Department of Medical Education (DME)

Renal Module

Study Guide
Second Year MBBS 2022 - 2023

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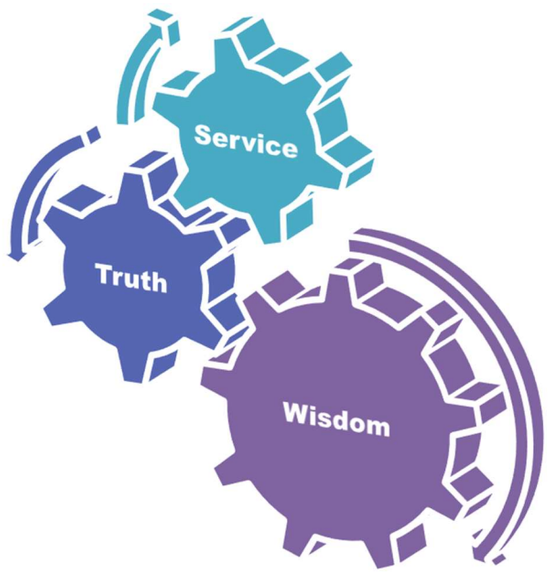
University Moto, Vision, Values & Goals

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 2023

Study Guide

Renal Module

Discipline wise Details of Modular Content

Block	Module	Embryology	Histology	Gross Anatomy
I	• Anatomy	Embryology • Kidney • Ureter • Urinary Bladder • Urethra	Histology • Kidney • Ureter • Urinary Bladder	• Posterior Abdominal Wall & Organs of Urinary System
	• Biochemistry	• Amino Acid Pool Protein Turn Over Nitrogen Balance & transport of Amino Acid, • Urea Cycle & Disorder • Arginine & Branched Chain Amino Acid Metabolism • Ammonia Toxicity		
	• 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		
	• Bioethics & Professionalism	• Islam & Teachings of Bioethics • Ethics of social media & advertising • Ethical principles		
	• Radiology & Artificial Intelligence	• Prenatal ultrasonography • Contrast Nephropathy		
	• Research Club Activity	• How To Generate a Research Question		
	• Family Medicine	• Renal Failure		
	• Vertical components	• The Holy Quran Translation Component • IUGRC • Biomedical Ethics Component		
	• Vertical Integration	Clinically content relevant to Renal module • Nephrotic syndrome. & Nephritic syndrome. (Medicine) • Acute renal failure (Medicine) • Potassium imbalance and its management (Medicine) • CRF & Rehabilitation of patient with CRF(Medicine)		

		• Management of Acid base disorders (Medicine) • Hydronephrosis / Pyonephrosis (Surgery) • Investigations of urinary tract (Surgery) • Renal tuberculosis (Surgery) • Renal calculi (Surgery) • Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis,stress incontinence) (Obstetrics & Gynecology) • UTI (Peads) • Introduction to diuretics (Pharmacology)

Table of Contents

Renal Module Team

Module Name	:	Renal Module
Duration of module	:	05 Weeks
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Co-coordinator	:	Dr. Uzma Kiani
Reviewed by	:	Module Committee

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13.	Focal Person Behavioral Sciences	Dr. Saadia Yasir
14.	Focal Person Community Medicine	Dr. Afifa Kulsoom
15.	Focal Person Quran Translation Lectures	Dr. Fahad Anwar

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4.	Co-Coordinator	Dr. Rahat Afzal (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Uzma Kiyani (Senior Demonstrator of Physiology)

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3.	Deputy Director DME	Dr Shazia Zaib
4.	Module planner & Implementation coordinator	Dr. Sidra Hamid
5.	Editor	Muhammad Arslan Aslam

Module II – Renal Module

Rationale: The urinary system is an important system of the body and it is also concerned with homeostasis and it is essential for survival of individuals. Kidney is the principal organ in the urinary system. It is an essential viscous concerned with maintenance of homeostasis. It performs its function through formation of urine in which hazardous waste products of metabolism, drugs, toxins and excess amounts of water and electrolytes are excreted. Kidneys also help in controlling body fluid volume, arterial blood pressure and acid base balance. Whereas, 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 implecation 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 time table and learning objectives are given in the study guides. Study guides will be uploaded on the university website. Good luck!

SECTION - I

Terms & Abbreviations

Contents

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.

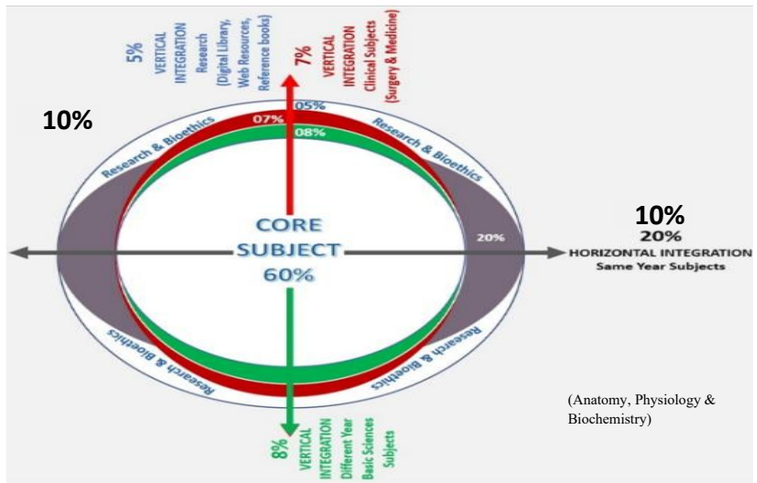


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

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

Table 2. Standardization of teaching content in Small Group Discussions

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

Table 3. Steps of Implementation of Small Group Discussions

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

Self-Directed Learning (SDL)

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

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

  ii.OSPE station

Case Based Learning (CBL)

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

Problem Based Learning (PBL)

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

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

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

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

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

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

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End of The Lecture the Student Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Embryology				
Development of Kidney & ureter	• Enumerate the derivatives of intermediate mesoderm, urogenital and gonadal ridges.	C1	LGIS	SAQ MCQ VIVA
	• Describe the stages of development of human kidneys	C1		
	• Describe the molecular regulation of kidney development.	C2		
	• Correlate positional changes of the kidney with its blood supply	C1		
	• Describe different stages of development of ureter from ureteric bud and metanephrogenic blastema.	C1		
	• Understand the bio-physiological aspects of kidney & ureter development	C2		
	• Enumerate Congenital anomalies of kidney and ureter.	C3		
	• Discuss polycystic kidney	C3		
	• Discuss horseshoe shaped kidney	C3		
	• Search a relevant research article	C3		
	• Use digital library	C3		
Development of urinary bladder & urethra	• Describe the development of urinary bladder	C1	LGIS	SAQ MCQ VIVA
	• Understand the bio-physiological aspects of bladder development	C2		
	• Discuss the parts of urethra in males and females	C1		
	• Describe development of male urethra	C1		
	• Describe development of female urethra	C1		
	• Discuss the anomalies related to urethra & bladder development	C3		
	• Read a relevant research article	C3		
Histology				
Histology of kidney I	• Discuss the structural components of the nephron..	C1	LGIS	SAQ MCQ VIVA
	• Discuss the histology of filtration barrier.	C1		
	• Understand the bio-physiological aspects of filtration	C2		
	• Distinguish the key microscopic components of the renal cortex and medulla.	C1		
	• Differentiate the histological appearance of proximal tubule, loop of Henley, distal convulated tubule and collecting duct.	C1		

Histology of kidney II	• Enumerate the component cells of the juxta glomerular apparatus.	C1	LGIS	SAQ MCQ VIVA
	• Discuss the component cells of the juxtaglomerular apparatus	C1		
	• Discuss the effect of diabetes & hypertension on glomerular filtration rate	C3		
	• Understand the effect of hypertension on renin angiotensin release	C3		
	• Search a relevant research article	C3		
	• Use digital library	C3		
Histology of Urinary bladder	• Describe histological characteristics of urinary bladder.	C1	LGIS	SAQ MCQ VIVA
	• Explain the concept of umbrella cells and Uroplakins.	C1		
	• Explain the concept of internalization	C1		
	• Understand the bio-physiological effects of urinary epithelium	C2		
	• Compare the histological changes of empty and full bladder.	C1		
	• Read a relevant research article	C3		
Histology of ureter & urethra	• Describe the microscopic structure of ureter	C1	LGIS	SAQ MCQ VIVA
	• Discuss the histological features of urethra	C1		
	• Distinguish the transition in epithelium in different types of urethra	C1		
	• Read a relevant research article	C3		
	• Use digital Library	C3		

Physiology Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To:	Learning Domain	Teaching Strategy	Assessment Tools
Body fluid compartments, Volume & osmolarity of ECF & ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality,Osmosis and Osmotic pressure	C1 C2 C2 C1	LGIS	SAQ MCQ VIVA
Physiology of Renal system,Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	C2 C2 C2 C1 C1	LGIS SGD	SAQ MCQ VIVA
Abnormalities of fluid volume &regulation, Edema	• Volume and osmolarity in abnormalstates • Abnormalities of fluid volume &Regulation • Hyponatremia and Hypernatremia • Edema and its Mechanism. • Fluid in potential spaces of the body	C1 C1 C2 C1 C2	LGIS SGD	SAQ MCQ VIVA
A. Regulation of GFR & RBF-I (Determinants of GFR & RBF) Regulation of GFR & RBF-II,Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	C1 C1 C2	LGIS SGD	SAQ MCQ VIVA
RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback Mechanism • Macula-densa Feedback Mechanism	C1 C1 C2 C1 C2 C3	LGIS SGD	SAQ MCQ VIVA

Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in
	  ○ Proximal tubule
	  ○ Loop of Henle
		C1
		C2
		C1
			LGIS	SAQ
				MCQ

	○ Distal tubule & collecting tubule. Active and passive transport mechanisms	C1 C2	Group presentations	VIVA
Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	C1 C2	LGIS SGD Group presentations	SAQ MCQ VIVA
A. Clearance methods to quantify kidney function Micturition reflex & Abnormalities of micturition	• Clearance Methods (Inulin clearance, Creatinine clearance, Para ammino hipuric acid clearance) • Filtration Fraction • Anatomy of bladder • Micturition and urine formation. • Control of Micturition and Micturition Reflex • Abnormalities of Micturition Reflex	C1 C1 C1 C1 C1 C2	LGIS SGD	SAQ MCQ VIVA

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Introduction to protein metabolism	Understand protein turn-over, amino acid pool and entry of amino acid into cell	C2	LGIS	MCQs, SAQs & Viva
Nitrogen balance	Describe positive and negative nitrogen balance	C2	LGIS	MCQs, SAQs & Viva
General reactions of amino acids	Discuss reactions of amino acids Interpret the clinical importance of transaminases	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of ammonia	Explain sources of NH_3 formation and its transport Discuss causes and effects of Hyperammonemia Explain mechanism of ammonia toxicity	C2 C3 C2	LGIS	MCQs, SAQs & Viva

Urea cycle	Describe the location, steps and regulation of Urea cycle	C2	LGIS	MCQs, SAQs & Viva
Disorders of urea cycle	Describe Disorders of the urea cycle	C2	LGIS	MCQs, SAQs & Viva
Metabolism of glycine	Explain Glycine metabolism and related disease	C2	LGIS	MCQs, SAQs & Viva
Metabolism of phenyl alanine and tyrosine	Explain Phenyl alanine & tyrosine metabolism Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of Tryptophan	Explain Tryptophan metabolism Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of methionine	Describe metabolism of sulpher containing amino acids Discuss related disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of branched chain amino acids	Explain Metabolism of branched chain amino acids Discuss related inherited disorders	C2 C3	LGIS	MCQs, SAQs & Viva
Metabolism of polyamines	Discuss Synthesis of polyamines and their clinical significance	C2	LGIS	MCQs, SAQs & Viva
Acid base imbalance	Explain causes and compensation of metabolic and respiratory acid base disorders Describe anion gap and its significance Interpret different acid base disorders	C2 C2 C3	LGIS	MCQs, SAQs & Viva
Water	Explain Distribution of water in different compartments of body Interpret Dehydration & over hydration	C2 C3	LGIS	MCQs, SAQs & Viva
Electrolytes Sodium (Na)	Describe Daily requirements, sources and functions of sodium Explain causes and effects of hyponatremia & hypernatremia	C2 C3	LGIS	MCQs, SAQs & Viva

Potassium	Describe Daily requirements, sources and functions of potassium Explain causes and effects of hypokalemia & hyperkalemia	C2 C3	LGIS	MCQs, SAQs & Viva
Chloride (Cl) & Bicarbonate ($HCO_{3)}$	Describe Daily requirements, sources, functions & their deficiency and toxic effects on body	C2	LGIS	MCQs, SAQs & Viva

Anatomy Small Group Discussion (SGDs)

Topics	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Posterior abdominal wall I (Fascia & Muscles)	• Describe the the fascia of posterior abdominal wall • Tabulate the muscles of posterior abdominal wall with reference to, origen, insertion, nerve supply and action, • Describe the relations of Psoas major muscle. • Discuss Psoas abscess • Read a relevant research article • Use digital Library	C1 C1 C1 C3 C3 C3	Skill labs	OSPE MCQ SAQ VIVA
Posterior abdominal wall II (Nerves)	• Trace the nerves present on posterior abdominal wall • Discuss the formation of nerves • Discuss the formation of lumbosacral plexus • Discuss clinical significance of Lumbar symphathectomy • Read a relevant research article • Use digital Library	C1 C1 C1 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Posterior abdominal wall III (vessels) & Lumbar Vertebrae	• Enlist branches of Abdominal Aorta. • Describe the tributaries of inferior vena cava. • Describe lymph nodes of posterior abdominal wall with emphasis on lumbar and intestinal trunk. • Differentiate between typical and atypical lumbar vertebrae. • Identify different parts of lumbar vertebrae. • Discuss the attachments of lumbar vertebrae. • Discuss abdominal aortic aneurysm	C1 C1 C1 C1 C1 C1 C3	Skill lab	OSPE MCQ SAQ VIVA

Kidney	• Discuss the site and extent of kidneys • Differentiate right from left kidney • Understand the bio-physiological aspects of kidney • Discuss the renal capsule and its role in support of kidney. • Describe the structure of cortex and medulla • Describe peritoneal relationship of both kidneys. • Describe visceral relationship of both kidneys • Explain blood supply of both kidneys with emphasis on renal artery. • Discuss the venous drainage of both kidneys. • Discuss related clinicals; perinephric abscess, nephroptosis, renal cysts and renal colic	C1 C1 C2 C1 C1 C1 C1 C1 C1 C1 C1 C3	Skill lab	OSPE MCQ SAQ VIVA
Ureter	• Discuss extent and course of ureter in abdomen and pelvis in males and females • Explain peritoneal reflections of ureter in both sexes. • Describe relations of ureter. • Describe the arterial, venous and lymphatic drainage of ureter. • Discuss the related clinicals; ureteric colic • Read a relevant research article • Use digital Library	C1 C1 C1 C1 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Supra renal gland	• Describe the location & visceral relations of right and left supra renal glands • Understand the bio-physiological aspects of kidney • Discuss supra renal cortex and medulla • Discuss vessels and nerves of supra renal gland • Discuss the related clinicals • Read a relevant research article • Use digital Library	C1 C2 C1 C1 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Urinary bladder	• Interpret size and extent of urinary bladder in different ages and states.	C2 C1	Skill lab	OSPE MCQ

	• 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, suprapubic cystotomy and atonic bladder	C2 C1 C1 C3		SAQ VIVA
Urethra	• Describe different parts of male and female urethra. • Explain blood supply, innervation and lymphatics of urethra in both sexes • Discuss the clinically significant differences between male and female urethra • Read a relevant research article • Use digital Library	C1 C1 C3 C3 C3	Skill lab	OSPE MCQ SAQ VIVA
Radiology & Surface Marking	• Identify structures on a normal X-ray abdomen • Identify kidney and its associated structures on contrast studies. • Appreciate filling defects. • Mark anatomical landmarks. • Demarcate specific points for surface marking of the kidney and structures on posterior abdominal wall	C2 C2 C2 P P	Skill lab	OSPE MCQ SAQ VIVA

Physiology Small Group Discussion (SGDs)

Topic	Learning Objectives Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tools
GFR & RBF	• Explain factors effecting GFR	C2	SGD	MCQ SEQ VIVA OSPE
	• Discuss determinants of RBF	C2		
	• Explain autoregulatory mechanism of GFR & RBF	C2		
Micturition	• Describe the physiological anatomy & nervous connections of urinarybladder	C1	SGD	MCQ

	• Explain Micturition reflex	C2		SEQ VIVA OSPE
	• Discuss abnormalities of Micturition	C2		
Clearancemethods	• Define Renal clearance	C1	SGD	MCQ SEQ VIVA OSPE
	• Enumerate & Explain clearance methods to quantify renal functions	C1		
	• Explain filtration fraction	C2		
Acid basebalance	• Describe mechanism of action of buffer systems of body fluid	C1	SGD	MCQ SEQ VIVA OSPE
	• Discuss buffering power of respiratory & renal system	C2		
	• Explain the acid base disorders	C2		

Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives At The End Of Tutorial Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Ammonia formation, transport and toxicity	Explain formation, transport and toxicity of ammonia in the body	C2	SGD	MCQs, SAQs & Viva
Urea cycle and Hyperammonemia	Describe steps of urea cycle and causes of Hyperammonemia	C2	SGD	MCQs, SAQs & Viva
Metabolism of tryptophan, tyrosine and branched chain amino acids	Explain metabolism and related disorders of amino acids	C2	SGD	MCQs, SAQs & Viva
Acid base imbalance	Explain causes and compensation of acid base disorders	C2	SGD	MCQs, SAQs & Viva
Water and Electrolyte balance	Describe causes and effects of hypo and hyper natremia, hypo and hyper kalemia	C2	SGD	MCQs, SAQs & Viva

Anatomy Self Directed Learning (SDL)

Topics	Learning Objectives Students Should Be Able To	Learning resources
Posterior abdominal wall I (Fascia & Muscles)	• Describe the the fascia of posterior abdominal wall • Tabulate the muscles of posterior abdominal wall with reference to, origen, insertion, nerve supply and action, • Describe the relations of Psoas major muscle. • Discuss Psoas abscess • Read a relevant research article • Use digital Library	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 537- 541).
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 • Use digital Library	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 527-532).
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).
Kidney	• Discuss the site and extent of kidneys • Differentiate right from left kidney • Understand the bio-physiological aspects of kidney • Discuss the renal capsule and its role in support of kidney. • Describe the structure of cortex and medulla • Describe peritoneal relationship of both kidneys. • Describe visceral relationship of both kidneys	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 515-517,523-524).

	• Explain blood supply of both kidneys with emphasis on renal artery. • Discuss the venous drainage of both kidneys. • Discuss related clinicals; perinephric abscess, nephroptosis, renal cysts and renal colic	
Ureter	• Discuss extent and course of ureter in abdomen and pelvis in males and females • Explain peritoneal reflections of ureter in both sexes. • Describe relations of ureter. • Describe the arterial, venous and lymphatic drainage of ureter. • Discuss the related clinicals; ureteric colic • Read a relevant research article • Use digital Library	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 517-518,525).
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 • Use digital Library	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 5, Page 519-523).
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, suprapubic cystotomy and atonic bladder	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6, Page 591-595).
	• Describe different parts of male and female urethra.	❖ Clinical Oriented Anatomy by Keith L. Moore.8TH Edition. (Chapter 6,

Urethra	• Explain blood supply, innervation and lymphatics of urethra in both sexes • Discuss the clinically significant differences between male and female urethra • Read a relevant research article • Use digital Library	Page 595).

Physiology Self Directed Learning (SDL)

Topics Of SDL	Learning Objective	References
Body fluid compartments, Volume & osmolarity of ECF &ICF.	• Fluid Intake/Output balance • Body fluid compartments • Constituents of ECF & ICF • Concept of Osmolarity, Osmolality,Osmosis and Osmotic pressure	❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition andvolume Section 07 (Chapter 38, Page 695) ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 245) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiologyof Body Fluids. (Chapter 26,Page 449-459) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys.Section 05. (Chapter 25, Page 305-313)
Physiology of Renal system,Glomerular filtration rate	• Functions of kidney. • Physiologic Anatomy of Kidney • Concept of Glomerular Filtration • Introduction to Glomerular filtration rate.	• Ganong's Review of Medical Physiology.25TH Edition. Renal Physiology (Chapter 37, Page 671) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 624-636) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiologyof Body Fluids. (Chapter 27, Page 460-469) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. TheBody Fluids And Kidneys. Section 05. (Chapter 26, Page 321-324) (Chapter 27, Page 331-332)
Abnormalities of fluid volume &regulation, Edema	• Volume and osmolarity in abnormal states • Abnormalities of fluid volume & Regulation • Hyponatremia and Hypernatremia • Edema and its Mechanism. • Fluid in potential spaces of the body	• Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 251) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 20 Page 672-677) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Regulation ofVolume and Osmolality of the Body Fluids. (Chapter 32, Page 530) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys.Section 05. (Chapter 25, Page 314-320)

B. Regulation of GFR & RBF-I(Determinants of GFR & RBF) **C.** Regulation of GFR & RBF-II,Physiological control of GFR and	• Glomerular filtration rate & Renal Blood flow • Determinants of GFR	❖ A. ❖ Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition andvolume, Section 07 (Chapter 37, Page 674) ❖ Physiology by Linda S. Costanzo 6th Edition.Renal Physiology (Chapter 06. Page 257,261)
RBF, Auto regulation of GFR and RBF/Macula densa feedback mechanism	• Determinants of RBF • Physiological control of GFR and RBF. • Auto regulation of GFR and RBF. • Tubulo-glomerular Feedback Mechanism • Macula-densa Feedback Mechanism	❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 28,Page 473) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 331,333,337) ❖ B. ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 27, Page 337,342) ❖ Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Filtration and Blood Flow. (Chapter 28,Page 476,483)
Tubular reabsorption & secretion along various parts of nephrons	• Tubular reabsorption & secretion in • Proximal tubule • Loop of Henle • Distal tubule & collecting tubule. • Active and passive transport mechanisms	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 37, Page 679) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 267) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. The Kidneys (Chapter 19 Page 636,643) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 04. Physiology of Body Fluids. (Chapter 29,Page 487-497) . (Chapter 30,Page 498) . (Chapter 31,Page 508) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 343,355)
Regulation of tubular reabsorption	• Concept of Glomerulo tubular Balance • Peritubular capillary and Renal interstitial fluid Physical forces. • Mechanism of Pressure natriuresis and Pressure diuresis	• Ganong's Review of Medical Physiology.25TH Edition. Regulation of ECF composition and volume Section 07 (Chapter 39, Page 709) • Physiology by Linda S. Costanzo 6th Edition. Renal Physiology (Chapter 06. Page 276,298) ❖ Textbook of Medical Physiology by Guyton & Hall.14th Edition. The Body Fluids And Kidneys. Section 05. (Chapter 28, Page 355-360)

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

Biochemistry Self Directed Learning (SDL)

Topics Of SDL	Learning Objectives	Learning resources
Amino Acids Pool, Protein Turnover, Nitrogen balance & Transport of Amino Acids	• Understand protein turn-over, amino acid pool and entry of amino acid into cell • Describe positive and negative nitrogen balance	• Lippin cott Biochemistry 8th edition (chapter 19 page - 271)
Urea cycle & its Disorders	• Describe the location, steps and regulation of Urea cycle • Describe Disorders of the urea cycle	• Lippin cott Biochemistry 8th edition (chapter 19 page - 279)
Arginine & Branched Chain Amino Acid Metabolism, Ammonia Toxicity	• Explain Metabolism of branched chain amino acids • Discuss related inherited disorders	• Harper's illustrated biochemistry 32nd edition (Chapter 40 page 477)
Sodium & Chloride Metabolism	• Describe Daily requirements, sources and functions of sodium • Explain causes and effects of hyponatremia & hypernatremia • Describe Daily requirements, sources, functions & their deficiency and toxic effects on body	• Essentials of medical Biochemistry. Mushtaq Ahmad Vol – I 9th edition (Chapter 02 page 46)

Histology Practicals Skill Laboratory (SKL)

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

Physiology Practicals Skill Laboratory (SKL)

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

Biochemistry Practicals Skill Laboratory (SKL)

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

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**
- **Longitudinal Themes**
    - **Biomedical Ethics & Professionalism**
    - **Family Medicine**
    - **Artificial Intelligence (Innovation)**
    - **Integrated Undergraduate Research Curriculum (IUGRC)**

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)

Peadiatrics

Topic	At the End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Nephrotic Syndrome	• Brief anatomy & physiology of kidney	C2	LGIS	MCQs
	• Definition of Nephrotic syndrome	C1		
	• Pathophysiology & etiology (primary & secondary)	C2		
	• Clinical features	C2		
	• Management	C2		
	• Complications & prognosis	C3		
Urinary tract infection	• Anatomy & physiology of urinary system	C3	LGIS	MCQs
	• Definition of UTI	C1		
	• Epidemiology	C1		
	• Etiological spectrum of causative organisms	C2		
	• Clinical features	C2		
	• Treatment & complications	C2		

Radiology & Artificial Intelligence

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Prenatal ultrasonography	• Interpret normal ultrasonography of renal system	C2	LGIS	MCQs
	• Discuss features of different congenital abnormalities of renal system	C2		

Community Medicine

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

Obstetrics & Gynaecology

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

Dermatology

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Skin and renal disorders	• Hereditary syndromes with skin and renal involvement	C2	LGIS	MCQs
	• Skin manifestations of renal failure and dialysis	C2		
	• Skin manifestations of renal transplantation	C2		
	• Skin disorders that may affect the kidney and urinary tract	C2		

Biomedical Ethics and Professionalism

Topic	At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Islam & Teachings of Bioethics	• Conceptualize the Islamic teachings of medical ethics • Outline the main points in oath of Muslim doctor • Correlate the 4 principles of medical ethics with principles of Islamic medical ethics	C2	LGIS	MCQs
Ethics of social media & advertising	• Delineate the principles of ethics involved in social media & advertising including; • Publishing or broadcasting information • Certificates, Reports and other documents • Teaching Photography and Consent			
Ethical principles	• Elaborate General ethical 06 basic ethical principles: autonomy, beneficence, non-maleficence & justice • Explain the process of ensuring patient autonomy, beneficence, non-maleficence, respect & justice while informing/ deciding on a treatment modality			

Integrated Undergraduate Research Curriculum (IUGRC)

Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
How to Generate a Research Question	• How to generate a research question according to FINER Criteria	C3	LGIS-1	MCQs
	• Formulate the research question according to PICOT format – problem/population, intervention, comparison, outcome and time frame			
	• To understand how a properly formulated research question is related to an efficient literature review			
	• Development of research protocol including research objectives			

Family Medicine

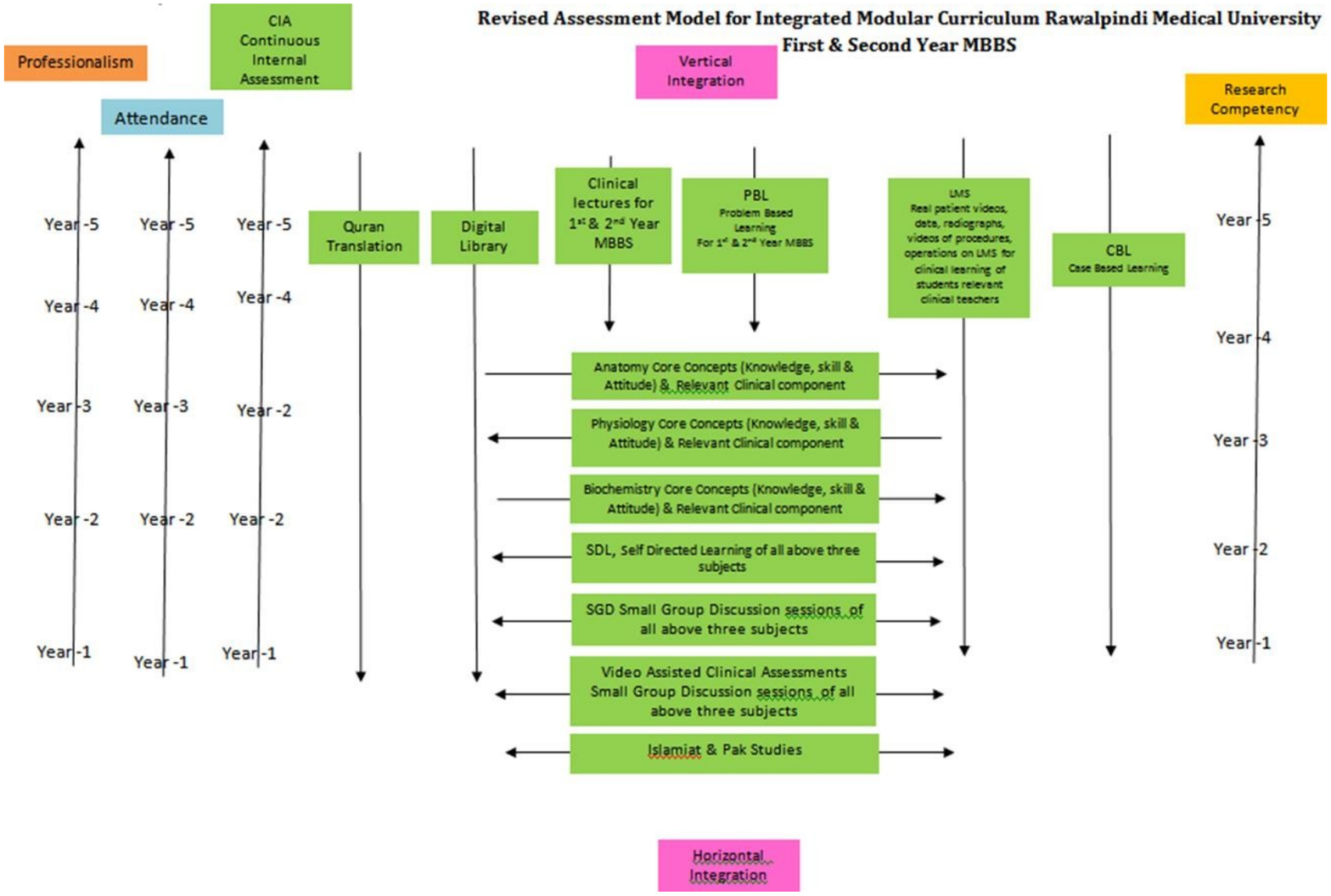
Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Renal Failure	• Describe presenting complains of patients with Renal failure	C3	LGIS-1	MCQs
	• Disscus complications of Renal failure			
	• Describe intial treatment of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

SECTION - IV

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in Renal** Module



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%	81 - 100%

90% is eligibility criteria for appearing professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular,modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given theshare according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based),modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in Renal Module I

Block	Sr #	Module – 1 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures	Formative	15 Minutes				
	7	Assessment of Bioethics Lectures	Summative	2 Minutes				
	8	Assessment of IUGRC Lectures	Summative	10 Minutes				

No. of Assessments of Anatomy for Second Year MBBS

Renal Module

Block	Sr #	Module – 1 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module (when 2/3rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	25-02-2023 09:00PM - 09:30PM 30 Minutes	2 Hours & 40 minutes	30 Minutes	3 Formative	3 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	29-03-2023 12:00pm-12:30pm 10 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	08-03-2023 08:30am - 10:30am 2 Hours				
	4	Sub Regional Assessment (Viva voce)	Formative	10 Minutes				
	5	Structured & Clinically oriented Viva voce	Summative	06-03-2023 & 07-03-2023 09:00am - 01:00pm 10 Minutes/student				
	6	Assessment of Clinical Lectures	Formative	10-03-23 09:30am-10:00am 10 Minutes				

No. of Assessments of Physiology for Second Year MBBS
Renal Module

Block	Sr. #	Module – 1 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Date/Time/Duration	Summative Assessment Time	Formative Assessment Time		
Block - I	1	Mid Module (when 2/3rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	25-02-2023 09:00PM -09:30PM 30 Minutes	2 Hours & 40 minutes	20 minutes	2 Formative	3 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	18-03-2023 12:00pm - 12:30pm 10 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	09-03-2023 08:30am -10:30am 2 Hours				
	4	Structured & Clinically oriented Viva voce	Summative	06-03-2023 & 07-03-2023 09:00am -01:00pm 10 Minutes/student				
	5	Assessment of Clinical Lectures	Formative	10-03-23 09:30am-10:00am 10 Minutes				

No. of Assessments of Biochemistry for Second Year MBBS
Renal Module

Block	Sr. #	Module – 1 Renal Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module (when 2/3rd content is covered) Examinations LMS based combined with Anatomy & Biochemistry	Summative	25-02-2023 09:00PM - 09:30PM 30 Minutes	2 Hours & 40 minutes	20 Minutes	2 Formative	3 Summative
	2	Topics of SDL Examination on MS Team (After 15 days of teaching)	Formative	18-03-2023 12:00pm - 12:30pm 10 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	10-03-2023 08:30am-10:30am 2 Hours				
	4	Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	5	Assessment of Clinical Lectures	Formative	10-03-2023 08:30am-10:30am 10 Minutes				
	Total			**3 Hours**			**5 Assessments**	

Learning Resources

Subject	Resources
Anatomy	**A. Gross Anatomy** 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III **B. Histology** 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. **C. Embryology** 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	**A. Textbooks** 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. **B. Reference Books** 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	**Textbooks** 1. Harper's Illustrated Biochemistry 32th edition. 2. Lehninger Principle of Biochemistry 8th edition. 3. Biochemistry by Devlin 7th edition.
Community Medicine	**Textbooks** 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	**Textbooks** 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
Pharmacology	**Textbooks** 1. Lippincot Illustrated Pharmacology 9th edition. 2. Basic and Clinical Pharmacology by Katzung 5th edition.

SECTION - V

Time Table

Integrated Clinically Oriented Modular Curriculum for Second Year MBBS

Renal Module Time Table

Second Year MBBS

Session 2021 - 2022

Batch- 49

Renal Module Team

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

Module Committee		
1.	Vice Chancellor RMU	Prof. Dr. Muhammad Umar
2.	Director DME	Prof. Dr. Rai Muhammad Asghar
3.	Convener Curriculum	Prof. Dr. Naeem Akhter
4.	Chairperson Anatomy & Dean Basic Sciences	Prof. Dr. Ayesha Yousaf
5.	Additional Director DME	Prof. Dr. Ifra Saeed
6.	Chairperson Physiology	Prof. Dr. Samia Sarwar
7.	Chairperson Biochemistry	Dr. Aneela Jamil
8.	Focal Person Anatomy Second Year MBBS	Prof. Dr. Ifra Saeed
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. Fahad Anwar

Module Task Force Team		
1.	Coordinator	Dr. Sheena Tariq (Senior Demonstrator of Physiology)
2.	DME Focal Person	Dr. Sidra Hamid (DHPE) (Assistant Professor of Biochemistry)
3.	Co-coordinator	Dr. Tariq Furqan (Senior Demonstrator of Anatomy)
4.	Co-Coordinator	Dr. Rahat Afzal (Senior Demonstrator of Biochemistry)
5.	Co-coordinator	Dr. Uzma Kiyani (Senior Demonstrator of Physiology)

DME Implementation Team		
1.	Director DME	Prof. Dr. Rai Muhammad Asghar
2.	Implementation Incharge 1st & 2nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
3.	Deputy Director DME	Dr Shazia Zaib
4.	Module planner & Implementation coordinator	Dr. Sidra Hamid
5.	Editor	Muhammad Arslan Aslam

Discipline wise Details of Modular Content

Block	Module	Embryology	Histology	Gross Anatomy
I	• Anatomy	Embryology • Kidney • Ureter • Urinary Bladder • Urethra	Histology • Kidney • Ureter • Urinary Bladder	• Posterior Abdominal Wall & Organs of Urinary System
	• Biochemistry	• Amino Acid Pool Protein Turn Over Nitrogen Balance & transport of Amino Acid, • Urea Cycle & Disorder • Arginine & Branched Chain Amino Acid Metabolism • Ammonia Toxicity		
	• 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		
	• Bioethics & Professionalism	• Islam & Teachings of Bioethics • Ethics of social media & advertising • Ethical principles		
	• Radiology & Artificial Intelligence	• Prenatal ultrasonography • Contrast Nephropathy		
	• Research Club Activity	• How To Generate a Research Question		
	• Family Medicine	• Renal Failure		
	• Vertical components	• The Holy Quran Translation Component • IUGRC • Biomedical Ethics Component		
	• Vertical Integration	Clinically content relevant to Renal module • Nephrotic syndrome. & Nephritic syndrome. (Medicine) • Acute renal failure (Medicine) • Potassium imbalance and its management (Medicine)		

		• CRF & Rehabilitation of patient with CRF(Medicine) • Management of Acid base disorders (Medicine) • Hydronephrosis / Pyonephrosis (Surgery) • Investigations of urinary tract (Surgery) • Renal tuberculosis (Surgery) • Renal calculi (Surgery) • Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis,stress incontinence) (Obstetrics & Gynecology) • UTI (Peads) • Introduction to diuretics (Pharmacology)

Categorization of Modular Content of Anatomy

Category A*	Category B**	Category C			
Special Embryology	**Special Histology**	**Demonstrations / SGD**	**CBL**	**Practical's**	**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	• Posterior Abdominal Wall • Kidney • Urinary Bladder • Suprarenal Gland • Urethra • Lumbar Vertebra

Category A*: By Professors

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

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

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	2 * 06 = 12 hours
2.	Small Group Discussions (SGD)	2*3 + 1*9=15 hours
4.	Practical / Skill Lab	1.5 * 15 = 22.5 hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1 * 6 = 06 hours
2.	Small Group Discussions (SGD)	2*3 + 1*9=15 hours
4.	Practical / Skill Lab	1.5 * 3 = 4.5 hours
5.	Self-Directed Learning (SDL)	1 * 7 = 7 hours

Categorization of Modular Content of Physiology

Category A*	**Category B****	**Category C*****				
LGIS	LGIS	PBL	CBL	Practical's	SGD	SDL
Regulation of GFR & RBF – I, (Determinants of GFR and RBF **(Prof Dr Samia Sarwar/Dr. Shmyla)**	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 **(ProfDr Samia Sarwar/Dr. Shmyla)**	Excretion of concentrated urine (counter current multiplier) **(Dr. Sidra)**					
Physiology of Renal system and Glomerularfiltration rate **(Dr. Shmyla)**	Excretion of concentrated urine (counter currentexchanger)**(Dr. Sidra)**					
Tubular reabsorption & secretion along various partsof nephrons **(Dr. Shmyla)**	Introduction to physiology of acid base balance & buffer systems, Respiratory and renal regulation of acid base balance**(Dr. Sidra)**					
Regulation of tubular reabsorption **(Dr. Shmyla)**	Acid base disorders **(Dr. Sidra)**					
Clearance methods to quantify kidney function **(Dr. Shmyla)**	Body fluid compartments, Volume & osmolarity of ECF &ICF **(Dr. Sheena)**					
Micturition reflex & Abnormalities of micturition **(Dr. Shmyla)**	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 Pool, Protein Turn Over, Nitrogen Balance	Ammonia Toxicity		Ammonia Toxicity	Analysis of Milk	Phenyl Alanine Metabolism
Glycine & Phenyl Alanine Metabolism	Sodium & Chloride Metabolism		Metabolic Acidosis	Estimation of Urea & Creatinine	Sodium & Chloride Metabolism
Chemical Reaction of Amino Acids, sources & Transport of Ammonia	Acid Based Balance-I			Urine Analysis-I	
Tyrosine Metabolism	Acid Based Balance-II			Urine Analysis-II & Urine Report	
Urea Cycle	Potassium Metabolism				
Glutamine Histidine & Polyamines Metabolism					
Arginine & Branched Chain Amino Acid Metabolism					

Category A*: By HOD and Assistant Professor

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

Category C*:** (By All Demonstrators)

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1	Assistant professor of biochemistry department (AP)	02
2	Demonstrators of biochemistry department	08

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	2 * 6 = 12 hours	06
2.	Small Group Discussions (SGD)	1.5 * 4 = 06 hours	06
4.	Practical / Skill Lab	1.5 * 04 =06 hours	06
5.	Self-Directed Learning (SDL)	1 * 4 = 4 hours	04

Renal Module First Week
(13-03-2023 To 18-03-2023)

DATE/DAY	8:00am-9:30am	9:30am – 10:20am		10:20am-11:10am		11:10-11:30	11:30am-12:20pm		12:20pm – 2:00pm	Home Assignments(2HRS)
13-03-2023 MONDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**ANATOMY (LGIS)**		Break	**BIOETHICS**		**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		Islam & Teachings of Bioethics		Fascia and Muscles of Posterior Abdominal wall	
				Development of kidney & Ureter	kidney -I					
		Dr. Sheena (Even)	Dr. Shmyla (Odd)	Pro. Dr. Ifra (Even)	Ass. Prof. Dr. Maria (Odd)		Dr. Sidra Hamid (Even)	Dr. Arsalan (Odd)		
14-03-2023 TUESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**ANATOMY (LGIS)**			**BIOETHICS**		**DISSECTION/SGD**	SDL Physiology Physiology of Renal system
		Physiology of Renal system, Glomerular filtration rate	Body fluid compartments Volume & Osmolarity of ECF & ICF	Histology	Embryology		Ethics of social media & advertising		Nerves of Posterior Abdominal wall	
				Kidney-I	Development of kidney & Ureter					
		Dr. Shmyla (Even)	Dr. Sheena (Odd)	Ass. Prof. Dr. Maria (Even)	Prof. Dr. Ifra (Odd)		Dr. Arsalan (Odd)	Dr. Sidra Hamid (Even)		
15-03-2023 WEDNESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**ANATOMY(LGIS)**			**BIOCHEMISTRY (LGIS**		**DISSECTION/SGD**	SDL Biochemistry Amino Acids Pool, Protein Turnover, Nitrogen balance & Transport of Amino Acids
		Abnormalities of fluid volume & regulation Edema	Regulation GFR & RBF-I (Determinats of GFR & RBF)	Embryology	Histology		Amino Acids Pool, Protein Turnover, Nitrogen balance & Transport of Amino Acids	Glycine & Phenylalanine Metabolism	Vessels of Posterior Abdominal Wall Lumbar Vertebra	
				Development of urinary bladder and urethra	kidney II					
		Dr. Sheena (Even)	Prof. Dr. Samia Sarwar / Dr. Shmyla (Odd)	Prof. Dr. Ifra (Even)	Ass. Prof. Dr. Maria (Odd)		Dr. Uzma (Even)	Dr. Anoosh (Odd)		
16-03-2023 THURSDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**PATHOLOGY**			**BIOCHEMISTRY (LGIS**		**DISSECTION/CBL**	SDL Anatomy Posterior abdominal wall
		Regulation GFR & RBF-I (Determinats of GFR & RBF)	Abnormalities of fluid volume & regulation Edema	Glomerular diseases			Glycine & Phenylalanine Metabolism	Amino Acids Pool, Protein Turnover, Nitrogen balance & Transport of Amino Acids	Kidney	
		Prof. Dr. Samia Sarwar / Dr. Shmyla (Even)	Dr. Sheena (Odd)	Dr. Huma (Even)	Dr. Mehreen (Odd)		Dr. Anoosh (Even)	Dr. Uzma (Odd)		
17-03-2023 FRIDAY	08:00am – 09:00am	**PHYSIOLOGY (LGIS)**		**ANATOMY(LGIS)**			**BIOCHEMISTRY (LGIS)**			
		09:00am – 10:00am		10:00am – 11:00am			**11:00am -12:00noon**			
	Practical &CBL/SGD Topics & venue mentioned at the end **(Saturday batch)**	Excretion of dilute urine	Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation ofGFR and RBF/Macula densa feedback mechanism	Histology	Embryology		Chemical Reactions of Amino Acids, Sources & Transport of Ammonia Tyrosine Metabolism			
				kidney II	Development of urinary bladder and urethra		Dr. Uzma (Even)	Dr. Anoosh (Odd)		
		Dr. Sidra Hamid (Even)	Prof. Dr. Samia Sarwar/Dr. Shymla (Odd)	Ass. Prof. Dr. Maria (Even)	Prof. Dr. Ifra (Odd)					
18-03-2023 SATURDAY	**Inauguration of 50th Anniversary Celebrations of RMU**									

Topics For Practical with Venue
• Histology of Kidney (Anatomy/ Histology-practical) venue Histology Laboratory • Serum estimation of Urea & Creatinine (Biochemistry practical) venue- Biochemistry Laboratory • Estimation of specific gravity of urine (Physiology –practical) Physiology Laboratory

Topics For Small Group Discussion& CBLs With Venue
• Biochemistry SGDs: Phenyl Alanine Metabolism (Venue: Lecture Hall No 2) • Physiology CBL-Acute Glomerular nephritis (Venue: Lecture Hall No 5)

Schedule For Practical / Small Group Discussion

Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD
Monday	**C**	**B**	**E**	**A**	**D**
Tuesday	**D**	**C**	**A**	**B**	**E**
Wednesday	**E**	**D**	**B**	**C**	**A**
Thursday	**B**	**A**	**D**	**E**	**C**
Friday	**A**	**E**	**C**	**D**	**B**

Venue For Second Year Batches for Anatomy Dissection / Small Group Discussion

Batches	Roll No	Anatomy Teacher	Venue
A	01-120	Dr. Sajjad Hussain	Lecture Hall No.03 Anatomy Lecture Hall
B	121-240	Dr. Sadia Baqir	Lecture Hall No. 04 Anatomy Lecture Hall
C	241-onwards	Dr. Gaiti Ara	Dissection Hall

Venue For Second Year Batches For PBL & SGD Team-II

Batches	Roll No	Venue	
Batch-A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Aneela Yasmeen
Batch-A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Shazia Nosheen
Batch-B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Kamil
Batch-B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Iqra Ayub (PGT Physiology)
Batch-C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Nayab (PGT Physiology)
Batch-C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Maryam (PGT Physiology)
Batch-D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Ali Raza (PBL) Dr. Ismail (SGD)
Batch-D2	(246-280)	Conference Room (Basement)	Dr. Almas (PBL) Dr. Najam-us-Sehar (SGD)
Batch-E1	(281-315)	New Lecture Hall no.01	Dr. Muhammad Usman
Batch-E2	(315 onwards)	Lecture Hall no.04	Dr. Rahat (PBL) Dr. Fareed Ullah (SGD)

Sr. No	Batch	Roll no	Names of Teachers	
			Biochemistry	Physiology
1.	Batch – A	01-70	Dr. Faiza Zafar	Dr. Aneela / Dr. Najam us Sehar
2.	Batch –B	71-140	Dr. Uzma Zafar	Dr. Shazia Nosheen
3.	Batch – C	141-210	Dr. Romaisa	Dr. Nayab Zonish / Dr. Muhammad Usman
4.	Batch –D	211-280	Dr. Rahat Afzal	Dr. Iqra Ayub
5.	Batch -E	281-onwards	Dr. Almas Ijaz	Dr. Kamil Tahir / Dr. Ismail

Venues for Large Group Interactive Session (LGIS) and SDL	
Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 01
Even Roll Number	New Lecture Hall Complex Lecture Theater # 04

Topic Details Of SDL Biochemistry
• Transport of Ammonia to Liver & in Circulation
• Carbamoyl Phosphate Synthetase I & II
• Sources of Ammonia
• Hyperammonemia
• Biochemical Effects of Na+, K+& Cl-
• Alkaptonuria
• Phenylketonuria

Renal Module Second Week
(20-03-2023 To 25-03-2023)

DATE/DAY	8:00am-9:30am	9:30am – 10:20am		10:20am-11:10am		11:10am-11:30am	11:30am-12:20pm		12:20pm – 2:00 pm	HomeAssignments(2 HRS)
20-03-2023 MONDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**BIOETHICS**		Break	**BIOCHEMISTRY (LGIS)**		**DISSECTION/CBL**	SDL Physiology Volume & osmolarity of ECF& ICF, Abnormalities of fluid volume & regulation
		Regulation of GFR & RBF-II, Physiological control of GFR and RBF, Autoregulation ofGFR and RBF/Macula densa feedbackmechanism	Excretion of dilute urine	Ethical principles			Urea cycle & its Disorders	Glutamine, Histidine, Threonine & Polyamines Metabolism	Ureter	
		Prof. Dr. Samia Sarwar/Dr. Shymla (Even)	Dr. Sidra Hamid (Odd)	Dr. Sidra Hamid (Even)	Dr. Arsalan (Odd)		Dr. Uzma (Even)	Dr. Anoosh (Odd)		
21-03-2023 TUESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**MEDICINE**			**BIOCHEMISTRY (LGIS)**		**DISSECTION/SGD**	SDL Evaluation
		Excretion of Concemtrated urine (Counter Current Multiplier)	Tubular Reabsorbtion & Scretion along Various parts of nephron	Nephrotic syndrome. & Nephritic syndrome			Glutamine, Histidine, Threonine & Polyamines Metabolism	Urea cycle & its Disorders	Urinary bladder	
		Dr. Sidra Hamid (Even)	Dr. Shmyla (Odd)	Dr. Saima Meer (Even)	Dr. Mudassar (Odd)		Dr. Anoosh (Even)	Dr. Uzma (Odd)		
22-03-2023 WEDNESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**SURGERY**			**Elections**			SDL Biochemistry Urea cycle & its Disorders
		Tubular Reabsorbtion & Scretion along Various parts of nephron	Excretion of Concemtrated urine (Counter Current Multiplier)	Hydronephrosis / Pyonephrosis						
		Dr. Shmyla (Even)	Dr. Sidra Hamid (Odd)	Dr. Muhammad Ali (Even)	Dr. Ahmed Sajjad (Odd)					
23-03-2023 THURSDAY	**Pakistan day**									
24-03-2023 FRIDAY	**8:00 AM – 9:00 AM**	**9:00 AM – 10:00AM**		**10:00AM – 11:00 AM**			**11:00AM – 12:00PM**			SDL Anatomy Ureter
	Practical &CBL/SGD Topics & venue mentioned at the end (Thurday Batches)	**PHYSIOLOGY (LGIS)**		**OBSTETRIC & GYNAECOLOGY**			**BIOCHEMISTRY (LGIS)**			
		Excretion of concentrated urine (Counter current exchanger)	Regulation of tubular reabsorbtion	Common renal problems in pregnancy (lower and upper urinary tract infections, hydronephrosis, stress incontinence)			Ammonia Toxicity	Arginine & Branched Chain Amino Acid Metabolism		
		Dr. Sidra Hamid (Even)	Dr. Shmyla (Odd)	Dr. Humaira Noureen (Even)	Prof. Tallat Farkanda (Odd)		Dr. Uzma (Even)	Dr. Anoosh (Odd)		
25-03-2023 SATURDAY	**8:00 AM – 9:00 AM**	**9:00 AM – 10:00AM**		**10:00AM – 11:00 AM**			**11:00AM – 12:00PM**		**12:00PM – 1:00PM**	SDL Urinary bladder
	Practical &CBL/SGD Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**BIOCHEMISTRY (LGIS)**			**QURAN TRANSLATION – I**		**DISSECTION/SGD**	
		Regulation of tubular reabsorbtion	Excretion of concentrated urine (Counter current exchanger)	Arginine & Branched Chain Amino Acid Metabolism	Ammonia Toxicity		Imaniat-3	Ibadaat-3	Suprarenal Gland & Urethra	
		Dr. Shmyla (Even)	Dr. Sidra Hamid (Odd)							

Topics For Practical with Venue	Topics For Small Group Discussion& CBLs With Venue
• Histology of Ureter (Anatomy/ Histology-practical) venue Histology Laboratory • Urine Analysis-I (Biochemistry practical) venue- Biochemistry Laboratory • Estimation of 9th, 10th, 11th, & 12th Cranial Nervous (Physiology –practical) Physiology Laboratory	• Biochemistry CBL: Ammonia Toxicity (Venue: Lecture Hall No 2) • Physiology SGD-Formation of Dilute & Concentrated Urine (Venue: Lecture Hall No 5)

Schedule For Practical / Small Group Discussion

Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD
Monday	C	B	E	A	D
Tuesday	D	C	A	B	E
Wednesday	E	D	B	C	A
Thursday	B	A	D	E	C
Saturday	A	E	C	D	B

Venue For Second Year Batches for Anatomy Dissection / Small Group Discussion

Batches	Roll No	Anatomy Teacher	Venue
A	01-120	Dr. Sajjad Hussain	Lecture Hall No.03 Anatomy Lecture Hall
B	121-240	Dr. Sadia Baqir	Lecture Hall No. 04 Anatomy Lecture Hall
C	241-onwards	Dr. Gaiti Ara	Dissection Hall

Venue For Second Year Batches For PBL & SGD Team-II

Batches	Roll No	Venue	
Batch-A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Aneela Yasmeen
Batch-A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Shazia Nosheen
Batch-B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Kamil
Batch-B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Iqra Ayub (PGT Physiology)
Batch-C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Nayab (PGT Physiology)
Batch-C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Maryam (PGT Physiology)
Batch-D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Ali Raza (PBL) Dr. Ismail (SGD)
Batch-D2	(246-280)	Conference Room (Basement)	Dr. Almas (PBL) Dr. Najam-us-Sehar (SGD)
Batch-E1	(281-315)	New Lecture Hall no.01	Dr. Muhammad Usman
Batch-E2	(315 onwards)	Lecture Hall no.04	Dr. Rahat (PBL) Dr. Fareed Ullah (SGD)

Sr. No	Batch	Roll no	Names of Teachers	
			Biochemistry	Physiology
1.	Batch – A	01-70	Dr. Faiza Zafar	Dr. Aneela / Dr. Najam us Sehar
2.	Batch –B	71-140	Dr. Uzma Zafar	Dr. Shazia Nosheen
3.	Batch – C	141-210	Dr. Romaisa	Dr. Nayab Zonish / Dr. Muhammad Usman
4.	Batch –D	211-280	Dr. Rahat Afzal	Dr. Iqra Ayub
5.	Batch -E	281-onwards	Dr. Almas Ijaz	Dr. Kamil Tahir / Dr. Ismail

Venues for Large Group Interactive Session (LGIS) and SDL

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

Topic Details Of SDL Biochemistry

- Transport of Ammonia to Liver & in Circulation
- Carbamoyl Phosphate Synthetase I & II
- Sources of Ammonia
- Hyperammonemia
- Biochemical Effects of Na+, K+& Cl-
- Alkaptonuria
- Phenylketonuria

Renal Module Thirdweek
(27-03-2023 To 01-04-2023)

DATE/DAY	8:00 AM – 9:00 AM	9:00 AM – 10:00AM		10:00AM – 11:00 AM		11:00AM – 12:00PM		12:00pm – 1:00 pm		Home Assignments(2HRS)
27-03-2023 MONDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**SURGERY**		**PEADS**		**DISSECTION/SGD**		SDL Physiology Excretion of dilute and Excretion of concentrated urine
		Control of ECF osmolarity	Clearence Method to Quantify kidney function	Investigations of urinary tract		UTI		Dissection/ Spottting		
		Dr. Sheena (Even)	Dr. Shmyla (Odd)	Dr. Faraz Basharat (Even)	Dr. Muhammad Ameen (Odd)	Dr. Jawaria zain (Even)	Dr. Amal Hashim (Odd)			
28-03-2023 TUESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**SURGERY**		**RADIOLOGY (LGIS)**		**BIOCHEMISTRY (LGIS)**		SDL Physiology Clearance methods to quantify kidney function
		Clearence Method to Quantify kidney function	Control of ECF osmolarity	Renal tuberculosis		Prenatal ultrasonography		Acid Base Imbalance I	Sodium & Chloride Metabolism	
		Dr. Shmyla (Even)	Dr. Sheena (Odd)	Dr. Muhammad Ali (Even)	Dr. Saadat Hashmi (Odd)	Dr. Saba Binte Kashmir (Even	Dr. Aniqa (Odd)	Dr. Aneela (Even)	Dr Kashif (Odd)	
29-03-2023 WEDNESDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**RESEARCH**				**DISSECTION/SGD**		SDL Biochemistry Arginine & Branched Chain Amino Acid Metabolism, Ammonia Toxicity **Online Clinical Evaluation**
		Regulation of ECF K^+ &Regulation of ECF Ca^{++}, PO_4^{-3}& Mg^{+2}concentration	Micturition Reflex & Abnormalities of Micturition	**Research club Activity -I**				Radiology & Surface marking		
		Dr. Sheena (Even)	Dr. Shmyla (Odd)	**(Bacth 1-5)**		**(Batch 5-10)**				
30-03-2023 THURSDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		ANATOMY		**BIOCHEMISTRY (LGIS)**		**MEDICINE**		SDL Biochemistry Sodium & Chloride Metabolism
		Micturition Reflex & Abnormalities of Micturition	Regulation of ECF K^+ &Regulation of ECF Ca^{++}, PO_4^{-3}& Mg^{+2}concentration	Histology Urethra & Ureter	Histology Urinary Bladder	Sodium & Chloride Metabolism	Acid Base Imbalance I	Acute renal failure		
		Dr. Shmyla (Even)	Dr. Sheena (Odd)	Prof. Dr. ifra (Even)	Asst. Prof. Dr. Maria (Odd)	Dr Kashif (Even)	Dr. Aneela (Odd)	Dr. Saima Meer (Even)	Dr. Mudassar (Odd)	
31-03-2023 FRIDAY	**8:00 AM – 9:00 AM** **RADIOLOGY**	**9:00 AM – 10:00AM** **PHYSIOLOGY (LGIS)**		**10:00AM – 11:00 AM** **MEDICINE**		**11:00AM – 12:00PM** **BIOCHEMISTRY (LGIS)**		SDL Anatomy Suprarenal gland & Urethra		
	Contrast Nephropathy	Renal Machanism for control of ECF, Nervous & hormonal factors for body Fluid	Physiology of acid base balance respiratory & renal regulation of acid base balance	Potassium imbalance and its management		Acid Base Imbalance II	Potassium Metabolism			
	Dr. Hina Hafeez (Even) / Dr. Saba Binte Kashmir	Dr. Sheena (Even)	Dr. Sidra Hamid (Odd)	Dr. Saima Meer (Even)	Dr. Mudassar (Odd)	Dr. Aneela (Even)	Dr. Kashif (Odd)			
01-04-2023 SATURDAY	**Practical &CBL/SGD** Topics & venue mentioned at the end	**PHYSIOLOGY (LGIS)**		**QURAN TRANSLATION – II**		**QURAN TRANSLATION – III**		Dissection		SDL Anatomy Lumbar Vertebra
		Physiology of acid base balanced respiratory & renal regulation of acid base balance	Renal Machanism for control of ECF, Nervous & hormonal factors for body Fluid	Imaniat-3	Ibadaat-3	Ibadaat-4	Imaniat-4			
		Dr. Sidra Hamid (Even)	Dr. Sheena (Odd)	Mufti Naeem Sherazi (Even)	Dr. Fahd Anwar (Odd)	Dr. Fahd Anwar (Even)	Mufti Naeem Sherazi (Odd)			

For Practical with Venue
• Histology of Urinary Bladder (Anatomy/ Histology-practical) venue Histology Laboratory • Urine Analysis-II & Urine report (Biochemistry practical) venue- Biochemistry Laboratory • Examination of 5th cranial nerves (Physiology –practical) Physiology Laboratory

Topics For Small Group Discussion& CBLs With Venue
• Biochemistry CBL: Metabolic acidosis (Venue: Lecture Hall No 2) • Physiology SGD- Acid Base Balance (Venue: Lecture Hall No 5)

Schedule For Practical / Small Group Discussion

Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD
Monday	**C**	**B**	**E**	**A**	**D**
Tuesday	**D**	**C**	**A**	**B**	**E**
Wednesday	**E**	**D**	**B**	**C**	**A**
Thursday	**B**	**A**	**D**	**E**	**C**
Saturday	**A**	**E**	**C**	**D**	**B**

Venue For Second Year Batches for Anatomy Dissection / Small Group Discussion

Batches	Roll No	Anatomy Teacher	Venue
A	01-120	Dr. Sajjad Hussain	Lecture Hall No.03 Anatomy Lecture Hall
B	121-240	Dr. Sadia Baqir	Lecture Hall No. 04 Anatomy Lecture Hall
C	241-onwards	Dr. Gaiti Ara	Dissection Hall

Venue For Second Year Batches For PBL & SGD Team-II

Batches	Roll No	Venue	
Batch-A1	(01-35)	Lecture Hall no.05 Physiology	Dr. Aneela Yasmeen
Batch-A2	(36-70)	Lecture Hall #.04 (1st Floor Anatomy)	Dr. Shazia Nosheen
Batch-B1	(71-105)	Anatomy Museum (First Floor Anatomy)	Dr. Kamil
Batch-B2	(106-140)	Lecture Hall no.03 (First Floor)	Dr. Iqra Ayub (PGT Physiology)
Batch-C1	(141-175)	Lecture Hall no.05 (Basement)	Dr. Nayab (PGT Physiology)
Batch-C2	(176-210)	Lecture Hall no.04 (Basement)	Dr. Maryam (PGT Physiology)
Batch-D1	(210-245)	Lecture Hall no.02 (Basement)	Dr. Ali Raza (PBL) Dr. Ismail (SGD)
Batch-D2	(246-280)	Conference Room (Basement)	Dr. Almas (PBL) Dr. Najam-us-Sehar (SGD)
Batch-E1	(281-315)	New Lecture Hall no.01	Dr. Muhammad Usman
Batch-E2	(315 onwards)	Lecture Hall no.04	Dr. Rahat (PBL) Dr. Fareed Ullah (SGD)

Sr. No	Batch	Roll no	Names of Teachers	
			Biochemistry	Physiology
1.	Batch – A	01-70	Dr. Faiza Zafar	Dr. Aneela / Dr. Najam us Sehar
2.	Batch –B	71-140	Dr. Uzma Zafar	Dr. Shazia Nosheen
3.	Batch – C	141-210	Dr. Romaisa	Dr. Nayab Zonish / Dr. Muhammad Usman
4.	Batch –D	211-280	Dr. Rahat Afzal	Dr. Iqra Ayub
5.	Batch -E	281-onwards	Dr. Almas Ijaz	Dr. Kamil Tahir / Dr. Ismail

Venues for Large Group Interactive Session (LGIS) and SDL

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

Topic Details Of SDL Biochemistry

- Biochemical Effects of Na+, K+& Cl-
- Alkaptonuria
- Phenylketonuria
- Transport of Ammonia to Liver & in Circulation
- Carbamoyl Phosphate Synthetase I & II
- Sources of Ammonia
- Hyperammonemia

Renal Module Fourth Week
(03-04-2023 To 08-04-2023)

DATE/DAY	8:00 AM – 9:00 AM		9:00 AM – 10:00AM		10:00AM – 11:00 AM		11:00AM – 12:00PM		12:20pm – 1:00 pm		Home Assignments(2HRS)
03-04-2023 MONDAY	**MEDICINE**		**PHYSIOLOGY (LGIS)**		**SURGERY**		**FAMILY MEDICINE**		**ISLAMIYAT**	**ISLAMIYAT**	
	CRF & Rehabilitation of patient with CRF		Renal failure & hemodialysis	Acid base disorder	Renal calculi		Renal Failure		Amar Bil Marof Nahi Anil Munkr	Amar Bil Marof Nahi Anil Munkr	
	Dr. Saima Meer (Even)	Dr. Mudassar (Odd)	Dr. Sheena (Even)	Dr. Sidra Hamid (Odd)	Dr. Saadat Hashmi (Even)	Dr. Ahmed Sajjad (Odd)	Dr. Sidra Hamid (Even)	Dr Sadia (Odd)	Mufti Naem Sherai (Odd)	Mufti Naem Sherai (Even)	
04-04-2023 TUESDAY	**BIOCHEMISTRY**		**PHYSIOLOGY (LGIS)**		**MEDICINE**		**PHARMACOLOGY**		**DISSECTION/SGD**		SDL Physiology Exam Preparation
	Potassium Metabolism	Acid Base Imbalance II	Acid base disorder	Renal failure & hemodialysis Diuretics	Management of Acid base disorders		Introduction to diuretics		Dissection / Spotting		
	Dr. Kashif (Even)	Dr Aneela (Odd)	Dr. Sidra Hamid (Even)	Dr. Sheena (Odd)	Dr. Saima Meer (Even)	Dr. Mudassar (Odd)	Dr. Uzma (Even)	Dr. Haseeba (Odd)			
05-04-2023 WEDNESDAY	SDL										
06-04-2023 THURDAY	SDL										
07-04-2023 FRIDAY	Anatomy /Physiology Viva Voce										
08-04-2023 SATURDAY	Anatomy /Physiology Viva Voce										

Renal Module Fifth Week
(10-04-2023 To 15-04-2023)

DATE / DAY	8:00 AM – 9:00 AM	2:00 PM – 03:00 PM
10-04-2023 MONDAY	Anatomy Theory Paper & Gross OSPE	
11-04-2023 TUESDAY	Physiology Theory Paper & Video Assisted Quiz	
12-04-2023 WEDNESDAY	Biochemistry Theory Paper & Allieds	
13-04-2023 FRIDAY	Integrated OSPE	

SECTION-VI

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

Sr. #	Discipline	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Viva voce	Integrated OSPE	Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3			
1.	Anatomy	25	15	5	5	5	25	1	2	2	50	15(Integrated) + 30(Gross)	145
2.	Physiology	30	18	9	3	4	20	1	1.5	1.5	50	18	118
3.	Biochemistry	12	6	5	1	1	15	-	0.5	0.5		10	37
Total Marks													300
Table of Specification for Clinical Subjects													
. 1.	Bioethics Professionalism	2											2
. 2.	Research, Artificial Intelligence & Innovation	5											5
3.	Pharmacology	2											2
4.	Pathology	3											3
5.	Medicine	2											2
6.	Surgery	3											3
7.	Obs & Gynaecology	2											2
8.	Family Medicine	1											1
Total													20

Table of Specification for Integrated OSPE

Anatomy					
Sr. #	**Topics**	**Knowledge**	**Skill**	**Attitude**	**Marks**
Block 1 – GIT & Renal					
1	Deveplopment of Gastrointestinal Tract	30%	50%	20%	3
2	Development of Renal System				3
3	Microscopic Anatomy of Gastrointestinal tract				3
5	Microscopic Anatomy of Renal System				3
6	Practical Copy				3
Physiology					
1	Examination of Semse of Taste	30%	50%	20%	3
2	Examination of Sense of Smell				3
3	Examination of Superficial Reflexes				3
4	Examination of Deep Reflexes				3
5	Examination of Specific gravity of Urine				3
6	Practical Note Book / Sketch Copy				3
Biochemistry					
1	Bile	100%			2
2	Introduction to Instruments				
3	Quamtitaive Estimation of Serum Alkaline Phosphotase (ALP) by Spectrophotometer	100%			2
4	Quantitative Estimation of Serum Alanine Transminase (ALT) by Spectrophotometer				
5	Urine Analysis		90%	10%	2
6	Urine Report				
7	Quantitative Estimation of Serum Urea	100%			2
8	Qurantitative Estimation of Serum Creatinine				
9	Practical Notebook		80%	20%	2

Table Of Specification for Gross Anatomy OSPE

Sr. #	Topics	Knowledge	Skill	Attitude	Marks
Block 2- Pelvis and Brain					
1	Bones of pelvis	30%	50%	20%	3
2	Structures of Male pelvis				3
3	Structures of Female pelvis				3
4	External genitalia				3
5	Radiology of Pelvis				3
6	Meningies				3
7	Brain Stem and cerebellum				3
8	Diencephalon and telencephalon				3
9	Cranial fossae				3
10	Radiology of Skull (cranial fossae)				3

Annexure-I

(Sample MCQ, SEQ Papers & OSPE)

RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT
2nd Year MBBS Module Exam (Renal)

1. A 12-year-old boy was presented to Emergency with severe pain in his right loin. Ultrasound examination revealed a stone lying 6 inches from the pelvi-ureteric junction. The most probable site of ureteric constriction is
    a. Pelvic brim
    b. Oblique passage through wall of bladder
    c. Pelvi-ureteric junction
    d. Lateral angle of trigone
    e. Crossing of root of mesentery
3. A 70-year-old post-menopausal woman presented to OPD with complaints of burning micturition. After investigation she was diagnosed as a case of cystitis as females do not possess
    a. Internal urethral sphincter
    b. External urethral sphincter
    c. No adipose tissue
    d. Ligamentous structures
    e. Skeletal muscle
5. The right kidney situated at the level of costo-vertebral angle is separated from the liver by
    a. Diaphragm
    b. Hepato-renal recess
    c. Supra-renal gland
    d. Gall bladder
    e. Stomach

2. Which of the following factors is taken into consideration while placing transplanted kidney in pelvis
    a. Lack of inferior support in lumbar region
    b. Non-availability of major blood vessels in pelvis
    c. To decrease the size of ureter
    d. Less traction to blood vessels
    e. More space in pelvis

4. The least dilatable part of male urethra is
    a. Prostatic
    b. Membranous
    c. Penile
    d. Bulbous
    e. Glans

RAWALPINDI MEDICAL UNIVERSITY
RENAL MODULE EXAM 2ND YEAR MBBS
ANATOMY SEQS

Note: Attempt all questions. All questions carry equal marks. Draw diagram where necessary

1. A male newborn was delivered vaginally at 38 weeks. Pregnancy was uneventful, and no fetal anomalies were detected at prenatal ultrasound controls. The neonate presented at birth with exposed, everted bladder that was clearly visible immediately below umbilical stump, a completely dorsally opened urethra. The scrotum was normally developed, but caudally displaced
   a. What is the most probable diagnosis? (1)
   b. Give embryological basis of this congenital anomaly (4)

2. a. Draw and label histological structure of urinary bladder in relaxed and distended state. (3)

   b. Briefly describe microscopic features of Filtration Apparatus of Kidney (2)

RAWALPINDI MEDICAL UNIVERSITY
DEPARTMENT OF PHYSIOLOGY
SECOND YEAR MBBS EXAMINATION MCQS
(RENAL MODULE)

1. The enzyme secreted by kidneys for regulation of blood pressure is:
    a. Angiotensinogen
    b. Angiotensin I
    c. Renin
    d. Angiotensin II
    e. Angiotensin converting enzyme
2. ^{125}I-albumin is used for the measurement of:
    a. Total body water
    b. Plasma volume
    c. Extracellular fluid
    d. Blood volume
    e. Intracellular fluid
3. Peritubular capillary fluid reabsorption is increased by:
    a. Increased blood pressure
    b. Decreased filtration fraction
    c. Increased efferent arteriolar resistance
    d. Decreased angiotensin II
    e. Increased renal blood flow
4. Value of Glomerular Filtration Rate is:
    a. 1100 ml/min
    b. 125 ml/min
    c. 180 ml/min
    e. 125 L/day
    d. 22 percent of cardiac output
5. A 40-year-old obese woman presented to medical specialist with complaints of edema. She was on a weight losing diet since last 3 months. Her detailed plasma investigations revealed hypoalbuminemia. The major cause of her edema was:
    a. Increased plasma colloid pressure
    b. Increased capillary hydrostatic pressure
    c. Decreased plasma colloid pressure
    d. Decreased interstitial fluid hydrostatic pressure
    e. Increased interstitial fluid hydrostatic pressure

RAWALPINDI MEDICAL UNIVERSITY DEPARTMENT OF BIOCHEMISTRY
2ND YEAR MBBS
RENAL MODULE

1. Deficiency of which one of the following enzymes is responsible for most toxic hyper ammonemia:
   a. Arginino succinase
   b. Arginase
   c. Alanine Transaminase
   d. Glutaminase
   e. Carbamoyl phosphate synthetase

2. Following is true about Potassium:
   a Is extra cellular cation
   b. Is not required for nerve transmission
   c. Is mainly excreted through sweat
   d. Level increase in renal failure
   e. Level is not regulated by aldosterone

3. Phenylalanine:
   a. Is the simplest amino acid
   b. Is non-essential amino acid
   c. Is normally acted upon by phenylalanine transaminase
   d. Is glycogenic as well as ketogenic
   e. By kyneurine pathway is converted into glucose and acetate

4. Following is the cause of Respiratory acidosis:
   a. Respiratory center depression
   b. Fever
   c. High altitudes
   d. Salicylate poisoning
   e. Excess mechanical ventilation

SEQ

Q. a. Explain steps of urea cycle with enzymes. 03

b. Discuss causes of metabolic acidosis. 02

RAWALPINDI MEDICAL UNIVERSITY
DEPARTMENT OF BIOMEDICAL ETHICS
2ND YEAR MBBS
RENAL MODULE

1----- Includes rules of conduct that may be used to regulate our activities concerning the biological world.

a. Bio-piracy
b. Biosafety
c. Bioethics
d. Bio-patents
e. Bio-logistic

2. The right of patients having self-decision is called.

a. Justice
b. Autonomy
c. Beneficence
d. Veracity
e. Fidelity

3. Following is not code of ethics.

a. Integrity
b. Objectivity
c. Confidentiality
d. Behaviour
e. Autonomy

4-------- in the context of medical ethics, if it's fair and balanced

a. Justice
b. Autonomy
c. Beneficence
d. Veracity
e. Fidelity

5------- Principle requiring that physicians provide, positive benefits

a. Justice
b. Autonomy
c. Beneficence
d. Veracity
e. Fidelity

OSPE BLOCK - I
DEPARTMENT OF ANATOMY

Station No. 1 Time Allowed: 1 Min 30secs

Histology sketch copy will be assessed for

a. Complete index (1)
b. Complete and signed diagrams (1)
c. 2 ID points mentioned with each diagram (1)

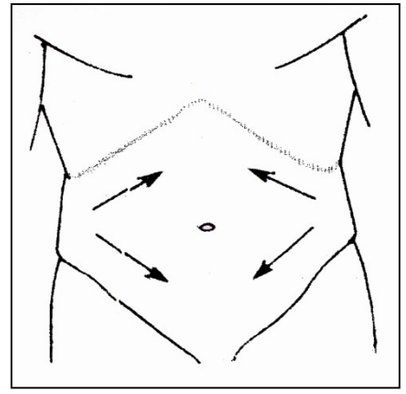
Station No. 2 Time Allowed: 1 Min 30secs

a. Identify slide A (1)
b. Identify slide B (1)
c. Give one histological feature to distinguish between colon and rectum (1)

OSPE BLOCK - I
DEPARTMENT OF PHYSIOLOGY

Unobserved Station

Time Allowed: 2 minutes



**Task: **

Carefully read and answer the following questions:

1. Name the reflex being performed in the given figure. **1**
2. Give two causes of absence of the given reflex **1**
3. Name the instrument used for performing this reflex? **1**

OSPE BLOCK - I
DEPARTMENT OF BIOCHEMISTRY

Station No. 1 Time Allowed: 2 Mins

Observed station

Perform Benedict's Test on given urine sample. 03

Station No. 2 Time Allowed: 2 Mins

Observed station

Perform Rothera's test on urine sample. 03