Physiology	Dr. Romessa (Demonstrator Biochemistry)	6.	**C2**	(176-210)	New Lecture Hall Complex Lecture Theater # 01	Dr. Nazia (Demonstrator Physiology)
2.	**A2**	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Farah Ali Shah (Demonstrator Physiology)	7.	**D1**	(210-245)	New Lecture Hall Complex Lecture Theater # 04	Dr. Mahnoor (PGT Physiology)
3.	**B1**	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Almas Aijaz (APWMO Biochemistry)	8.	**D2**	(246-280)	New Lecture Hall Complex Lecture Theater # 04	Dr. Minahil Haq (Senior Demonstrator Anatomy)
4.	**B2**	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Sadia Baqir (APWMO Anatomy)	9.	**E1**	(281-315)	Anatomy Museum (First Floor Anatomy)	Dr. Rahat (APWMO Biochemistry)
5.	**C1**	(141-175)	New Lecture Hall Complex Lecture Theater # 01	Dr. Ali Zain (PGT Physiology)	10	**E2**	(315 onwards)	Lecture Hall no.04 (Basement)	Dr. Afsheen (PGT Physiology)

Table No. 3 Venues for Large Group Interactive Session (LGIS)

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Table No. 4 Batch Distribution and Venues for Anatomy Small Group Discussion SGDs / Dissections

Batches	Roll No	Subgroup	Anatomy Teacher	Venue
A	01- 60	A1: Roll No (1 – 15) A2: Roll No (16 – 30) A3: Roll No (31 – 45) A4: Roll No (46 – 60)	Dr. Sara bano (Assistant Professor)	New Lecture Hall Complex 01
B	61-120	B1: Roll No (61 – 75) B2: Roll No (76 – 90) B3: Roll No (91 – 105) B4: Roll No (06 – 120)	Dr. Sadia Aman (Assistant Professor)	New Lecture Hall Complex 02
C	121-180	C1: Roll No (121 – 135) C2: Roll No (136 – 150) C3: Roll No (151 – 165) C4: Roll No (166 – 180)	Dr. Minahil Haq (Senior. Demonstrator)	New Lecture Hall Complex 04
D	181- 240	D1: Roll No (181 – 195) D2: Roll No (196 - 210) D3: Roll No (211 – 225) D4: Roll No (226 – 240)	Dr. Tariq Furqan (Senior. Demonstrator)	Anatomy Lecture Hall 04
E	241- 300	E1: Roll No (241 – 255) E2: Roll No (256 – 270) E3: Roll No (271 – 285) E4: Roll No (286 – 300)	Dr. Sana Sameen (PGT Anatomy)	Anatomy Lecture Hall 03
F	301- onwards	F1: Roll No (301 – 315) F2: Roll No 316 – 330) F3: Roll No 331 – 345) F4: Roll No (346 – onwards)	Dr. Maryam Sohail (PGT Anatomy)	New Lecture Hall Complex 3
Supervised by Prof. Dr. Ayesha Yousaf				

Table No. 5 Batch Distribution and Venues for Physiology & Biochemistry Small Group Discussion SGDs

Batches	Roll No	Subgroup	Physiology Teacher	Physiology Venue	Biochemistry Teacher	Biochemistry Venue
A	01-70	A1: Roll No (1 – 14) A2: Roll No (15 – 28) A3: Roll No (29 – 42) A4: Roll No (43 – 56) A5: Roll No (57 – 70)	Dr. Aneela Yasmeen (APWMO)	Physiology Lecture Hall 5	Dr. Uzma Zafar (APWMO)	Basement Lecture Hall No. 2
B	71-140	B1: Roll No (71 – 84) B2: Roll No (85 – 98) B3: Roll No (99 – 112) B4: Roll No (113 – 126) B5: Roll No (127 – 140)	Dr. Shazia Nosheen (APWMO)	Physiology Lecture Hall 5	Dr. Rahat (APWMO)	Basement Lecture Hall No. 2
C	141-210	C1: Roll No (141 – 154) C2: Roll No (155 – 168) C3: Roll No (169 – 182) C4: Roll No (183 – 196) C5: Roll No (197 – 210)	Dr. Fahd Anwar (Demonstrator)	Physiology Lecture Hall 5	Dr. Almas (APWMO)	Basement Lecture Hall No. 2
D	211-280	D1: Roll No (211 – 224) D2: Roll No (225 – 238) D3: Roll No (239 – 252) D4: Roll No (253 – 266) D5: Roll No (267 – 280)	Dr. Jawad (Demonstrator)	Physiology Lecture Hall 5	Dr. Sana Latif (Senior Demonstrator)	Basement Lecture Hall No. 2
E	281- onwards	E1: Roll No (281 – 294) E2: Roll No (295 – 308) E3: Roll No (309 – 322) E4: Roll No (323 – 336) E5: Roll No (337 – onwards)	Dr. Fareed (Demonstrator)	Physiology Lecture Hall 5	Dr. Romessa (Demonstrator)	Basement Lecture Hall No. 2
Supervised by Prof. Dr. Samia Sarwar					Supervised by. Dr. Aneela Jamil	

Tentative Schedule for LMS Based Weekly Online Assessments for Second Year MBBS (Renal Module - I) Batch 51

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

Class	Module	Day & Date	Time of Assessment	Focal person	Department Responsible
Second Year MBBS	Renal Module - I	Monday 05th May, 2025	9:00 pm - 9:30pm	Prof. Dr Ayesha Yousaf	Anatomy
		Tuesday 06th May, 2025	9:00 pm – 9:30pm	Prof. Dr Samia Sarwar	Physiology
		Wednesday 07th May, 2025	9:00 pm - 9:30pm	Dr Aneela Jamil	Biochemistry

*Note: All dates are subject to change.

Tentative Date Sheet for End of Renal Module-I Assessment
(19-05-2025 To 28-05-2025)

Date & Day	Tentative Schedule
19-05-2025 Monday	Assessment Week
20-05-2025 Tuesday	
21-05-2025 Wednesday	
22-05-2025 Thursday	
23-05-2025 Friday	
24-05-2025 Saturday	
26-05-2025 Monday	
27-05-2025 Tuesday	
28-05-2025 Wednesday	

Note: Timetable Subject to Change

(Logistic details of Assessments will be notified separately)

Annexure I

Templates for Thoery Paper

- **MCQ, SEQ Paper, & EMQ**

Templates for AV OSPE

Templates for Structured Viva

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

Rawalpindi Medical University Rawalpindi
Department of Anatomy, Physiology & Biochemistry
MCQs & EMQ Paper for _____ Module, Second Year MBBS Batch 51
Date: 00-00-0000

Total Marks: 30 (MCQs: 25, EMQ: 5) Roll No. _____
Total Time: 30 Minutes Name. _____
Each MCQ carries 1 mark and EMQ carries 5 marks

Encircle the single best response

Q.#	Integrated & Clinically Oriented Assessment of the Subject Anatomy, Physiology & Biochemistry Section A: Core Knowledge of Anatomy / Physiology / Biochemistry (70%)	Level of Cognition
1.	Question …… a. ……. b. ……. c. ……. d. ……. e. ……. USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	C1
	Section – B: Integrations (30%)	
	Horizontal Integration Anatomy / Physiology / Biochemistry (5%)	
2.	**Horizontal Integration with Anatomy (2.5%)** Questions ……. a. …….. b. …….. c. …….. d. …….. e. …….. USMLE: Type Question Reference: Ganong 25th Edition Page No. 101	C1
	Vertical Integration with Medicine / Surgery / Gynae Obs etc (15%)	
3.	Question ……. a. ……. b. ……. c. ……. d. ……. e. …….	C3

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

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

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

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

Attempt all Questions

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

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

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

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

_____ Year MBBS (Batch _____)

Day: _____

Date: _____

10 AV OSPE Slides

Time Allowed: 50 minutes

05 minutes for each slide

Chairperson
Department of _____
Rawalpindi Medical University, Rawalpindi

Additional Director Assessment
Rawalpindi Medical University
Rawalpindi

Director DME
Rawalpindi Medical University
Rawalpindi

Vice Chancellor
Rawalpindi Medical University
Rawalpindi

Slide 1

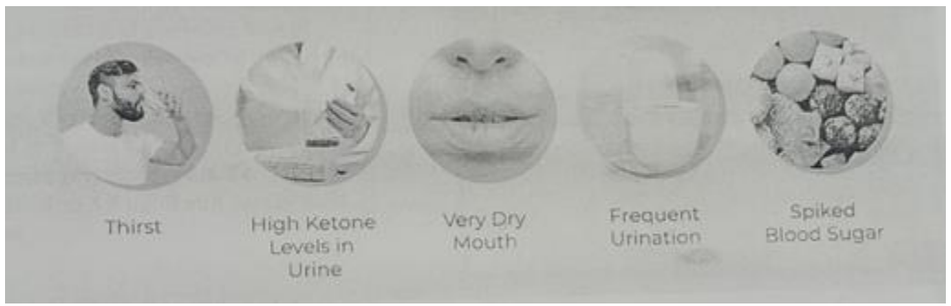
Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic:

Teaching Strategy:

Requirements: Answer sheet, Pen

Objective: _____



1. ……. (01)
2. ……. (01)
3. ……. (01)
4. ……. (01)
5. ……. (01)

Slide 1

Key for Examiner

1. ……
2. …….
3. …….
4. ……..
5. ……..

Department of Anatomy

GIT Module - I (Structured Viva)

Date: Time: 8:00-2:00pm Roll no: 181 onwards

P: Punctuality, D: Dressing, C: Communication

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

Examiner _____

Sign _____

Stamp _____

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

Department of Physiology

GIT Module - I (Structured Viva)

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

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

Department of Biochemistry

GIT Module - I (Structured Viva)

Date: Time: Teacher's Name

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

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

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

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

Rawalpindi Medical University
2nd Year MBBS Model EMQ

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

Options for Questions:

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

Questions:

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

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

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

Rawalpindi Medical University
2nd Year MBBS Model AV OSPE

Slide 1 / Video

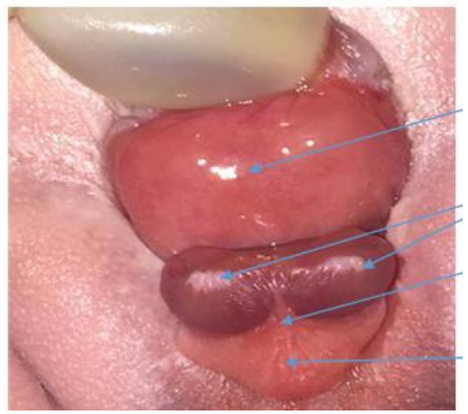
Core Knowledge with Horizontal / Vertical / Spiral Integration

Topic: Development of Urinary Bladder

Teaching Strategy: LGIS

Requirements: Answer sheet, Pen

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



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

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

Observed Station ___

Marks: 05 Time Allowed: 03 Minutes

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

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

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

Key Station ____

Requirements: Simulated Patient/ Torso

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

Unobserved Station ___

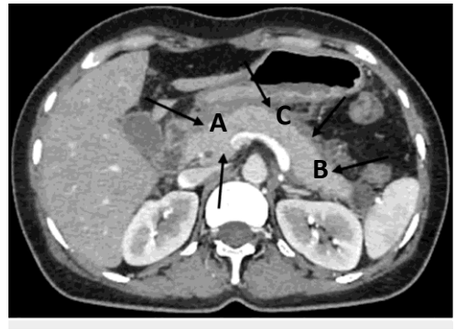
Marks: 05 Time Allowed: 03 Minutes

Subject: Anatomy of Abdomen
Topic assessed: Radiology of Abdomen
Requirements: Image of CT Scan
Objective: Evaluate the students' understanding of CT

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

For Candidate

Identify the labeled abdominal organs on the given CT scan as



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