Study Guide

MBBS YEAR II

BLOCK IV

MODULE VIII& IX

(Digestive System & Metabolism I & Genitourinary System)

2025-2029

Contents

VISION

National University of Medical Sciences envisions a world with a better quality of life for all by enhancing our contribution to healthcare, education, innovation, and research.

MISSION

To produce competent medical professional graduates equipped with sound knowledge & research capabilities based on scientific principles, imbued with ethics and moral values primed to serve the community through the profession and pursue research & advanced training in any branch of medicine".

1. Program Learning outcomes (PLOs)

By the end of 5-year MBBS program the WMC student should be able to:

PLO 1. Independently manage common, non-critical clinical problems.

PLO 2. Assist in the management of critically ill patients & demonstrate competency in life saving procedures.

PLO 3. Exhibit the attributes of an ethical professional.

PLO 4. Conduct research which brings relevance to health care practices.

PLO 5. Act as an efficient community health promoter.

PLO 6. Exhibit scientific knowledge in all professional activities.

PLO 7. Demonstrate clear and efficient written &verbal communication skills.

PLO 8. Exhibit the habits of a lifelong learner.

2. Block Development Committee

Year Coordinator	Dr. Sumera Gul	
Block In-charge	Dr. Rabbiah Manzoor	
Members/ Resource persons		
Anatomy	Dr. Kaukab Anjum	kanjumq@gmail.com
Physiology	Dr. Hina Umair	hina.umair003@gmail.com
Biochemistry	Dr. Rabbiah Manzoor	rabbiahmanzoor@gmail.com
Medicine	Dr. Ayesha Rani	aysharani48@gmail.com
Surgery	Dr. Samreen	samreen.siddique@gmail.com
Radiology	Dr. Madiha	
Behavioral Sciences/ Generics	Mr. Hassan	ha55an.qau5@gmail.com
Research Methodology	Dr. Khola	khankhola0@gmail.com
Quran	Miss Samina Bashir	
Pakistan studies		
Study guide developed by	**Department of Medical Education, Wah Medical College Under the supervision of Prof. Dr. Musarat Ramzan**	
Resource person for Study Guide	**Dr. Memoona Mansoor**	

3. Introduction to the block:

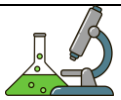
Dear students
Welcome to the "block IV (containing 2 modules: Digestive System & Metabolism I Module II -Genito urinary System)" of the second year of MBBS, In this block, we will introduce you to fundamental concepts of medical sciences, on which you will build your learning in the coming years.
The study guide in your hand is organized around themes represented by clinical cases or vignettes, the way patients present to the clinics or emergency rooms. The learning objectives are mentioned to guide you to the relevant knowledge and skills. You should refer to these clinical cases during Small group discussions (SGDs) and Case-based learning (CBL) sessions. The module is based on themes shown in the structured summary in the next section. This block is designed to build a comprehensive understanding of the structure and function of the gastrointestinal and genitourinary systems, along with the fundamental principles of metabolism. You will explore the anatomical organization, physiological mechanisms, biochemical pathways, and pathological correlations that underpin normal body function and disease processes. Emphasis will be placed on integrating basic sciences with clinical relevance to strengthen your diagnostic reasoning and application skills.
To make you a well-rounded graduate, different subjects from humanities and various generic competencies(communication, leadership & professionalism), Quranic studies and Pakistan studies are part of the curriculum at Wah Medical College apart from Medical disciplines.
Some of the learning strategies you will come across may be new for you like Large Group Interactive Sessions (LGIS), Flipped Classrooms, Small Group Discussions (SGDs), and the most interesting Case-based learning (CBL). CBL and SGD are scored for your active participation and critical thinking and the score is counted toward internal assessment. You will learn the clinical skills in "Skill Lab" and will do laboratory work in Laboratory sessions (aka practical)
You will have formative and summative assessments. Formative assessment will be in the form of tests, quizzes, and scoring of CBL and SGDs, while summative assessment will be done at the end of the Block, comprising both MCQs (multiple-choice) and SAQs (short answer questions). The performance exam will be taken at the end of Block I in the form of OSPE (Objective Structured Performance Exam). The table of specifications for this module is given at the end of this study guide.
You must have heard the famous adage, "Strong footings make strong buildings." The strong footing of your medical knowledge will be possible with the faculty and students' combined efforts, but the students' continuous internal motivation is its mainstay.
Please feel free to contact me for questions and comments.
Let's get started!

4. Structured summary/overview of themes

Block Code	Y2BIV- MVIII
Prerequisite	Passing the first professional MBBS examination.
Duration	05 weeks
Rationale	This module of the block aims to form the basis of knowledge and skills related to the Anatomy, Physiology and Biochemical aspect of the gastrointestinal system. This module of 5 weeks duration, focuses on histo-morphological and embryological structure as well as physiological and biochemical functioning of the digestive system. It is part of the second year integrated curriculum at WMC.
Anatomy	The gross anatomical, developmental & light microscopic features of GIT and Hepatobiliary system.
Physiology	• Gastrointestinal Physiology ➢ action potential in GIT, autonomic and enteric nervous systems, esophageal motility, Law of Gut ➢ functions of the stomach, hormonal and neuronal processes of gastric motility & emptying, vomiting reflex ➢ Small intestine, motility (segmentation and peristalsis) ➢ large intestine functions, propulsive and mixing movements, gastrocolic and duodenocolic reflexes ➢ metabolic and non-metabolic functions of liver, functions of Gall bladder ➢ regulation of exocrine secretions of the pancreas ➢ feeding, hunger, appetite and energy expenditure
Biochemistry	• Relate the biochemical aspects of GIT with clinical aspect • Nutrition • Protein Chemistry • effects of Insulin and Glucagon on CHO metabolism.
Clinical Relevance: (Medicine & Surgery)	• **esophagus:** dysphagia, achalasia, GERD, esophagitis, Barrett's esophagus, esophageal varices

	• **Stomach:** gastritis with pernicious anemia, pyloric stenosis, gastric ulcers, gastritis, Helicobacter pylori infection, achlorhydria, peptic ulcer and gastric cancer • **Small intestine:** celiac disease, SIBO, Sprue, vitelline duct abnormalities, gut rotation defects, gut atresia & stenosis • **Anterior Abdominal Wall**: omphalocele, gastroschisis • **Nutrition:** nutritional requirements in Pregnancy, cirrhosis, Marasmus and Kwashiorkor • **Large Intestine**: Crohn's disease, IBS, pain in lower abdomen, appendicitis, hemorrhoids/ anal fissure and intestinal obstruction, Recto anal atresia, anal fistulas, imperforate anus, and congenital megacolon, presentations of diarrhea and constipation • **Liver & Biliary Tree:** fatty liver, cirrhosis, portal hypertension, cholelithiasis and cholecystitis, cholelithiasis, different types of jaundice, interpretation of LFTs • **Spleen:** splenic rupture, splenomegaly • **Pancreas:** CA head of Pancreas, malabsorption syndrome, acute and chronic pancreatitis and Zollinger-Ellison syndrome, pancreatitis, Annular pancreas and accessory pancreatic tissue • Hyperglycemia, hypoglycemia and their regulating factors

5. Icon index

Case-based learning (CBL)	
Small group discussion (SGD)	
Learning objectives	
Large Group Interactive Session (LGIS)	
Demonstration	
Laboratory Session (Practical)	
Skill Lab sessions	
Clinical case/vignette	
Critical Questions/Guiding Questions	
Interesting facts	
Useful links	
Important	
Self-assessment	

Week 01

Theme 1:Hypersalivation

A 32-year-old man presents with pain and swelling in front of his right ear for the past 4 days. The pain increases while eating, especially when consuming sour foods. He also complains of excessive salivation and mild fever. On examination patient had diffuse, tender swelling over the right preauricular region while skin is warm and erythematous. Opening of Stensen's duct shows purulent discharge on massage.

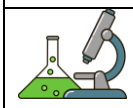
Guiding questions:

Q1: Why does this patient have Hypersalivation?

Q4: How will you manage this patient?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy:** **Anterior Abdominal Wall** **Knowledge:** ● Identify nine regions of abdominal cavity to locate the topographic arrangement of underlying abdominal organ. ● Explain the clinical importance of membranous layer of superficial fascia with anatomical reasoning. ● Describe the attachments, & nerve supply and actions of muscles of anterolateral abdominal wall. ● Describe the formation of rectus sheath at different levels of abdomen and enlist its contents. ● Describe the blood supply, nerve supply & lymphatic drainage of anterolateral abdominal wall ● Describe various types of abdominal hernias **Clinical relevance** Justify an inguinoscrotal swelling on the basis of anatomical knowledge of anterior abdominal wall **Gross anatomy of Peritoneum** **Knowledge**	● Foundation knowledge of gastrointestinal anatomy—including the anterior abdominal wall, rectus sheath, neurovascular supply, and peritoneal organization—enables accurate localization of abdominal pathology, clinical diagnosis, prediction of disease spread, and safe surgical or radiological practice.

	● Describe Peritoneum and its modifications ● Enumerate intraperitoneal, extra-peritoneal & secondarily retroperitoneal organs. ● Define following with one example each: Mesentry, Omentum, Ligaments, Folds, Recesses, Pouches, Gutters ● Explain peritoneal infection, adhesions & anatomical basis of spread of pathological fluid in various peritoneal compartments along with their surgical approach **Skills**: ● Demonstrate the vertical and horizontal disposition of peritoneum on the model of abdomen and pelvis. ● Demonstrate the attachment of greater & lesser omentum in the given model. ● Demonstrate the differences in arrangement of peritoneum in males and females in the given model of pelvis	● Mastery of these concepts at this stage builds spatial orientation, strengthens clinical reasoning, and prepares students for surgical, medical, and radiological applications in later training.

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	• Physiology **<u>Foundation of GIT System</u>** • Discuss the physiological anatomy of gastrointestinal tract • Identify the role of interstitial cells of Cajal in the electrical activity of G.I smooth muscle • Differentiate between slow wave potentials and spike potentials in GIT. • Explain the role of other factors like stretch & paracrine hormones in the generation of action potential in GI smooth muscle • Describe the organization of enteric nervous system and elaborate its role in control of G.I functions • Differentiate between myenteric and sub mucosal plexuses • Analyze the interplay of autonomic and enteric nervous system in GI functions **<u>Oral cavity & Esophagus</u>** Explain the physiological processes involved in mastication and salivation.	• Must Know
	**<u>How to read a research article.</u>** • **Identify the structure of a scientific research article** (Abstract, Introduction, Methods, Results, Discussion, Conclusion).	• Must Know

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● Discuss the biochemical composition of saliva and its role in digestion, mechanism of regulation, daily secretion, stimulants and depressants. • Relate the hypo and hyper secretions of salivary glands with its physiological and biochemical basis Describe the composition, mechanism of synthesis, daily secretion, stimulants, depressants, factors affecting HCl secretion, and biochemical regulation of gastric secretions • Describe the role of the stomach in the initial stages of digestion of carbohydrates, proteins, and lipids, as well as in the production of intrinsic factor essential for vitamin B_{12} absorption • Describe the composition, functions, daily secretion, stimulants and depressants of Bile juice and related disorders: Cholelithiasis & Cholecystitis) • Describe the composition, functions, daily secretion, stimulants and depressants of Pancreatic Juice ●	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Clinical Relevance** ● Identify common stomach disorders such as gastritis, Helicobacter pylori infection, achlorhydria, peptic ulcer and gastric cancer.	●

Week 02

Theme 2: Achalasia
Case Scenario of Difficulty in Swallowing

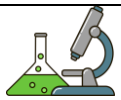
A 35-year-old man presents with progressive difficulty in swallowing for the past 1 year. Initially, he had difficulty swallowing solid food, but now he has difficulty swallowing liquids as well. He reports regurgitation of undigested food, especially at night, and occasional coughing while lying down. He complains of mild weight loss and retrosternal discomfort. There is no history of acid reflux, corrosive ingestion, or neurological illness. A barium swallow study shows a dilated esophagus with tapering at the lower end ("bird-beak" appearance).

Guiding questions:

Q1: Why is there coughing when lying down?

Q2: What could be the reason for regurgitation of food?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** **Gross Anatomy:** ● Describe abdominal esophagus regarding its relations, blood supply, nerve supply and lymphatic drainage **Histology**: ● Describe the general plan of histological structure of GIT ● Describe the histological structure of Esophagus **Embryology**: ● List derivatives of foregut ● Describe the development of esophagus ● Explain the embryological basis of the trachea-esophageal fistula, esophageal atresia and hiatal hernia **Clinical Relevance:** ● Discuss disorders of swallowing (dysphagia, achalasia), esophageal disorders (e.g., GERD, esophagitis, Barrett's esophagus) and their clinical presentations	● These topics integrate anatomy, histology, embryology, and clinical correlations of the esophagus and foregut, helping students understand normal structure, disease mechanisms, and symptom interpretation. Knowledge of vascular, neural, lymphatic, and developmental aspects supports diagnosis of malignancy spread, reflux disorders, and congenital

	• Describe the anatomical basis of bleeding esophageal varices **Skills**: • Focus and identify the slide of esophagus under light microscope. • Illustrate the histological features of esophagus in manual.	anomalies, strengthening clinicopathological reasoning.
	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	Physiology **<u>Oral cavity & Esophagus</u>** Describe the mechanisms of peristalsis, esophageal motility, and the regulation of food passage from the oral cavity to the stomach, Law of Gut	• Must Know
	**<u>General Physical Examination (GPE)</u>** • Enlist the components of GPE. • Describe the aspects of general appearance. • Identify the five major vital signs. • Demonstrate GPE.	

The "Bird-Beak" Sign

On 

barium swallow, achalasia shows:

- Dilated esophagus
- Tapered distal end
- Classic **"bird-beak" appearance**

This is a favorite radiology exam image

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● Explain the processes of digestion and nutrient absorption in the small intestine ● Revisit the concepts of digestion and absorption of Carbohydrates ● Discuss the digestion and absorption of Proteins ● Explain the role of digestive enzymes and hormones (gastrin, secretin and CCK) in the breakdown and absorption of proteins ● Discuss the digestion and absorption Lipids & Nucleic acids in human body	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Clinical Relevance	●

Week 03

Peptic Ulcer

Case Scenario of Heartburn

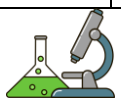
A 45-year-old man presents to the outpatient department with complaints of burning epigastric pain for the past 3 months. The pain occurs 2–3 hours after meals and is relieved temporarily by eating food or taking antacids. He also reports occasional nausea but no vomiting. He is a chronic smoker and takes NSAIDs frequently for knee pain.On examination the patient had mild epigastric tenderness with no guarding or rigidity.

Guiding questions:

Q1: Why does the pain relieve after eating?
Q2: What could be the role of smoking and NSAIDs in this condition?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** **Gross Anatomy:** **Knowledge:** ● Describe the gross anatomy, blood supply, nerve supply and lymphatic drainage of the stomach ● Demonstrate the position & gross features of stomach on the given model and identify the omenta attached. ● Enumerate the structures lying in stomach bed ● Explain gastric and peptic ulcers with reference to their common locations and blood vessels endangered as a consequence of perforation. ● Identify common stomach disorders such as gastritis, Helicobacter pylori infection, achlorhydria, peptic ulcer and gastric cancer **Embryology**: ● Describe the development of stomach with special reference to its rotations and relocation of both vagi	● These topics integrate stomach anatomy, histology, embryology, and vascular supply, enabling understanding of its structure, function, relations, and clinical relevance. Knowledge of glandular organization, development, and mesenteric derivatives supports interpretation of investigations, recognition of gastric disorders, and application of clinicopathological reasoning.

	● Enlist derivatives of ventral and dorsal mesentery of foregut ● Explain the development of lesser sac. ● Explain the embryological basis of pyloric stenosis. **Histology**: ● Explain the histological structure of stomach ● Differentiate between a gastric gland and pit ● Enumerate cells forming gastric glands ● Describe the structure and function of cells forming gastric glands ● Compare the histological structure of cardia, fundus and pylorus of stomach **Clinical Relevance:** ● Correlate a case of gastritis with pernicious anemia with histological and biochemical basis ● Explain the embryological basis of pyloric stenosis ● Describe the mechanism of development of gastric ulcers and erosions. ● Explain gastric and peptic ulcers with reference to their common locations and blood vessels endangered as a consequence of perforation. ● Identify common stomach disorders such as gastritis, Helicobacter pylori infection, achlorhydria, peptic ulcer and gastric cancer. **Skill**: • Focus and identify the slide of different regions of stomach under light microscope. ● Illustrate the histological features of stomach in manual. ●	

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	• Physiology **Stomach** • Explain the hormonal and neuronal processes of gastric motility and gastric emptying • Describe mechanism (stimuli, pathways, center) and clinical significance of vomiting reflex Describe the functions of stomach	• Must Know
	**Examination of Abdomen** • Examine the abdomen on SP following the correct sequence of inspection, palpation, percussion and auscultation.	

Quick Mnemonic: "HAPPP" For Peptic Ulcer

- **H**. pylori
- **A**cid
- **P**ain after meals (gastric)
- **P**erforation
- **P**PI treatment

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● Give the caloric requirements of the human body ● Define Balanced Diet and elaborate various DRIs (EAR, DA, AI, UL), AMDR ● Describe Protein turnover, amino acid Pool, Nitrogen Balance, BMR, BMI, Respiratory quotient, Protein Quality and Glycemic Index. ● Describe the nutritional requirement and biomedical importance of CHO, lipid & protein in human body ● Discuss Malnutrition with Protein Energy Malnutrition in particular (Primary and Secondary PEM) ● Discuss nutritional requirements in various stages of life and Nutritional tools ● Elaborate obesity with respect to body weight assessment, body weight regulation, molecular influences, metabolic and health effects	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Clinical Relevance** ● Explain the nutritional requirements in Pregnancy, cirrhosis, hypertension, end stage renal disease ● Compare and contrast between Marasmus and Kwashiorkor	●

Week 04

Diarrhea

Case of Diarrhea:

A 7-year-old child is brought to the pediatric outpatient department with complaints of chronic diarrhea, abdominal distension, and poor weight gain for the past 1 year. The mother reports that the child passes bulky, foul-smelling stools that are difficult to flush. The child appears irritable and fatigued. Diet history reveals regular intake of wheat-based foods. On examination the patient was underweight for age, Pallor present, Protuberant abdomen and muscle wasting.

Guiding questions:

Q1: What could be the reason for abdominal distention?

Q2: What does wheat-based food have to do with the patients' condition?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** **Gross Anatomy:** **Knowledge:** ● Describe the gross anatomical features of small intestine **Histology**: ● Describe the histological structure of three parts of small intestine ● Differentiate between three parts of small intestine on histological basis ● Elaborate the adaptive structural modifications of small intestine for performing its functions. ● Describe the histological, and gross anatomical features of large intestine and appendix **Embryology**: ● Describe physiological herniation with emphasis upon rationale behind its occurrence and reduction ● Correlate the rotation of midgut loop with definitive positioning of mid gut derivatives in abdomen ● Describe the development of Duodenum ● Describe the partitioning of cloaca and its consequences	These topics unify anatomical, histological, embryological, and functional concepts of the intestines, providing a clear understanding of digestion, absorption, motility, and disease processes. Comprehension of developmental events, structural variations, and physiological roles supports recognition of congenital anomalies, interpretation of

	● Describe the development of derivatives of anorectal canal **<u>Clinical Relevance:</u>** ● Identify common disorders of the small intestine, such as celiac disease, and small intestinal bacterial overgrowth (SIBO), Sprue ● Correlate development of midgut with abnormalities of mesenteries, vitelline duct abnormalities, gut rotation defects, gut atresia & stenosis ● Differentiate between omphalocele, umbilical hernia and gastroschisis on the basis of embryology ● Identify common disorders of large intestine, such as Crohn's disease, IBS, pain lower abdomen, appendicitis. ● Describe the embryological basis of hindgut abnormalities (Recto anal atresia, anal fistulas, imperforate anus and congenital mega colon) **Skill**: • Focus and identify the slide of different parts of small and large intestine under light microscope. • Focus and identify the slide of Appendix under light microscope. ● Illustrate the histological features of small and large intestine and appendix in manual. ●	clinical findings, and effective application of anatomical knowledge in practice. ●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	• Physiology **Small intestine** • Describe the functions of small intestine Describe the motility patterns of the small intestine, including segmentation and peristalsis **Large Intestine** • Categorize different functions of large intestine • Compare the propulsive and mixing movements taking place in colon • Identify the role of gastrocolic and duodenocolic reflexes in regulation of mass movements • Describe the nervous control of large intestine Explain the process and reflexes of defecation.	• Must know
	**Calculate body mass index (BMI) & Waist Circumference** • Define BMI. • Explain clinical significance of BMI. • Calculate personal BMI. • Categorize BMI according to WHO classification. • Identify underweight, normal weight, overweight and obese persons based on BMI	

🧠 High-Yield & Interesting Facts

1️⃣ It's One of the Leading Causes of Child Mortality

Globally, diarrhea remains a major cause of death in children under 5 — primarily due to dehydration, not infection itself.

2️⃣ Cholera Can Cause Massive Fluid Loss

In severe cholera:

- Up to **1 liter per hour** fluid loss
- "Rice-water stool" appearance
- Rapid shock if untreated

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● Apply the knowledge of protein metabolism for understanding relevant metabolic disorders ● Outline the mechanism of Nitrogen excretion from the human body ● Define and exemplify various mechanisms of transamination, deamination, decarboxylation, deamidation, mechanism of Amino acid oxidation ● Describe the transport of amino group, role of Pyridoxal phosphate, Glutamate, Glutamine, Alanine ● Draw Urea cycle and discuss its regulation in detail ● Comprehend Carbon skeleton metabolism and its importance ● Describe the metabolic fates, specialized products, functions, degradation pathways, and associated genetic disorders of **ALL** individual amino acids (excluding branched-chain amino acids and creatine)	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Clinical Relevance:** ● Describe Genetic defects of Urea cycle ● Explain in detail the concept of Ammonia intoxication ●	●

Week 05

Case of Cirrhosis of Liver:

A 54-year-old man with a history of chronic alcohol consumption presents with massive hematemesis. He reports progressive abdominal distension over the past six months along with bilateral pedal edema. On examination, icterus is present. Dilated, tortuous veins radiating from the umbilicus are observed. Abdominal examination reveals splenomegaly and ascites. The patient is also confused and demonstrates flapping tremors. Laboratory investigations show low serum albumin and elevated bilirubin levels. Ultrasound of the abdomen demonstrates a coarse liver echotexture with splenomegaly and ascites

Guiding questions:

1. What is the most likely diagnosis?
2. Explain the anatomical reasoning of above-mentioned signs and symptoms.
3. Describe the gross anatomical features of a liver with its blood supply, lymphatic drainage, and innervation
4. Explain the anatomical basis of portal hypertension.
5. Describe the formation and course of portal vein.

Diabetes

Case of Non healing Ulcer:

A 58-year-old man with a 12-year history of poorly controlled diabetes presents to the surgical OPD with a non-healing ulcer on the sole of his right foot for 3 weeks. He reports numbness in his feet and does not recall any injury. On examination, there is a painless ulcer under the head of the 1st metatarsal with surrounding callus. Foot pulses are weak. There is reduced sensation to light touch and vibration.

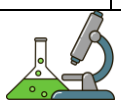
Guiding questions:

1. Why was the ulcer painless?
2. What is the reason for decreased foot pulses and reduced sensations?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** **Gross Anatomy:** ● Describe gross anatomical features of liver and gallbladder including its	These topics integrate the anatomy, histology,

	structure, blood & nerve supply, lymphatic drainage, bile ducts, and relationship with the liver. ● Describe the peritoneal covering, ligaments and supports of liver ● Describe the location, parts, relations and ducts of pancreas ● Describe the blood supply, nerve supply and lymphatic drainage of pancreas. ● Justify the referred pain of acute pancreatitis with anatomical reasoning ● Describe location, relations, supports, blood supply, nerve supply & lymphatic drainage of spleen ● Identify spleen, impressions, ligaments, nerves, muscles, blood vessels, related to spleen. **Histology**: ● Describe the histology of Pancreas. ● Describe the histology of Liver. ● Describe the histology of Gall Bladder **Embryology**: ● Describe the development of Liver ● Describe the development of Gall bladder ● Explain the development of pancreas ● Explain the development of Spleen. ● ● **Clinical Relevance:** ● Identify common disorders of the liver and gallbladder, such as fatty liver, cirrhosis, portal hypertension, cholelithiasis and cholecystitis. ● Describe the embryological basis of accessary hepatic duct, duplication of Gall bladder, extrahepatic biliary atresia, intrahepatic biliary duct atresia and hypoplasia ● Justify the referred pain of acute pancreatitis with anatomical reasoning ● Identify common disorders of the pancreas, such as CA head of Pancreas, malabsorption syndrome, acute and	development, and neurovascular supply of the pancreas, liver, gallbladder, and spleen, forming the basis for understanding hepatobiliary and pancreatic function and disease. This knowledge supports interpretation of imaging, recognition of major clinical disorders, and application of anatomical reasoning in diagnosis and management across clinical disciplines. ●

	chronic pancreatitis and Zollinger-Ellisonsyndrome ● Explain the embryological basis of Annular pancreas and accessory pancreatic tissue ● Justify the possibility of splenic rupture in case of accidental injury ● Describe the common causes of splenomegaly **Skill**: ● Focus and identify the slides of Liver, Gall bladder and pancreas under light microscope. ● Illustrate the histological features of Liver, Gall bladder and pancreas in manual.	

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Physiology **(Liver & Biliary Tree)** ● Enlist metabolic and non-metabolic functions of liver ● Elaborate the non-metabolic functions of liver and correlate with different functions of GIT ● Explain the main functions of Gall bladder Identify the factors affecting emptying of the gall bladder **Pancreas:** • Explain the regulation of exocrine secretions of the pancreas • Describe the regulation of feeding, hunger, appetite and energy expenditure.	● Must know
	**Recording Body Temperature** ● Define temperature. ● Explain the response of the body when it is exposed to severe cold or heat. ● Label different parts of the clinical thermometer. ● Describe the procedure of recording body temperature.	

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	Biochemistry ● Elaborate the role of liver in the metabolism of: ○ Carbohydrates ○ Proteins ○ Lipids ○ Integration of metabolism, and its evaluation through liver function tests (LFTs) ● Compare the role of different body organs in integration of metabolism in health and disease ● Describe Feed fast cycle and explain its adaptation by different tissues to changing energy conditions of the body ●	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Clinical Relevance	●

Reference books

Teaching faculty contact:

Email address : physiologywmc@gmail.com

Learning Resources: Human Physiology 9th Edition by Sherwood

- Ganong's Review of Medical Physiology, 25th Edition
- BRS Physiology ,5th edition by Linda S.Costanzo
- A text book of practical physiology,8th edition by CL Ghai
- Guyton and hall review ,3rd edition

2.Online resources

- Google class room
- Understandingphysiology.wordpress.com

3.Library resources:

- Guyton and Hall Textbook of Medical Physiology (15th Edition)
- Human Physiology 9th Edition by Sherwood
- Ganong's Review of Medical Physiology, 25th Edition
- BRS Physiology ,5th edition by Linda S.Costanzo 50
- A text book of practical physiology,8th edition by CL Ghai
- Guyton and hall review ,3rd edition

Assessment formats

Assessment Strategies (Formative)	Assessment Strategies (Summative)
CBL Case Discussion	MCQs
CBL Quiz	SEQs
Class Discussion	OSPE
Flipped Class Format	VIVA
Reflective writing	

NOTES:

Important concepts:

Exam style question:

Teacher's expectation:

MODULE IX

Genitourinary System

2025-2029

1. Structured Summary of Y2BIV- MIX

Block Code	Y2BIV- MIX
Prerequisite	
Duration	
Rationale	
Anatomy	➢
Physiology	Genitourinary System (Renal Physiology) • Regulation of Body Fluid Compartments: Extracellular and Intracellular Fluids: Edema • The Urinary System: Functional Anatomy and Urine Formation by the Kidneys • Glomerular Filtration, Renal Blood Flow, and their control • Renal Tubular Reabsorption and Secretion • Urine Concentration and dilution: Regulation of extracellular Fluid Osmolarity and Sodium concentration • Renal regulation of Potassium, Calcium, Phosphate and Magnesium; Integration of renal mechanism for control of Blood volume and extracellular Fluid Volume • Acid Base Regulation • Diuretics and Kidney Diseases
Biochemistry	•
Clinical Relevance: (Medicine & Surgery)	•

Week 06

Edema

Case of progressive swelling of both legs:

A 52-year-old man presents to the outpatient department with progressive swelling of both legs for the past 3 weeks. He also complains of facial puffiness, especially in the morning, and frothy urine. There is no history of liver disease or heart disease.

On examination:

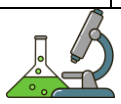
Bilateral pitting pedal edema
Periorbital edema
BP: 150/95 mmHg
No raised JVP
No hepatomegaly
The patient had protein (+++) on urine R/E.

Guiding questions:

1. What could be the reason for facial puffiness?
2. Why was his urine frothy?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** **Gross Anatomy:** **Knowledge:** ● Describe the gross features, coverings, surface marking, blood supply, nerve supply, & lymphatic drainage of kidney ● Draw and label the relations of anterior and posterior surfaces of both kidneys ● Describe location, gross features, relations, blood supply, nerve supply, & lymphatic drainage of suprarenal glands. ● Describe the gross features, relations, & course of both ureters on the model / specimen while emphasizing upon its constrictions. ● Describe the blood and nerve supply of ureter. ● Explain the anatomical basis of ureteric stone impaction **Embryology**: ● Describe the development of kidney with reference to the sources of	● Understanding the gross anatomy, coverings, blood and nerve supply, and relations of the kidney, ureter, suprarenal glands, allows students to correlate structure with clinical procedures, imaging, and pathology. ● Studying the development, histology, and microscopic features of

	different parts of uriniferous tubule, rotation and ascent of kidneys **Histology**: ● Describe the histological features of kidney and uriniferous tubules ● Identify the histological features of kidney on a slide under microscope ● Explain the histological features of juxta glomerular apparatus ● Describe the histological structure of glomerular filtration barrier ● Differentiate between microscopic features of PCT and DCT **Clinical Relevance** ● Correlate following congenital anomalies with normal development: Wilm's tumour, Horseshoe kidney, Ectopic/Accessory kidney, Poly cystic kidneys, Malrotated kidney, Agenesis of kidney ● Explain surgical significance of renal fascia and separate compartment for suprarenal gland ● Describe the possible routes of spread of perinephric abscess ● Explain the anatomical basis of typical renal colic **Skill**: ● Focus and identify the slide of kidney under light microscope. ● Illustrate the histological features of kidney and ureter in manual. ●	nephrons, juxtaglomerular apparatus helps explain congenital anomalies, renal function, filtration, and common clinical conditions like renal colic, ureteric stones, and bladder dysfunction. ● Linking anatomy with embryology and clinical relevance equips students with a foundation for interpreting disease patterns, surgical approaches, and patient management in both exams and future clinical practice. ●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	• Physiology **FLUID & ELECTROLYTE BALANCE** • Explain total body water content and its distribution in different body compartments • Compare and contrast the ionic composition of ECF and ICF • Explain the regulation of water balance • Explain the indicator dilution principle for the measurement of fluid volumes in the different body fluid compartments Explain the role of Starling forces in causing net filtration and absorption of fluid between vascular and interstitial compartments.	• Must Know
	**<u>Bimanual renal palpation:</u>** **Describe the anatomical location of the kidneys** in relation to vertebral levels and surrounding structures. **Explain the principle of bimanual renal palpation** (ballottement technique)	

🧠 High-Yield & Interesting Facts

It's About Starling Forces

Edema develops when there is:

- ↑ Hydrostatic pressure
- ↓ Oncotic (colloid osmotic) pressure
- ↑ Capillary permeability
- Lymphatic obstruction

Remember: Fluid shifts depend on pressure gradients.

🔎 Quick Mnemonic: "HOP-L"

- **H**ydrostatic pressure ↑
- **O**ncotic pressure ↓
- **P**ermeability ↑
- **L**ymphatic obstruction

	By the end of this week, the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● List and describe the different types of particles and solutions in relation to the significance of the selectively permeable membrane ● Explain the distribution and biochemical functions of water ● Compare and contrast the intracellular and extracellular edema ● Explain the effects of adding isotonic, hypotonic and hypertonic solution (to ECF) on ICF and ECF compartments	●
	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Clinical Relevance	●

NOTES:

Important concepts:

Exam style question:

Teacher's expectation:

Week 07

Renal Calculi

Case Scenario of Flank Pain:

A 34-year-old man presents to the emergency department with sudden onset of severe right-sided flank pain radiating to the groin for the past 4 hours. The pain is colicky in nature and associated with nausea and one episode of vomiting. He appears restless and is unable to lie still. There is no history of trauma. He reports passing reddish urine once in the morning.

- On examination:
- Pulse: 96/min
- BP: 130/80 mmHg
- Right costovertebral angle tenderness present
- No fever
- Urine analysis showed microscopic hematuria.

Guiding questions:

1. Why is pain colicky and radiating to the groin?
2. Why is there microscopic hematuria?
3. How will you manage this patient?

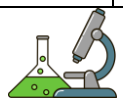
	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** **Gross Anatomy**: • Describe the gross features, peritoneal covering, blood supply nerve supply and lymphatic drainage of urinary bladder • Identify the anatomical routes of possible spread of bladder cancer • Identify the site commonly selected for suprapubic aspiration of urine • Describe the gross anatomy of sigmoid colon and rectum • List the structures palpated in males and females while performing rectal examination • Describe the boundaries of true and false pelvis. • Explain the bony landmarks & sites of	• Understanding the gross anatomy, coverings, blood and nerve supply, and relations of urinary bladder allows students to correlate structure with clinical procedures, imaging, and pathology.

	muscular attachments on sacrum • Describe the type, articulations, ligaments & movements of joints of pelvis. • Enumerate the structures forming pelvic diaphragm. Describe the origin, insertion, nerve supply & actions of muscles of pelvic walls & floor • Explain the functional significance of pelvic floor in females **Embryology**: • Enumerate different parts and derivatives of urogenital sinus • Enlist the sources of ureter, urinary bladder and urethra • Describe the development of urinary bladder • Explain the anatomical relationship of ductus deferens with ureter with embryological reasoning **Histology**: • Describe the histological structure of Urinary bladder. **Clinical Relevance** • Correlate the autonomic nervous control of pelvic viscera with various clinical conditions. • Justify occurrence of low back pain in sacroiliac joint disease • Analyze the clinical presentation of a case of injury to pelvic floor with anatomical reasoning • Correlate various Urachal anomalies, exstrophy of bladder and exstrophy of cloaca with normal development • Identify common abnormalities of micturition such as atonic, automatic and neurogenic bladder. **Skill**: • Demonstrate the orientation of pelvic girdle on models.	● Studying the development, histology, and microscopic features of bladder helps explain congenital anomalies, renal function, filtration, and common clinical conditions like renal colic, ureteric stones, and bladder dysfunction. ● Linking anatomy with embryology and clinical relevance equips students with a foundation for interpreting disease patterns, surgical approaches, and patient management in both exams and future clinical practice.

	• Demonstrate the features of bony pelvis in the given model • Demonstrate boundaries of pelvic inlet and pelvic outlet on models. • Differentiate between the relations of urinary bladder in models of both genders. • Identify the histological features of Urinary bladder under microscope. ● Illustrate the histological structure of urinary bladder in manual.	

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Physiology **KIDNEY** • Describe in sequence the tubular segments through which ultrafiltrate flows • Describe the physiological anatomy of kidney (nephron, the glomerular tuft: the afferent and efferent arterioles, glomerular capillary network, mesangium, Bowman's capsule, and the juxtaglomerular apparatus including macula densa). • Distinguish between cortical and juxtamedullary nephrons. • Describe the functions and hormones of kidneys. Describe the composition of the glomerular filtrate • Discuss the determinants of the GFR • Explain the physiological control of glomerular filtration and renal blood flow • Describe the myogenic, humoral and tubuloglomerular feedback mechanisms that mediate the autoregulation of renal plasma flow and glomerular filtration rate. • Identify the use of clearance methods to quantify kidney function • Describe the estimation of GFR by inulin clearance, and plasma creatinine clearance • Discuss PAH clearance for estimation of renal plasma flow • Calculate filtration fraction, tubular reabsorption and secretion from renal clearance Describe reabsorption and secretion by the renal tubules • Describe the functions and importance of renal transporters and their predominant localization along the tubules with regard to nephron segment and apical versusbasolateral	● Must Know

	membranes.	

	**<u>Estimate urine specific gravity on a given sample</u>** ● Define specific gravity. ● Recall the normal range of urine specific gravity. ● Name the methods for measuring urine specific gravity. ● Determine relative mass density/ specific gravity by using a urinometer. ● Identify various physiological and pathological factors affecting urine relative mass density.

5 Most Important Facts About the Kidney

1 **Filters 180 L/day** – Yet only 1–2 L urine is excreted (99% reabsorbed).

2 **Has ~1 million nephrons** per kidney — and they do not regenerate.

3 **Acts as an endocrine organ** — Produces renin, erythropoietin, and activates vitamin D.

4 **Maintains acid–base balance** — Prevents metabolic acidosis.

5 **Regulates electrolytes & blood pressure** — Especially sodium and potassium (life-saving control)

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● Explain the importance of membrane permeability, osmosis, osmotic pressure, surface tension, and viscosity in relation to body fluids ● Discuss the biochemical regulation of plasma/ECF osmolarity ● Explain the importance of membrane permeability, osmosis, osmotic pressure, surface tension, and viscosity in relation to body fluids ● Discuss the biochemical regulation of plasma/ECF osmolarity	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Clinical Relevance	●

Week 08

A Case of Ca Prostate

A 72-year-old man presents with progressive difficulty in passing urine for one year. He complains of hesitancy, weak urinary stream, terminal dribbling. Over the last two months, he also noticed nocturia, increased urgency and unintentional weight loss. Recently he developed dull aching lower back pain and pelvis. Digital rectal examination reveals a hard, irregular prostate with loss of the median sulcus. MRI shows extracapsular extension of a prostatic mass, and imaging reveals multiple osteoblastic lesions in lumbar vertebrae.

Guiding questions:

1. Give the anatomical reasoning of above-mentioned signs and symptoms.
2. Describe the anatomy of lobes, blood supply and lymphatic drainage of prostate gland.
3. Describe the zonal anatomy of the prostate gland.
4. Differentiate Ca prostate from benign prostatic hypertrophy.
5. Discuss the pathways of metastasis of prostate cancer specially to vertebral column.

Electrolyte Imbalance

Clinical Scenario of Electrolyte Imbalance:

A 48-year-old man presents to the emergency department with muscle weakness and cramps for the past 2 days. He also reports palpitations and occasional constipation. He recently had a severe episode of diarrhea after eating street food.

On examination:
BP: 140/90 mmHg
Pulse: 100/min, irregular
Muscle strength: 3/5 in lower limbs
Deep tendon reflexes: diminished

Laboratory findings:

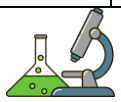
Serum potassium: 2.8 mEq/L
Serum sodium: 138 mEq/L
ECG: flattened T waves, U waves, ST depression

Guiding questions:

1. What is the cause of muscle weakness and cramps?
2. Why does the patient have palpitations?
3. What do flatten T waves and the appearance of a U wave mean?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** **Gross Anatomy:** **Knowledge:** • Describe the gross anatomy of male external genital organs • Discuss clinical importance of vasectomy • Explain the gross anatomy of prostate. • Apply the knowledge of histology to explain the clinical scenarios of Immotile cilia syndrome, • benign prostatic hypertrophy and carcinoma of • prostate • Identify the parts of prostate most likely to be involved in benign and malignant growths of prostate • Justify the metastasis of carcinoma of prostate to vertebral column & cranial cavity on basis of venous drainage • Illustrate sacral plexus showing its branches • List the branches of internal iliac artery • Enumerate different groups of lymph nodes of • pelvis. **Embryology:** • Explain the indifferent stage of gonad development, development and descent of testis. • Describe the embryological basis of cryptorchidism • Explain the development of ovaries • Enumerate the derivatives of mesonephric duct, paramesonephric duct and urogenital sinus in males and females.	• Understanding the boundaries, bony landmarks, articulations, ligaments, and muscles of the pelvis helps students relate skeletal anatomy to muscular attachments, joint stability, and functional movements • Studying the pelvic diaphragm, pelvic floor muscles, and their nerve supply is essential for comprehending support of pelvic organs, female reproductive physiology, and the mechanisms of continence. • Linking anatomy with clinical correlations such as sacroiliac joint pain, pelvic floor injuries, and autonomic control of

	Histology: • Describe the histological features of testes and correlate the blood-testes barrier with its functions. • Explain the light microscopic features of male genital ducts and accessory glands of the male reproductive system • Differentiate and illustrate the light microscopic structure of male reproductive system; Testis, Epididymis, Vas deferens, Seminal vesicle, Prostate.	pelvic viscera equips students to interpret symptoms, perform examinations, and plan interventions safely.

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Physiology **FLUID & ELECTROLYTE BALANCE** • Explain total body water content and its distribution in different body compartments • Compare and contrast the ionic composition of ECF and ICF • Explain the indicator dilution principle for the measurement of fluid volumes in the different body fluid compartments Explain the role of Starling forces in causing net filtration and absorption of fluid between vascular and interstitial compartments.	● Must know
	**<u>Interpret Arterial Blood Gases report</u>** ● Define acidosis and alkalosis. ● Identify acidosis and alkalosis and its types. • Comment on compensated and uncompensated acid base disturbances.	

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry:** ● Describe the sources, normal serum level and biochemical functions of sodium, potassium, calcium and magnesium ● Discuss causes and effects of imbalance of various electrolytes ● Identify and explain hazardous effects of sodium and potassium with clinical features. ● Describe the sources, normal serum level and biochemical functions of sodium, potassium, calcium and magnesium ● Discuss causes and effects of imbalance of various electrolytes	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Clinical Relevance	●

Week 09

Case of Uterovaginal Prolapse

A 60-year-old multiparous woman presents with a complaint of a mass protruding from the vagina, which increases on straining and standing. She reports a dragging sensation in the pelvis. On examination, the cervix is seen descending below the introitus. She also complains of difficulty in passing urine, polyuria, stress urinary incontinence when coughing and sneezing. Her obstetric history reveals five full term normal vaginal deliveries. On speculum examination, cervix is seen descending below the introitus on straining with associated anterior and posterior vaginal wall bulges.

Guiding questions:

a) Correlate the normal anatomy of uterus with the given sign and symptoms in this case.
b) Describe the normal anatomical position of the uterus in the pelvis.
c) Describe the anatomical supports of the uterus under the following headings:
d) Describe the pelvic diaphragm and mention its components.
e) Describe the attachments and role of the levator ani muscle in supporting pelvic organs.
f) State the importance of obstetric history in this case.

Diabetes Insipidus

Case Scenario of Polydipsia:

A 25-year-old man presents with excessive thirst and passing large volumes of urine for the past 2 months. He reports needing to urinate every 1–2 hours, including at night, and drinks 10–12 liters of water per day to stay hydrated. There is no history of use of diuretics.

On examination:
BP: 110/70 mmHg
Pulse: 90/min
Signs of mild dehydration: dry mucous membranes, slightly reduced skin turgor

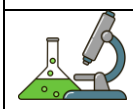
Laboratory findings:
Serum sodium: 148 mEq/L (mild hypernatremia)
Serum osmolality: 305 mOsm/kg (high)
Urine osmolality: 100 mOsm/kg (very low)

Guiding questions:

1. What is the reason for dehydration despite drinking a large amount of water?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** **Gross Anatomy:** • Explain the gross anatomy of, ovaries, uterus and fallopian tubes. • Correlate the anatomy of female genital tract with hysterosalpingography, ligation of uterine tubes, ectopic tubal pregnancy • Comprehend a case of uterine prolapse on the basis of gross anatomy of uterus and its supports • Define hysterectomy and explain the precautionary measures to be taken necessarily during this procedure • Identify the anatomical routes for spread of malignancies of uterus, cervix and ovary • Explain the role of lymphatics and lymph nodes in spread of malignancies of pelvis **Embryology**: • Describe the indifferent stage of genital ducts and development of genital ducts in the male and female. • Describe the indifferent stage of external genitalia and development of external genitalia in the male and female. • List common anomalies of the male genitalia. • Describe the embryological basis of hypospadias and epispadias. **Clinical Relevance:** • Apply the knowledge of embryology to explain the following congenital anomalies:	• Studying the gross anatomy, relations, and surface landmarks of pelvic organs, reproductive glands, and rectum equips students to perform clinical examinations, procedures like suprapubic aspiration, and understand gender-specific anatomy. • Learning the embryology and development of gonads, genital ducts, and external genitalia allows students to correlate congenital anomalies, sexual development disorders, and clinical conditions such as cryptorchidism, hypospadias,

	o Uterus didelphys o Uterus arcuatus o Uterus bicornis. o Vaginal atresia • Apply the knowledge of embryology to explain the basis and clinical presentation of following disorders of sexual development: o Ambiguous genitalia o Hermaphrodites o Congenital adrenal hyperplasia. o Gonadal dysgenesis **Histology**: • Describe the light microscopic features of following female reproductive organs; Ovaries and Fallopian tubes **Skill**: • Focus and identify slides of Ovaries and Fallopian tubes under light microscope • Differentiate and illustrate following components of female reproductive system; Ovaries and Fallopian tubes • Identify parts of developing genitourinary system on given models and diagrams showing different developmental phenomena. •	and uterine malformations.

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Physiology Physiology: • Explain the mechanism of urine formation (dilution and concentration) • Discuss the control of extracellular fluid osmolarity and sodium concentration by kidneys • Elaborate osmo-receptor-ADH feedback system • Identify role of thirst in controlling extracellular fluid osmolarity and sodium concentration • Enumerate requirements for excreting a concentrated urine— high ADH levels and hyperosmotic renal medulla • Discuss the countercurrent mechanism for generating a hyperosmotic renal medullary interstitium • Explain the role of distal tubule and collecting ducts in excreting a concentrated urine • Discuss the role of urea for generating hyperosmotic renal medullary interstitium and in the formation of concentrated urine • Describe the countercurrent exchange in the vasa recta in preservation of hyperosmolarity of the renal medulla • Revisit the regulation of blood pressure by kidneys Describe the regulation of sodium, potassium, calcium, phosphate and magnesium	● Must Know
	**<u>Urine Analysis:</u>** **Describe the physical, chemical, and microscopic components** of routine urine examination.	●

	List the normal characteristics of urine, including: • Color • Volume • Odor • Specific gravity • pH **Identify normal and abnormal urine constituents**, including: • Protein • Glucose • Ketones • Bilirubin • Blood • Nitrites ● Leukocytes	

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● Describe the sources, normal serum level and biochemical functions of sodium, potassium, calcium and magnesium ● Discuss causes and effects of imbalance of various electrolytes ● Discuss medical biochemistry of water and fluid homeostasis relating to electrolyte balance	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Clinical Relevance:** ● Discuss disorders of urine concentrating ability (diabetes insipidus: central and nephrogenic, SIADH) Quantify renal urine concentration and dilution: “Free Water” and osmolar clearances	●

Week 10

Case of Hemorrhoids

A 42-year-old male presents with a 4-month history of bright red bleeding per rectum during defecation. The bleeding is noticed on toilet paper and occasionally drips into the pan. He denies any pain during or after defecation. There is no history of weight loss or altered bowel habits. On proctoscopic examination, three congested vascular swellings are seen at the 3, 7, and 11 o'clock positions within the anal canal. These swellings are located above the dentate (pectinate) line

Guiding questions:

1. In which part of the anal canal are these swellings located?
2. Describe the anatomical extent and subdivisions of the anal canal.
3. What is the pectinate (dentate) line? Describe its anatomical features and importance.
4. Explain the anatomical basis for painless bleeding in this patient.
5. Describe the arterial supply of the anal canal above the pectinate line.
6. Describe the venous drainage of the anal canal above the pectinate line and explain its clinical relevance

Dehydration

Case Scenario of Dehydration:

A 30-year-old man is brought to the emergency department with sudden onset profuse watery diarrhea for the past 6 hours. He describes it as "rice-water stools"—pale, watery, and odorless. He also reports multiple episodes of vomiting and extreme thirst. History reveals that he recently returned from a village affected by flooding, where he drank untreated well water.

On examination:

BP: 80/50 mmHg
Pulse: 120/min, weak
Extremities cold and clammy
Sunken eyes, dry mucous membranes
No fever
Patient appears restless but conscious

Laboratory findings:

Serum electrolytes: Na^+ 130 mEq/L, K^+ 2.8 mEq/L (due to massive fluid loss)

Guiding questions:

1. Why is the skin cold and clammy?
2. What is the reason for restlessness?

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	• Anatomy **Perineum** • Describe the borders, relations & divisions of perineum • Explain the boundaries of superficial and deep perineal pouches and enumerate their contents in both genders • Illustrate the cutaneous nerves of the perineum. • Describe perineal body with its attachments • Describe the relations, internal features, blood supply, lymphatic drainage, & innervation of anal canal • Describe the boundaries, contents & recesses of ischiorectal fossa **Clinical Relevance** • Differentiate between clinical presentation of internal and external hemorrhoids on anatomical basis • Elucidate perianal hematoma, fissure, abscess and fistulas of anal canal with anatomical basis of their occurrence and presentation • Justify the possible routes of spread of ischiorectal abscess with anatomical reasoning **Skill**: • Focus and identify slides of uterus under light microscope • Illustrate the histological features of uterus in manual. • Identify borders, relations & divisions of perineum on models	• Studying the borders, divisions, pouches, perineal body, and cutaneous nerves of the perineum helps students understand pelvic support, continence, and gender-specific anatomical differences. • Learning the anatomy of the anal canal and ischiorectal fossa, including blood supply, lymphatics, and innervation, equips students to correlate structure with common clinical conditions like hemorrhoids, fissures, abscesses, and fistulas. • Integrating this knowledge with clinical reasoning allows prediction of disease spread, guides surgical interventions, and prepares students for safe management of perineal and anorectal disorders.

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Physiology ● Explain the regulation of water balance	● Must know

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● Relate the metabolic role of kidney in health and disease ● Interpret RFTs ● Identify and explain hazardous effects of sodium and potassium with clinical features. ● Describe the sources, normal serum level and biochemical functions of sodium, potassium, calcium and magnesium ● Discuss causes and effects of imbalance of various electrolytes ● Describe the principle and biochemical basis of Dialysis (artificial kidney, hemodialysis and peritoneal dialysis)	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Clinical Relevance	●

Week 11

Anion Gap

Case Scenario of a patient with fruity odor:

A 50-year-old man is brought to the emergency department with rapid breathing, fatigue, and confusion for the past 1 day. He has a history of type 1 diabetes mellitus and reports missing his insulin doses for 2 days. His wife notes that he has been vomiting frequently and complaining of abdominal pain.

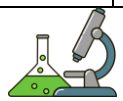
On examination:
BP: 90/60 mmHg
Pulse: 110/min
Respiratory rate: 28/min, deep, rapid breathing (Kussmaul respiration)
Fruity odor on breath
Laboratory findings:
Arterial blood gas (ABG): pH 7.20, HCO_3^- 12 mEq/L, $PaCO_2$ 25 mmHg
Serum potassium: 5.8 mEq/L
Blood glucose: 450 mg/dL
Serum ketones: positive

Guiding questions:

1. What could be the reason for vomiting and abdominal pain?
2. Why was the patient confused?
3. Why is there a fruity odour in his breath??

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Anatomy** ● Describe the gross features of vagina including relations, blood supply, nerve supply & supports ● Explain gross features of all parts of male & female urethra, its arterial supply, venous drainage & nerve supply ● Apply anatomical reasoning in justifying the route of extravasation of urine in case of injury to different parts of male urethra ● Enlist parts of external genitalia and describe their blood and nerve supply **Clinical relevance:** ● Identify the various organs, impressions, ligaments, nerves, muscles, blood	● Understanding the gross anatomy, relations, blood and nerve supply, and supports of the vagina, urethra, external genitalia, and prostate helps students relate structure to function, sexual and

	vessels related to renal system, pelvis and perineum on given models and specimens. ● Explain area of anesthesia, indications, & list steps of pudendal nerve block ● Provide the anatomical basis of presentation of Bartholin cyst ● Apply the anatomical knowledge in analyzing a case of vaginal prolapse (cystocele and rectocele, and vaginal fistula ● Define culdocentecis and describe its diagnostic and therapeutic importance ● Identify the parts of prostate most likely to be involved in benign and malignant growths of prostate ● Justify the metastasis of carcinoma of prostate to vertebral column & cranial cavity on basis of venous drainage ● Correlate the anatomy of female genital tract with hysterosalpingography, ligation of uterine tubes, ectopic tubal pregnancy Skill: ● Focus and identify slides of Vagina under light microscope ● Illustrate the histological features of Vagina in manual. ●	urinary physiology, and gender-specific differences. ● Studying clinical correlations, imaging, lymphatic pathways, and routes of tumor spread enables students to apply anatomical knowledge in diagnosis, surgical planning, and understanding disease progression in the pelvis.

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Physiology **<u>ACID BASE BALANCE</u>** ● Discuss the role of respiratory system in acid base balance ● Discuss the Renal Correction of acidosis— increased excretion of hydrogen ions and addition of bicarbonate ions to the extracellular fluid ● Discuss the renal correction of alkalosis— decreased tubular secretion of hydrogen ions and increased excretion of bicarbonate ions	● Must Know
	● Revision of practicals	

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	**Biochemistry** ● Describe Ionization of water & weak acids, bases, pH pK values, pH scale, Dissociation constant & titration curve of weak acids ● Describe application of Henderson - Hassel Balch equation ● Explain the mechanism of chemical and physiological buffering and homeostasis. ● Correlate the presentation of different acid base disorders with their etiology ● Interpret person's acid base status through ABGs analysis ● Describe anion gap and its clinical significance	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● Clinical Relevance	●

Week 12

Review & Reinforcement

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● **Anatomy** ● Surface marking ● Revision and revisits of all the content taught in the two modules of the Block Y2BIV on models and specimen.	●

	By the end of this week the 2nd -year MBBS students will be able to:	Importance
	● **Physiology** **<u>Ureter & Urinary Bladder</u>** Discuss the micturition reflex and facilitation or inhibition of micturition by the brain	● Must know

NOTES:

Important concepts:

Exam style question:

Teacher's expectation:

Reference books

Subject/discipline	Title and Author	Edition

Other resources that can be explored:

Research Methodology

Block Learning Outcomes:

By the end of Block IV the 2nd Year MBBS students will be able to**:**

- Apply the process of research and construction of data collection tool on various research questions.
- Validate a research design and data collection tool
- Identify Ethical issues in research and Research ethics

Sr no.	Topic	Educational Strategies'	Name of instructor	Importance
1.	Overview of research process	Flipped Classroom	Dr. Khola	Need to know
Class Learning Outcomes: • Elaborate on the steps of the research process				
2.	Data Collection Tool	Flipped Classroom	Dr. Khola	Need to know
Class Learning Outcomes: • Outline types of data collection tools and types of questions • Formulate data collection tool				
3.	Validity of research design and data collection tool	Flipped Classroom	Dr. Khola	Need to know
Class Learning Outcomes: • Explain the validity of research design and data collection tool				
4.	Ethical issues in research and Research ethics	Flipped Classroom	Dr. Khola	Need to know
Class Learning Outcomes: • Explain ethical issues in Research • Differentiate areas of scientific dishonesty in research • Summarize the rights of research participants				

Learning Resources:

1. **Text Books**
   - Park's Textbook of Preventive and Social Medicine
   - Public Health and Community Medicine (Shah, Ilyas, Ansari, Irfan's)
2. **Reference Books/ Library resources**

- Basic Statistics for the Health Sciences (Jan W. Kuzma)
- Basic Methods of Medical Research (Indrayan)
- New qualitative Methodologies in Health and Social Care Research (Frances Rapport)
- Handouts/SDL prepared by faculty

3. **Online resources**
    - Medical ethics

Teaching faculty & contact address:

Name	Email address
Dr. Khola Waheed Khan	khankhola@wahmedicalcollege.edu.pk

Assessment formats:

Assessment Strategies (Formative)	Assessment Strategies (Summative)
MCQs, SEQs, Group Activity and Assignments	MCQs and SEQs

Behavioral Sciences

Sr no.	Topic	Educational Strategies'	Name of instructor	Importance
1.	Significance of behavioral Sciences in clinical practice	LGIS	Ms. Sara Rubab	Nice to Know
Learning Outcome • Explain the significance of Behavioral Sciences in medical practice				
2.	Differentiate: 1. Holistic Vs. Traditional Allopathic Medicine	LGIS	Ms. Sara Rubab	Must know
Learning Outcome • Demonstrate understanding of holistic and bio medicine model in clinical practice along with understanding of culture and medical practice				
3.	Culture & Medical Practice	LGIS	Ms. Sara Rubab	Need to know
Learning Outcome • Demonstrate understanding of holistic and bio medicine model in clinical practice along with understanding of culture and medical practice				
4.	Bio-Psycho- Social Model of health and disease	LGIS/SGD	Ms. Sara Rubab	Need to Know
5.	The Integrated Model of Health Care: Correlation of Body, Brain, Mind, Spirit and Behavioral Sciences	LGIS/SGD	Mr. Hassan Ali	Nice to Know
6.	The Public Health Care Model	LGIS/SGD	Mr. Hassan Ali	Need to Know
Learning Outcome • Identify the role of psychology, sociology and anthropology as well as biological determinants of health and disease in clinical practice, along with public health approach of primary and secondary prevention of disease/disorder and promotion of health				
7.	Analyze human behavior through the Principles of Psychology 1. Sensation and sense organs	LGIS Interactive Video Vignettes/	Ms. Zunaira Naveed	Nice to Know
8.	Attention and concentration	Interactive Video Vignettes/ LGIS	Ms. Zunaira Naveed	Nice to Know
9.	Perception	LGIS	Ms. Zunaira Naveed	Nice to Know
10.	Memory & thinking	Interactive	Ms. Zunaira Naveed	Nice to Know

		Video Vignettes/ LGIS		
Learning Outcome • Analyses human behavior and other factors affecting health and disease by Enhancing doctor's own learning and clinical skill				
11.	Intelligence	LGIS/videos	Ms. Zunaira Naveed	Nice to Know
12.	Personality Development	LGIS/Presentations/Interactive Video/	Ms. Zunaira Naveed	Need to Know
Learning Outcome • Assess types of human personality and phases of personality development along with intelligence				
13.	Describe Neurobiological and Psychological Basis of Behavior 1. Emotions 2.Motivation/need/drive	LGIS	Ms. Zunaira Naveed	Nice to Know
Learning Outcome • Analyze the complex interplay of Brain and Behavior				
14.	Medical Ethics	LGIS/SGD	Mr. Hassan Ali	Need to Know
15.	Medical Ethics in Medical Practice	Role play/ CBL	Dr. Hira Munir	Need to Know
16.	Medical Ethics in Medical Practice	Role play/ CBL	Dr. Hira Munir	Need to Know
Learning Outcome • Integrate the principles of medical ethics in professional life				
17.	Psychosocial aspects of alternative medicine in clinical practice	LGIS	Ms. Sara Rubab	Nice to Know
Learning Outcome • Familiarize doctors with alternative medicine and ethical concerns of its practices in medical setup				
18.	Mental Health Acts	LGIS	Mr. Saad-ul-Hassan	Need to Know
19.	Rights and responsibilities of Doctor and Patients	LGIS	Mr. Hassan Ali	Need to Know
Learning Outcome • Analyses critical situations/ challenges in clinical practice to solve clinical problems				

20.	Psychological Reactions in Doctor-Patient Relationship	LGIS	Ms. Zunaira Naveed	Need to Know
Learning Outcome • Critique the ethical boundaries of conduct in doctor patient relationship				
21.	Professionalism in Healthcare	LGIS	Dr. Hira Munir	Need to Know
Learning Outcome • Demonstrate professional excellence of a doctor to maintain healthy doctor-patient relationship				
Professionalism				
1.	Introduction to Medical Professionalism	LGIS	Dr. Hira Munir	Need to Know
Learning Outcome • Identify the significance of Medical professionalism in clinical practice				
2.	Attributes of Medical Professionalism	LGIS	Mr. Hassan Ali	Need to Know
Learning Outcome • Identify the key attributes of medical professionals				
3.	Physician Self-Regulation and Maintenance of Competence	LGIS	Mr. Hassan Ali	Nice to Know
Learning Outcome • Recognize the role of physician's self- regulation and maintenance of competence				
Leadership				
1	Introduction to Leadership and Management	LGIS	Mr. Saad-Ul-Hassan`	Need to Know
2	Principles of Leadership	LGIS	Mr. Saad-Ul-Hassan`	Need to Know
Learning Outcome • Analyze and differentiate between leadership and management • Explore the principles of leadership and examine various approaches to leadership				
3	Leadership Styles	LGIS	Mr. Saad-Ul-Hassan	Nice to Know
4	Medical Leadership	LGIS	Dr. Hira Munir	Need to Know
Learning Outcome • Evaluate the significance of different leaderships styles in a medical setting				
5	Leadership and theories	LGIS	Brig. Atif Bashir/Mr. Saad-ul-Hassan	Nice to Know

Learning Outcome • Explore the principles of leadership and examine various approaches to leadership • Examine and describe various attributes and leadership styles within their respective cultural contexts				
6	Effective Leadership: Abilities and skills	LGIS	Brig. Atif Bashir/Mr. Saad Ul Hassan	Need to Know
Learning Outcome • Explore the principles of leadership and examine various approaches to leadership				
Communication Skills				
1	Introduction to Communication Skills	LGIS	Ms. Sara Rubab	Nice to Know
Learning Outcome • Define communication and describe its components				
2	Non-Verbal Communication	Role Plays/Videos	Mr. Hassan Ali	Need to Know
Learning Outcome • Describe types of non-verbal communication • Identify culturally sensitive aspects of non-verbal communication in medical practice • Demonstrate appropriate non-verbal behaviors during history taking				
3	Communication in Medical practice	Role Play/Videos	Dr. Hira Munir	Need to Know
Learning Outcome • Explain the role of communication in medical practice • Apply structured communication models				
4	The art of Listening	Role Play/Videos	Ms. Zunaira Naveed	Need to Know
Learning Outcome • Differentiate between hearing and active listening • Demonstrate reflective listening skills				
5	Communication Styles	LGIS	Mr. Hassan Ali	Nice to Know
Learning Outcome • Identify different communication styles				
6	Verbal Communication in Medicine	Role Play/Videos	Dr. Hira Munir	Need to Know
Learning Outcome				

• Explain principles of clear and simple medical language. • Identify the risks of medical jargon in patient communication • Demonstrate how to translate medical terminology into patient-friendly language				
7	Building Rapport	Role Play/Videos	Mr. Hassan Ali	Need to Know
Learning Outcome • Define rapport in the context of doctor patient relationship • Describe techniques for establishing rapport at the beginning of consultation • Identify behaviors that damage rapport • Demonstrate empathy, respect, and professionalism during simulated patient interaction				
8	The Questioning	Role Play/Videos	Ms. Zunaira Naveed	Need to Know
Learning Outcome • Define rapport in the context of doctor–patient relationship. • Describe techniques for establishing rapport at the beginning of consultation. • Identify behaviors that damage rapport. • Demonstrate empathy, respect, and professionalism during simulated patient interaction.				

Medicine

S.No.	Topic/Theme	Educational Strategies	Name of instructor	Importance (Must know Should know Could know)
Gastro Rotation				
Clinical Rotation	**Peptic ulcer disease. and observation of endoscopies**	Bed side teaching	Dr. Noreen / Dr. Jamila / Dr. Bilal	Should Know
Learning Outcome • Discuss the disorders of swallowing achlasia, dysphagia , GERD,etc • Discuss anatomical basis of bleeding varices. • Correlate clinical manifestations with the underlying disease.				
Clinical Rotation	**Visit to dialysis**	Bed side teaching	Dr. Farhan Nazir	Should Know
Learning Outcome • Describe the principles of Dialysis(Artificial kidney, Hemodialysis and peritoneal dialysis) • Clinical findings in a patient of srf..examination findings included				
Clinical Rotation	WITHDRAWING AN ABG SAMPLE	Skill Lab	PG Nephro	Should Know
Learning Outcome • To understand procedure of taking ABGS und Aseptic technique and following patient safety guidelines.				
1	**GERD**	LGIS	Dr. K. Bilal Khan	Should Know
Learning Outcome • Correlate clinical manifestations of GERD with the underlying physiology of disease • Enumerate relevant investigations.				
2	**Miscellaneous Swallowing disorders and dysphagia**	LGIS	Dr. Noreen Adil	Should Know
Learning Outcome • Correlate clinical manifestations of Miscellaneous Swallowing disorders and dysphagia with the underlying anatomy and physiology of disease • Enumerate relevant investigations.				

3	**Acid Peptic Disease**	LGIS	Dr. K Bilal Khan	Should Know
Learning Outcome • Correlate clinical manifestations of Acid Peptic Disease with the underlying anatomy and physiology of disease. • Enumerate relevant investigations.				
4	**Malabsorption**	LGIS	Dr. K Bilal Khan	Should Know
Learning Outcome • Correlate clinical manifestations of Malabsorption with the underlying anatomy and physiology of disease. • Enumerate relevant investigations.				
5	**Approach to patient with Diarrhea**	LGIS	Dr. Noreen Adil	Should Know
Learning Outcome • Correlate clinical manifestations of diarrhea with the underlying disease • Enumerate relevant investigations.				
6	**Approach to patient with Jaundice**	LGIS	Dr. Noreen Adil	Should Know
Learning Outcome • Describe the types of jaundice and their presentations o Interpret LFTs				
7	**Common Liver Disorders**	LGIS	Dr. Jamila Khan	Nice to Know
Learning Outcome • Identify common disorders of the liver and gallbladder, such as fatty liver, cirrhosis, portal Hypertension, variceal bleed				
8	**Acid base disorders**	LGIS	Dr. Ali Riaz	Should Know
Learning Outcome • To understand basics ofacid base disorders andtheir clinicalcorrelation				
9	**Approach to patient with edema**	LGIS	Dr. Mubeena	NICE TOKNOW
Learning Outcome • Explain the role of Starling forces in the development/ prevention of edema • Appreciate the significance of edema safety factor • Discuss the mechanism of fluid accumulation in the potential spaces				

• Compare and contrast the intracellular and extracellular edema				
10	**Acute and Chronic Renal Failure**	LGIS	Dr Mobina	Should Know
Learning Outcome • Correlate RFTs with clinical presentation (Oliguria/ Uraemia/ Renal Failure).				
11	**Diabetes insipidus: central and nephrogenic SIADH**	LGIS	Dr. Ali Riaz	Should Know
Learning Outcome • Discuss disorders of urine concentrating ability (diabetes insipidus: central and nephrogenic, SIADH) • Quantify renal urine concentration and dilution: "Free Water" and osmolar clearances • Identify and explain hazardous effects of sodium and potassium with clinical features.				
12	**Common electrolyte abnormalities**	LGIS	Dr. Ali Riaz	Should Know
Learning Outcome • Identify common electrolyte abnormalities with clinical case presentation.				

Learning Resources:

- Davidson's Principles and Practice of Medicine, 23rd Edition

Assessment formats

Assessment Strategies (Formative)	Assessment Strategies (Summative)
Class Discussion CBL Case Discussion CBL Quiz	MCQs SEQs

2. Rules & regulations:

I. Student's code of conduct

The Student Code of Conduct sets out the standards of conduct expected of students. It holds individuals and groups responsible for the consequences of their actions. Failure to fulfill these responsibilities may result in the withdrawal of privileges or the imposition of sanctions.

Wah Medical College is a community of students, faculty, and staff involved in learning, teaching, research, and other activities. All members of the WMC community are expected to conduct themselves in a manner that contributes positively to an environment in which respect, civility, diversity, opportunity, and inclusiveness are valued, so as to assure the success of both the individual and the community. The Student Code of Conduct reflects a concern for these values and tries to ensure that members of the WMC can make use of and enjoy the activities, facilities, and benefits of WMC without undue interference from others. during the clerkship, the Students must:

- Follow discipline, dress decently, show good manners, and indulge in healthy activities.
- Avoid smoking and refrain from abusive language.
- Be cooperative and respectful towards their seniors, peers, paramedical staff, patients, and their attendants.

II. Attendance policy

a. Students are required to mark attendance for every class.

b. The attendance is compiled by the respective department and submitted to Student Affairs by the 10th of each month.

c. The Students' Affairs Department will compile the absent report, and a fine of Rs. 1000/- for a lecture or for the whole day will be imposed on absent students. It is pertinent to mention here that a fine is imposed on students to compel them to attend classes regularly and not to generate the funds.

d. In accordance with PM&DC and NUMS regulations, MBBS and BOS students must meet minimum attendance standards to qualify for the Annual Professional Examination. From the 2024-25 session onward, 85% attendance is mandatory. For sessions 2020-23, the 85% requirement will be enforced starting the new academic year. Students in the ongoing 2024-25 session must maintain at least 75% attendance but are strongly encouraged to achieve 85% to meet GMC contact hour requirements.

e. Admission forms of students having attendance less than 75% will NOT be submitted to NUMS for appearing in Annual University Exams.

3. Study tips

Dear Students,

Becoming a doctor is a tough job, but you can make it easier for yourself by adopting some time-tested techniques or habits. It's never too early – or too late – to develop good study habits. The sooner you get into a good self-study pattern, the easier everything will be and the more your chances of getting good marks will improve. Here are our top tips for getting the most out of your self-directed study time. And remember **Perseverance is the Key to Success!**

Review the material regularly, create a study schedule

Write it down

Test yourself

Find an effective learning environment with limited distractions and some fresh air

Improve memorization with Mnemonics

Incorporate auditory methods; use online podcasts

Use visuals, images, concept maps & illustration charts

Consider forming a study group or find an accountability buddy

Take strategic breaks

4. Feedback on the Study Guide

We value your feedback and will use it for improvement of this Study guide. Kindly provide feedback for this study guide. At the email:

dme@wahmedicalcollege.edu.pk

dmewahmedicalcollege@gmail.com

5. References:

HARDEN, J.M. LAIDLAW, E.A. HESKETH, R. M. (1999). AMEE Medical Education Guide No 16: Study guides-their use and preparation. *Medical Teacher*, *21*(3), 248–265. https://doi.org/10.1080/01421599979491.

7. Time Table Template:

Wah Medical College
3rd Year MBBS Session -2023
Time Table From

Theme:

Course Code:- Y3B1

Accadamic Week:

Date & Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00-08:50	Pathology LGIS	Pharma LGIS	Forensic Medicine LGIS	ENT/EYE SDL	Surgery LGIS
8:50-9:40	Pharma LGIS	Forensic Medicine LGIS	Methadolo LGIS	Pathology LGIS	harmacolog LGIS
9:40-10:30	Medicine LGI S	Pathology LGI S	harmacolog LGI S	harmacolog SD L	Peads/ Gynae LGIS
Break 10:30- 10:45					
10:45 - 12:30	Practical Pathology: Batch-I Pharma: Batch- II F. Medicine: Batch- III	Practical Pathology: Batch-I Pharma: Batch- II F. Medicine: Batch- III	Practical Pathology: Batch-I Pharma: Batch- II F. Medicine: Batch- III	Pharmacology CBL	Community Medicine SDL
12:30-03:00	Clinical Rotation X 6 Weeks Medicine I = A Medicine II = B Surgery I = C Surgery II = D EYE/ENT = E				Pathology SDL
					Pathology CBL
Prayer 1:15-2:00					BS/IC

Professor
Brig (R) Dr. Tariq Masood Malik
Chairperson Block Committee Y3B1

Professor
Dr. Babur Rashid Chughtai
Coordinator Pre-Clinical Depts

Prof. Dr. Mumtaz Ramzan
Dean / Vice Principal
Wah Medical College Wah Cantt