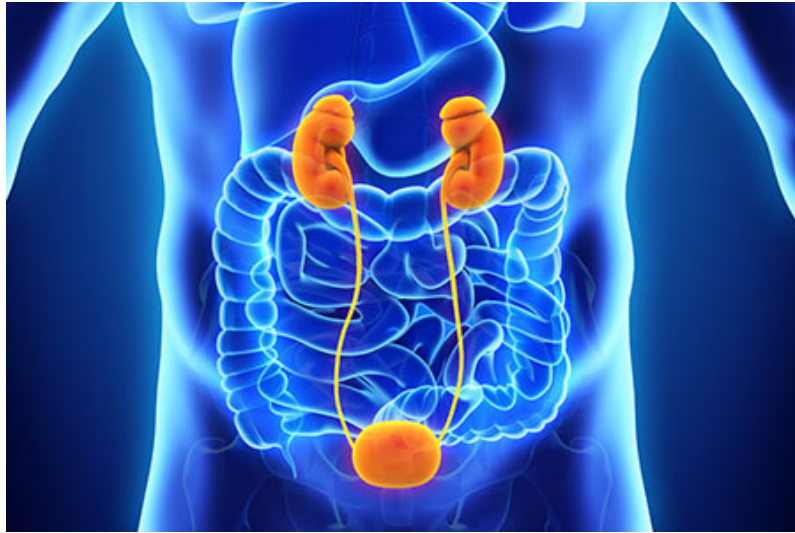




RIHS MEDICAL & DENTAL COLLEGE INTEGRATED CURRICULUM



RENAL MODULE

20102

Session 2022-23

SECOND YEAR MBBS

STUDY GUIDE

PLANNED BY: PROF. SABIHA M HAQ

RIHS Medical & Dental College, 2023 yearly grid

Second year MBBS Batch 2022-23

Block IV 12 weeks		Block V 13 weeks including Eidul Fitr Holidays			Holidays & Eidul Adha		Block VI 12 weeks		Resit & University Assessments		
9 th Jan. to 19 th Feb	20 th Feb. to 26 th March	27 th March to 2 nd April	3 rd April to 14 th May Eidul Fitr 21-25 April	15 th May to 22 nd June	23 rd June to 27 th June	28 th June to 30 th July Eidul Adha 28 June-2 nd July	31 st July to 17 th September	18 th September to 15 th October	16 th October to 22 nd October	23 rd October to 19 th November	December 2023
GIT & Nutrition Module 20101	Renal Module 20102	Block I Revision & Assess- ment	Endocrine & Maxillo facial Module 20203	Repro- duction Module 20204	Block II Revision & Assessment	Summer break	Neuro- sciences Module 20305	Special senses Module 20306	Block III Revision & Assessment	Resits and Pre- Assessment leave	Written & Practical Assessments
06 weeks	05 weeks	01week	05+1 weeks	06 weeks	01 week	04 weeks	07 weeks	04 weeks	01 week	04 weeks	03 weeks
<p>*Each Module consists of integrated teaching of normal structure and function of the human body and their clinical context. In order to help the students, acquire knowledge, skills and professional behavior, special focus is placed on involving multiple teaching and learning strategies and Assessment modalities.</p> <p>**Islamic studies is taught as one LGIS per week throughout all Modules</p> <p>***Communication skills, Medical Ethics, Professionalism & Behavioral Sciences are taught in the relevant modules as parallel subjects</p> <p>****There is continuous Formative & Summative Assessment throughout the Modules by relevant disciplines, in addition to end Block Assessment</p>											

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RIHS MEDICAL & DENTAL COLLEGE

Module 20102: RENAL MODULE

Session 2022-23

Placement in curriculum: Module code: 20102 (Year 2, block- 01, module 02) Prerequisite: 1st YEAR MODULES, GIT MODULE

Teaching faculty & Curriculum committee members

	Disciplines	Name of Faculty
1.	Principal & HOD Surgery	Prof. Dr. Shakaib Anwar
2.	Anatomy	Prof. Dr. Sabiha M. Haq
3.	Physiology	Prof. Dr. Jan Alam
4.	Biochemistry	Prof. Dr. Rehan Khwaja
5.	Pathology	Prof. Dr. Bushra
6.	Pharmacology	Prof. Dr. Azam Zia
7.	Community Medicine	Prof. Dr. Mirza Inamul Haq
8.	Forensic Medicine	Dr. Sabika Husain
9.	Behavioral Sciences	Ms. Nargis Munir
10.	Medical & Allied	Prof. Dr. Nadia Shams
11.	Surgery & Allied	Prof. Dr. Aslam Shah
Module duration		05 Weeks
Module planner		Prof. Dr. Sabiha M Haq

Module co-planner	Prof. Dr. Mirza Inamul Haq
Module Coordinator	
Integrated Curriculum	<p>The Integrated Curriculum is becoming an increasingly popular concept internationally in the field of Medicine.</p> <p>The goal of integration is to break down barriers between the basic and clinical sciences, currently in practice as a result of traditional curricular models.</p> <p>Integration should promote retention of knowledge and acquisition of skills through repetitive and progressive development of concepts and their applications.</p> <p>There are three areas in need of improvement and clarification for successful integration:</p> <ol style="list-style-type: none"> 1. Ensuring synchronous presentation of teaching material 2. Avoiding the tendency to diminish the importance of the basic sciences, and 3. Using unified definitions <p>(MEDICAL TEACHER)</p> <p>The model adapted in this institution is an Integrated, modular, system based, spiral curriculum.</p> <p>Arrangement of spirals: Two years + one year + two years</p>
Students as a curriculum Coordinator and class representative	<p>Student involvement in an integrated curriculum is the key to the process of making him a self-directed, competent and ethical learner who can adjust and compete with the latest trends in medical education in today's and tomorrow's world. In order to achieve this:</p> <ol style="list-style-type: none"> 1. Students will help the Module coordinators in accomplishing all tasks assigned to him/her. 2. They will be a part of curriculum planning and implementing team. 3. They will inform/discuss the ongoing activities /problems in teaching and learning with module coordinators and curriculum chairperson.

<p>Module Rationale</p>	<p>The urinary system is also an important system of the body and it is also concerned with homeostasis and its survival 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 included in this module as it is concerned with production of semen.</p>
<p>Module Outcomes</p>	<p>By the end of the module, students will be able to:</p> <p>Knowledge:</p> <p>This module is expected to build students' basic knowledge about normal structure, organization, functions and development of urinary system.</p> <p>Skill:</p> <p>Demonstrate effective skill for performing and interpreting various laboratory tests like routine urine examination.</p> <p>Attitude:</p> <p>Demonstrate a professional attitude, team building spirit and good communication specially in small group discussions.</p>
<p>Teaching and Learning methodology</p>	<p>Large Group Interactive Sessions (LGIS): The goal of interactive lecture is to engage the students' attention, through ways to interact with the content, the instructor, and their classmates. Accordingly, interactive lectures include segments of knowledge transfer, combined with segments where students interact. One of the things that makes the lecture interactive is the ability of the instructor to select the content of the lecture segments based on the students' needs. This demands a prior search for the baseline knowledge of the students at the start of the lecture. If students have difficulty answering a question, or an activity fails to develop the concept in most student groups, it's time to find a new and better way to deal with the material. LGIS clearly gives a better concept of the content and keeps students' attention captured throughout, as compared to yester years'</p>

	<p>didactic lectures.</p> <p>Small Group Discussion (SGD): ‘The purpose and technique of small group teaching is to keep it learner-centered, with all students joining in free discussion on a particular topic. A typical ‘small group’ is around eight to 12 learners facilitated by a teacher. The steps of SGD are Forming, Storming, Norming & Performing. The teacher acts only as a facilitator. Students are allowed to use their books or other search material during the discussion. SGD is a good method to clear the concepts and develop communication and conflict solving skills in the students.</p> <p>Departmental lab. Teaching: This is a teaching & learning methodology where students learn handling of laboratory equipment, machines, their practical uses and safety rules.</p> <p>Skill lab. Teaching: This is performance based teaching & learning methodology where students learn to physically examine the patients and get hands on training on various clinical skills.</p> <p>Dissection and demonstration: Teaching of gross Anatomy is aided by cadaver dissection and demonstration on plastic models.</p> <p>Assignments and Presentations: Both of these methodologies are meant to make the students self-directed learners and good communicators by seeking knowledge from multiple sources and presenting it in front of facilitators and peers.</p>
<p>Assessment methodology</p>	<p>Multiple Choice Questions (MCQs): Structured Viva: Objective Structured Practical/Clinical Examination (OSPE /OSCE)</p>

No.	Core content	Discipline	Learning objective	Teaching, Learning strategy	Assessment methodology
1.	Gross Anatomy of posterior abdominal wall	Anatomy	<ul style="list-style-type: none"> Describe the muscles in the posterior abdominal wall along with their functions, nerve and blood supply Enumerate the organs in relation to posterior abdominal wall 	SGD	MCQ
2.	Gross anatomy of kidney and ureter	Anatomy	<ul style="list-style-type: none"> Explain the location and relations of kidney in posterior abdominal wall. Describe the structure of cortex and medulla of kidney Describe the gross anatomy and course of ureter on the model. Describe the course of renal artery correlates the anatomical structures involved in perinephric abscess 	SGD	MCQ
3.	Body fluid compartments	Physiology	<ul style="list-style-type: none"> Describe how fluid intake and output are balanced during steady-state conditions. Enlist the body fluid compartments. Describe the constituents of ICF and ECF. 	LGIS	MCQ
4.	Measurements and determination of body fluid volumes	Physiology	<ul style="list-style-type: none"> Describe how fluid volumes are measured in the different body fluid compartments Describe how to determine volumes of specific body fluid compartments Describe regulation of fluid exchange and osmotic equilibrium between ICF and ECF 	LGIS	MCQ
5.	Histology of renal system	Anatomy	<ul style="list-style-type: none"> Describe the Histological features of kidney, ureter and bladder Comment on the location of each part of nephron in the kidney 	3 LGIS	MCQ
6.	Histology of urinary system	Anatomy	<ul style="list-style-type: none"> Identify the histological features of <ul style="list-style-type: none"> kidney Ureter under microscope Write two points of identification Draw a labeled diagram of identified tissue on histology 	2 Skill Labs	VIVA/OSPE

			notebook		
7.	Edema	Physiology	<ul style="list-style-type: none"> Define edema. Describe the types of edema. Enlist the causes of edema. Explain how edema can be prevented. Enumerate the fluids in the potential spaces in the body. 	LGIS	MCQ
8.	Physiological anatomy and functions of the kidney	Physiology	<ul style="list-style-type: none"> Enumerate the multiple functions of the kidneys. Describe the physiological anatomy of the kidneys. 	LGIS	MCQ
9.	Micturition	Physiology	<ul style="list-style-type: none"> Define micturition. Describe the physiological anatomy of the bladder. Explain the micturition reflex. State the abnormalities of micturition. 	LGIS	MCQ
10.	Development of kidney, ureter and bladder	Anatomy	<ul style="list-style-type: none"> Describe the stages of development of kidneys <ul style="list-style-type: none"> Pronephros Mesonephros Metanephros Define congenital anomalies. <ul style="list-style-type: none"> Horseshoe shaped, Poly cystic kidneys Ectopic kidneys Agenesis of kidneys Malrotated Kidney 	2 LGIS	MCQ
11.	Urine formation basics	Physiology	<ul style="list-style-type: none"> Explain the formation of urine through filtration, reabsorption and secretion. State the formula for urinary excretion rate. 	LGIS	MCQ
12.	Glomerular filtration	Physiology	<ul style="list-style-type: none"> first step in urine formation. State the formula for filtration fraction. Calculate GFR. Enlist the determinants of the GFR. 	LGIS	MCQ
13.	Development of ureter, bladder and prostate	Anatomy	<ul style="list-style-type: none"> Describe the development of ureter and bladder Enlist the congenital anomalies. complete and partial duplications of the ureters Ectopic ureteral openings in the vagina, urethra, and vestibule 	LGIS	MCQ

			<p>complete and a partial double ureter</p> <ul style="list-style-type: none"> Describe the development of prostate 		
14.	KUB anomalies	Pediatrics	<ul style="list-style-type: none"> Classify the developmental anomalies of kidney, ureter and bladder Recognize each of these anomalies on given diagrams Comment on the clinical effects of these anomalies 	1 LGIS	MCQ
15.	Edema and congestion	Pathology	<ul style="list-style-type: none"> Define edema Enlist the causes of edema Describe briefly the pathophysiology of edema and congestion 	LGIS	MCQ
16.	Developmental anomalies	Surgery	<ul style="list-style-type: none"> Classify the anomalies of urinary tract Define each anomaly Comment on the clinical manifestations of urinary tract anomalies 	1LGIS	MCQ
17.	PBL LOIN TO GROIN PAIN				
18.	Renal blood flow and its physiological control	Physiology	<ul style="list-style-type: none"> Describe renal blood flow in relation to oxygen consumption. Enlist the determinants of renal blood flow. Explain the physiological control of glomerular filtration and renal blood flow. 	LGIS	MCQ
19.	Autoregulation of GFR and renal blood flow	Physiology	<ul style="list-style-type: none"> Explain the importance of GFR autoregulation. Describe tubule-glomerular feedback and autoregulation of GFR. Describe myogenic autoregulation of renal blood flow and GFR. 	LGIS	MCQ
20.	Phosphate metabolism	Biochemistry	<ul style="list-style-type: none"> Describe sources, distribution and functions of Phosphate. Describe the metabolism and regulation of Phosphate. 	SGD	MCQ
21.	Diabetes mellitus	Community Medicine	<ul style="list-style-type: none"> Types of Diabetes Mellitus Disease burden and Epidemiology Non- modifiable and modifiable Risk factors 	LGIS	MCQ

			<ul style="list-style-type: none"> Modes of interventions for prevention Diet and Diabetes Patient counseling in Diabetes 		
22.	Tubular reabsorption and secretion 1	Physiology	<ul style="list-style-type: none"> Describe how tubular reabsorption is quantitatively large and highly selective. Explain the active mechanism of tubular reabsorption. 	LGIS	MCQ
23.	Tubular reabsorption and secretion 2	Physiology	<ul style="list-style-type: none"> Describe reabsorption along the: <ul style="list-style-type: none"> Distal tubule. Late distal tubule. Collecting ducts. 	LGIS	MCQ
24.	Creatinine metabolism	Biochemistry	<ul style="list-style-type: none"> Describe the formation of Creatinine. Describe the importance of Creatinine in determining renal function. 	2 LGIS	MCQ
25.	Tubular reabsorption and secretion 3	Physiology	<ul style="list-style-type: none"> Describe reabsorption along the: <ul style="list-style-type: none"> Distal tubule. Late distal tubule. Collecting ducts. 	LGIS	MCQ
26.	Electrolytes	Biochemistry	<ul style="list-style-type: none"> Describe the sources, serum levels, functions and regulations of sodium Describe the biochemical effects of hypo/hyponatremia Describe the sources, serum levels, functions and regulations of K Describe the biochemical effects of hypo/hyperkalemia Describe the sources, serum levels, functions and regulations of chloride Describe the biochemical effects of hypo/hyperchloremia 	SGD	MCQ
27.	Regulation of tubular reabsorption	Physiology	<ul style="list-style-type: none"> Explain glomerulo-tubular balance. Describe the role of peritubular capillary and renal interstitial fluid physical forces. Describe pressure natriuresis and pressure diuresis. 	LGIS	MCQ
28.	Estimation of creatinine	Biochemistry	<ul style="list-style-type: none"> Describe principles of estimation of serum creatinine Perform the procedure 	Skill lab	VIVA/OSPE

			<ul style="list-style-type: none"> Describe clinical significance of serum creatinine levels 		
29.	Hormonal regulation of tubular reabsorption	Physiology	<ul style="list-style-type: none"> Enumerate the hormones that regulate tubular reabsorption. Describe the effects and site of action of the various hormones that regulate tubular reabsorption. 	LGIS	MCQ
30.	Use of clearance methods to quantify kidney function	Physiology	<ul style="list-style-type: none"> Explain the use of the following to quantify kidney function: <ul style="list-style-type: none"> Inulin. Creatinine. Para-amino-hippuric acid (PAH). Calculate filtration fraction and tubular reabsorption. 	LGIS	MCQ
31.	Urine analysis	Biochemistry	<ul style="list-style-type: none"> Perform normal physical examination of urine (pH and specific gravity) 	Skill Lab	VIVA/OSPE
32.	Kidneys excreting and conserving water for urine formation	Physiology	<ul style="list-style-type: none"> Describe how kidneys excrete excess water by forming dilute urine. Describe how kidneys conserve water by excreting concentrated urine. 	LGIS	MCQ
33.	Special characteristics of the loop of Henle	Physiology	<ul style="list-style-type: none"> Enlist the special characteristics of the loop of Henle that cause solutes to be trapped in the renal medulla. Explain the countercurrent exchange mechanism. 	LGIS	MCQ
34.	Metabolic acidosis and alkalosis	Biochemistry	<ul style="list-style-type: none"> Define metabolic acidosis and alkalosis Describe role of kidney in maintaining body pH List the causes of metabolic acidosis and alkalosis Describe the lab picture in metabolic acidosis and alkalosis 	2 LGIS	MCQ
35.	Disorders of urinary concentrating ability	Physiology	<ul style="list-style-type: none"> Recall the urine concentrating mechanism in different segments of the tubules. Describe free water and osmolar clearances. Enumerate the disorders of urinary concentrating ability. 	LGIS	MCQ
36.	Control of ECF osmolarity and	Physiology	<ul style="list-style-type: none"> Estimate plasma osmolarity from plasma sodium concentration. 	LGIS	MCQ

	ADH feedback mechanism		<ul style="list-style-type: none"> Explain the osmoreceptor ADH feedback mechanism. 		
37.	Estimation of urea	Biochemistry	<ul style="list-style-type: none"> Describe the principle of serum urea estimation. Perform the procedure Describe the clinical significance of serum urea level. 	Skill Lab	VIVA/OSPE
38.	Importance of thirst	Physiology	<ul style="list-style-type: none"> Describe the importance of thirst in controlling ECF osmolarity and sodium consumption. Describe the role of Angiotensin II, aldosterone and salt appetite mechanism in controlling ECF osmolarity and sodium consumption. 	LGIS	MCQ
39.	Regulation of potassium excretion	Physiology	<ul style="list-style-type: none"> Explain the regulation of extracellular fluid potassium concentration and potassium excretion. 	LGIS	MCQ
40.	Estimation of creatinine	Biochemistry	<ul style="list-style-type: none"> Describe the principle of serum creatinine estimation. Perform the procedure Describe the clinical significance of serum creatinine level. 	Skill Lab	VIVA/OSPE
41.	Regulation of calcium and magnesium excretion	Physiology	<ul style="list-style-type: none"> Explain the control of renal calcium excretion and extracellular calcium ion concentration. Explain the control of renal magnesium excretion and extracellular magnesium ion concentration. 	LGIS	MCQ
42.	Importance of pressure natriuresis and pressure diuresis	Physiology	<ul style="list-style-type: none"> Describe the integration of renal mechanisms for control of ECF. Define and explain: <ul style="list-style-type: none"> Pressure natriuresis. Pressure diuresis. Describe the distribution of ECF between the interstitial spaces and vascular system. 	1 LGIS	MCQ
43.	Renal calculi	Surgery	<ul style="list-style-type: none"> Classify renal stones Comment on the mechanism of formation of stones in KUB Comment on the effects of calculi in KUB 	1 LGIS	MCQ
44.	Gross anatomy of bladder and Prostate gland	Anatomy	<ul style="list-style-type: none"> Describe the clinically important relations of bladder Describe important features 		MCQ

			<ul style="list-style-type: none"> of mucous membrane of urinary bladder • Describe the nerve supply of bladder • Describe the nerves involved in Spinal Cord Injury causing <ul style="list-style-type: none"> ➤ Atonic bladder ➤ Automatic bladder ➤ Autonomous bladder • Describe lobes of prostate gland • Describe the relation of prostate gland • Describe blood supply and nerve supply of prostate • Describe the lobes involved in Benign Enlargement of the Prostate • Describe development of prostate gland 	1 SGD	
45.	Nervous and hormonal factors that increase the effectiveness of renal body fluid feedback control	Physiology	<ul style="list-style-type: none"> • Explain the role of the following in controlling renal excretion: <ul style="list-style-type: none"> ○ Sympathetic nervous system. ○ Angiotensin II. ○ Aldosterone. ○ ADH. • Atrial natriuretic peptide. 	LGIS	MCQ
46.	Conditions that cause large increases in extracellular fluid volume	Physiology	<ul style="list-style-type: none"> • Describe the integrated responses to changes in sodium intake. • Describe the conditions that cause large increases in blood volume and ECF volume. • Describe the conditions that cause large increases in ECF volume but with normal blood volume. 	LGIS	MCQ
47.	Diuretics and their mechanisms of action	Physiology	<ul style="list-style-type: none"> • Enumerate the various classes of diuretics with examples. • Describe the mechanism of action of each diuretic along with its site of action. 	LGIS	MCQ
48.	Histology of urinary Bladder and prostate	Anatomy	<ul style="list-style-type: none"> • Identify the histological features of prostate and urinary bladder under microscope • Write two points of identification • Draw a labeled diagram of identified tissue in histology note books 	Skill lab	VIVA/OSPE
49.	Urinary tract	Pathology	<ul style="list-style-type: none"> • Define urinary tract infection 	1LGIS	MCQ

	infections		<ul style="list-style-type: none"> Enumerate the organisms responsible for urinary tract infections Comment on the urine analysis in UTI 		
50.	Acute and chronic kidney injury	Physiology	<ul style="list-style-type: none"> Explain the causes and effects of: <ul style="list-style-type: none"> Acute kidney injury. Chronic kidney disease. 	LGIS	MCQ
51.	Renal failure effects, hypertension, tubular disorders and dialysis	Physiology	<ul style="list-style-type: none"> Describe the effects of renal failure on the body fluids (uremia). Explain hypertension in relation to kidney disease. Enlist various tubular disorders. Describe the treatment of renal failure with transplantation and dialysis. 	LGIS	MCQ
52.	Imaging and surface marking of urinary system	Anatomy	<ul style="list-style-type: none"> Identify normal appearance on radiographs, USG, CT SCAN and MRI SCAN <ul style="list-style-type: none"> kidney Ureter Urinary bladder Mark the kidney and ureter on the subject. 	Skill Lab	VIVA/OSPE
53.	Overview of acid base balance	Physiology	<ul style="list-style-type: none"> Describe briefly the various buffer systems of the body. Explain the characteristics of primary acid base disturbances. 	SGD	MCQ
54.	Urine relative mass density (specific gravity)	Physiology	<ul style="list-style-type: none"> Enlist the various methods used to test the relative mass density of urine. Use the urinometer technique to calculate the relative mass density of urine. 	Skill lab	VIVA/OSPE
55.	Renal pathology	Pathology	<ul style="list-style-type: none"> Name the common pathological disorders of kidney Identify the gross and microscopic pathology of common renal disorders 	2 LGIS	MCQ
56.	Organisms causing UTI	Microbiology	<ul style="list-style-type: none"> Enlist organisms involved in UTIs Understand bacterial attributes in UTI development Describe bacteriological confirmation 	LGIS	MCQ

57.	Introduction to drugs used in renal system	Pharmacology	<ul style="list-style-type: none"> • Classify drugs used in renal system • Enlist drugs used in UTIs • Enlist drug used as diuretics • Understand mechanism of action of drugs used in renal system • Describe adverse effects of drugs used in renal system 	LGIS	MCQ
58.	Imaging and surface marking of urinary system	Anatomy	<ul style="list-style-type: none"> • Identify normal appearance on radiographs, USG, CT SCAN and MRI SCAN <ul style="list-style-type: none"> ○ kidney ○ Ureter ○ Urinary bladder • Mark the kidney and ureter on the subject. 	Skill Lab	VIVA/OSPE
59.	Renal failure	Medicine	<ul style="list-style-type: none"> • Define renal failure • Enumerate the causes of renal failure • Give a list of the effects on the body caused by renal failure: <ul style="list-style-type: none"> • Acute • Chronic 	1LGIS	MCQ
60.	Overview of acid base balance	Physiology	<ul style="list-style-type: none"> • Describe briefly the various buffer systems of the body. • Explain the characteristics of primary acid base disturbances. 	LGIS	MCQ
61.	Urine relative mass density (specific gravity)	Physiology	<ul style="list-style-type: none"> • Enlist the various methods used to test the relative mass density of urine. • Use the urine-meter technique to calculate the relative mass density of urine. 	Skill lab	VIVA/OSPE
62.	Solid waste management	Community Medicine	<ul style="list-style-type: none"> • To know the various sources of solid waste • To understand the public health importance of solid waste management • To describe the hazards of improper solid waste management • To explain the methods of solid waste management 	LGIS	MCQ

Learning Resources: Anatomy

Text Books

1. Regional Anatomy by Snell
2. Embryology by Langman's
3. Snell's Neuro Anatomy
4. Histology by Janquira
5. General Anatomy by Laique Hussain

Reference Books:

6. Clinical Anatomy by Keith L. Moore
7. Histology by Laique Hussain
8. Histology by Difiore
9. Student Gray's
10. Embryology by Keith L. Moore

Physiology

10. Text Book of Medical Physiology by Guyton & Hall
11. Physiology by Lippincott

Biochemistry

12. Lippincott Biochemistry.
13. Harper's Biochemistry
14. Biochemistry by Chatterjee

Pathology

14. Pathologic Basis of Disease by Robbins and Cotran.

Pharmacology

15. Lippincott pharmacology.
16. Katzung Pharmacology. Biochemistry

Behavioral Sciences

17. Introduction to Psychology by Edward. E Smith.
18. Behavioral Science by Lippincott Williams.

Community Medicine

19. Text book of Preventive and Social Medicine by JE. Park

Medicine

20. Davidson's Text book of Medicine

Surgery

21. Text book of Surgery by Bailey & Love
22. Text book of Radiology by Christson

**FOR ENQUIRIES CONTACT:
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