AYUB MEDICAL COLLEGE ABBOTTABAD

DEPARTMENT OF MEDICAL EDUCATION

GIT, HEPATOBILIARY & METABOLISM I

2ND YEAR MBBS

BLOCK: E (GIT, HEPATOBILITY & METABOLISM I)

DURATION: 06 WEEKS

CLASS OF : 2024

STUDENT NAME

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Contents

1. Module Committee:

s.no	Name	Department	Role
1.	Prof. Dr. Umar Farooq	CEO & Dean	
2.	Prof. Dr. Irfan U. Khattak	DME	Director
Module Team			
3.	Associate Prof Dr Ayesha Awan	Biochemistry	
4.	Associate Prof Dr Nadia Haleem	Biochemistrty	
5.	Assistant Prof Dr Sarwat Abbassi	Biochemistry	

2. What Is A Study Guide?

It is an aid to Inform students how student learning program of the module has been organized, to help students organize and manage their studies throughout the module and guide students on assessment methods, rules and regulations.

5.1: The study guide:

- Communicates information on organization and management of the module.
- This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as lectures, small group teachings.

5.2: Module objectives.

- Provides a list of learning resources such as books, computer-assisted learning programs, weblinks, and journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's performance.

5.3: Achievement of objectives.

- Focuses on information pertaining to examination policy, rules and regulations.

3. Recommended List Of Icons

Introduction To Case

For Objectives

Critical Questions

Assessment

Resource Material

4. Table Of Specification

Paper-E (GIT, Hepatobiliary & Metabolism and Renal module) 2nd year MBBS.
Each written paper consists of 120 MCQs and internal assessment marks will be added to the final marks

Final distribution of MCQs for 2nd year MBBS Annual University Examination

Subject	GIT, HEPATOBILIARY & METABOLISM MODULE	RENAL MODULE	TOTAL MCQs
Gross Anatomy	14	7	21
Histology	5	2	7
Embryology	6	3	9
Physiology	18	16	34
Biochemistry	27	5	32
PRIME including Research	5	2	7
Medicine	2	-	03
Pharmacology	2	-	04
Pathology	2	-	06
Community medicine	1	-	1
Pediatrics	1	-	03
Surgery	1	1	02
Total	**84**	**36**	**120**

Final distribution of OSPE Stations for 1st year MBBS Annual University Examination
Each OSPE/ VIVA station has 05 marks i.e. total of 90 marks. Internal assessment marks will be added to the final marks.

Subject	GIT, HEPATOBILIARY & METABOLISM MODULE		RENAL MODULE		TOTAL STATIONS	
	OSPE STATIONS	VIVA	OSPE STATIONS	VIVA	OSPE	VIVA
ANATOMY	**04**	**01**	**03**	**01**	**07**	**02**
Gross Anatomy						
Histology						
Embryology						
PHYSIOLOGY	**-**	**01**	**01**	**01**	**01**	**02**
BIOCHEMISTRY	**02**	**01**	**02**	**01**	**04**	**02**
TOTAL					**12**	**06**

5. Organization of Module

5.1 Introduction:

5.1.1 INTRODUCTION TO BLOCK –E

Biochemistry Department of Ayub Medical College is not only responsible for Organizing, conducting and Record Maintaing of the Block E but it is also responsible to assess the students for 13 marks theory and 10 marks OSPE interal assessments in collaboration with the other two core subjects i.e. Anatomy and Physiology .

It is 10 weeks Duration and divided into 02 Modules

5.1.2 INTRODUCTION TO GIT, HEPATOBILIARY & METABOLISM MODULE

***THEME FOR* GIT, HEPATOBILIARY & METABOLISM MODULE**		
TOTAL DURATION – 06 WEEKS		
S.NO	***THEME***	***DURATION***
	Painful Swallowing	01 week
	Abdominal Pain	01week
	Jaundice	03 days
	Diarrhea and Constipation	03 days
	Bleeding Per Rectum	04 days
	Hyperglycemia (carbohydrate Metabolism)	01 week
	Obesity (Lipid Metabolism)	01 week
	Wasting (Protein Metabolism)	01 week

5.2 INTRODUCTION TO RENAL MODULE

THEME FOR RENAL MODULE		
TOTAL DURATION – 03 WEEKS		
S.NO	***THEME***	***DURATION***
	Flank Pain /Loin Pain	01 week
	Scanty Urine /Urinary retention and Edema	01 week
	Urinary Incontinence	01 eek

5.3 Rationale

VISION & MISSION

OUR VISION IS :To Be A **Leading Institution Of The Region** In Medical Education, Health Care Services And Research
OUR MISSION IS:To Deliver Distinctive **Medical Care** Encompassing Curative, Preventive And Rehabilatitive Services And To Pursue Excellence In **Medical Education** And **Research** To Produce A Work Force Receptive To The Health Care Needs Of The Communities
Seven Star Doctors

The outcomes of the curriculum of MBBS According to the PMDC/ PMC is to make seven star doctors who are :

1- Knowledgeable
2- Skillful
3- Community Heath Promoter
4- Problem-solver
5- Professional
6- Researcher
7- Leader and Role Model

6. Learning Objectives

6.1 General Learning Outcomes

At the end of this 6 weeks` module, the 2nd year students will be able to:

6.1.1 KNOWLEDGE:

1. Familiarize with the MBBS system based curriculum.
2. Identify & describe the various aspects of GIT, hepatobiliary and metabolism in relation to its Anatomy, Physiology & Biochemistry.
3. Describe the development of GIT, hepatobiliary and metabolic pathways with clinical disorder
4. Describe the anatomy of oral cavity with respect to GI functions
5. Elaborate the structure and functions of salivary glands
6. Describe the structure and development of esophagus, stomach, small intestine and large intestine
7. Describe the anatomy of peritoneum and mesentery
8. 5) Explain the movements, functions and regulations of gastrointestinal functions
9. 6) Describe the structure, development and functions of hepatobiliary system and pancreas
10. 7) Discuss the mechanisms of digestion and absorptions of carbohydrates, proteins, fats and other nutrients
11. 8) Describe different physiological reflexes occurring upon stimulation of gastrointestinal organs
12. 9) Discuss the chemistry and functions of gastrointestinal hormones
13. 10) Describe common pathological conditions like peptic ulcers, viral hepatitis, obstructive jaundice, carcinoma of esophagus and colorectal cancers
14. 11) Explain the metabolic processes related to carbohydrates, fats and protein metabolism
15. 12) Describe the components of medical ethics
16. 13) Explain research ethics, research misconduct and plagiarism
17. 14) Explain the psychosocial aspects of common psychiatric and functional bowel disorders.

6.1.2 B: PSYCHOMOTOR

1. Describe the basic laboratory techniques and use of microscope.
2. Identify basic tissues under the microscope

3. Follow the basic laboratory protocols
4. Perform biochemical analysis of a gastric juice and urine
5. Make and record observations accurately.
6. Estimation of concentration of blood glucose, urea, plasma protein,cholesterol, bilirubin etc.

6.1.3 C . ATTITUDE

1. Follow the basic laboratory protocols.
2. Participate in class and practical work efficiently
3. Maintain discipline and follow the norms of the college.
4. Communicate effectively with colleagues and teachers.
5. Follow ethical rules..
6. Demonstrate the ability to reflect on the performance. .
7. Exchange opinion & knowledge
8. To equip themselves for teamwork
9. Regularly attend the classes
10. Demonstrate good laboratory practices

THEME 1 : Painful Swallowing

Introduction

This module is a one week long module mostly emphasizing on the physiological and anatomical aspects of oral cavity, esophagus and the salivary glands. It also includes the development of oral cavity and esophagus, excitation of gastrointestinal smooth muscle, enteric neurotransmitters, mechanism of swallowing, secretion, composition and uses of saliva. There will also be a brief account of abnormalities of oral cavity and esophagus.

SNO	SUBJECT	TOPICS	Learning Outcomes
	Gross anatomy	Oral cavity	Describe the musculature of tongue Describe the nerve supply of tongue
		Salivary glands	Describe the gross anatomy of parotid, submandibular and sublingual salivary gland
		Esophagus	Describe the extent, course, relations and gross structure of esophagus
	Embryology	Development of tongue	Describe the developmental events of tongue Enlist various anomalies of tongue development
		Development of esophagus	Describe the development of Esophagus
		Development of salivary glands	Describe the development of salivary glands
	Histology	Oral cavity	Describe the microscopic structure of lips. Describe the histological features of tooth in longitudinal and transverse section. Explain the histology of tongue. Differentiate between the microscopic picture of anterior 2/3rds and posterior 1/3rds of the tongue
		Esophagus	Identify the epithelium of esophagus and esophageal glands in mucosa. Differentiate between musculature in different parts of the esophagus
	Physiology	General principles of gastrointestinal motility	Describe electrical activity of gastrointestinal smooth muscle. Describe the mechanism of excitation of smooth muscle of gastrointestinal. Differentiate between slow wave and spike potential.
		Neural control of GIT function (Enteric Nervous system)	Differentiate between mesenteric and submucosal plexus. 17 Classify the following enteric nervous system neurotransmitters as excitatory or inhibitory: norepinephrine, acetylcholine, CCK, VIP, histamine, and

			somatostatin 18 Describe the role of autonomic nervous system in regulation of GIT's function 19 Differentiate between sympathetic and parasympathetic modulation of the enteric nervous system and the effector organs of the GI tract. Describe three types of gastrointestinal reflexes
		Hormonal control of Gastrointestinal motility	Describe gastrointestinal hormone actions, stimuli for secretion, and site of secretion.
		Functional types of movements in the gastrointestinal tract	Describe the functional types of movements in the gastrointestinal tract. Describe law of gut. Describe blood flow through the villus and its significance
		Gastrointestinal blood flow—Splanchnic circulation	Describe anatomy of the gastrointestinal blood supply. Describe the effect of gut activity and metabolic factors on gastrointestinal blood flow. Describe nervous control of gastrointestinal blood flow
		Ingestion of food	Describe the mechanics of ingestion of food 29 Describe chewing and mastication. Describe different stages of swallowing. 31 Describe the effects of the pharyngeal stage of swallowing on respiration.
		General principles of alimentary tract secretion	Describe basic mechanisms of stimulation of the alimentary tract glands. Describe dual effect of sympathetic stimulation on alimentary tract glandular secretion.
		Role of mucus and saliva.	Describe the secretion of saliva and its nervous regulation. Describe the plasma and saliva concentrations of Na+, Cl-, and HCO3- at low secretion rates and at high secretion rates and the principal cell types involved in each secretion rate. State the substrates and digestion products of salivary amylase (ptyalin). Identify the stimuli and cell types involved in GI secretion of mucous, and identify the function of salivary mucus. Describe three types of stimuli that increase salivary secretion. State the components of the saliva important in oral hygiene, and identify the role of salivary secretions in eliminating heavy metals
	Biochemistry		Describe the composition of salivary secretions.

			Describe the formation and characteristics of salivary secretions. Elaborate the functions of saliva.
	Pathology	Carcinoma of Esophagus.	Describe the histological types and presentation of esophageal carcinoma.
	ENT	Oral ulceration.	Enlist the causes of oral ulcerations. Describe Aphthous ulcers and its treatment. Describe the clinical features and drugs used to treat esophageal candidiasis.

THEME 2: PAIN EPIGASTRIUM

Introduction

This two week long module consists of anatomy of the abdominal wall, peritoneum, esophagus, stomach and duodenum. It also includes motor function of stomach and the secretion of gastric juices. This module also has lectures on abdominal hernias. This module consists of lectures, practicals, SGDs, DSLs and SDLs.

SNO	SUBJECT	TOPICS	Learning Outcomes
	Gross Anatomy	Anterior abdominal wall.	Describe the origin, insertion, nerve supply and actions of anterolateral abdominal wall muscles. Describe the formation of rectus sheath. Describe the contents of rectus sheath. Describe the surface anatomy of anterior abdominal wall Describe the structures related to transpyloric plane. Enlist various types of abdominal hernias.
		Inguinal canal.	Describe the boundaries of inguinal canal. Enlist the contents of inguinal canal in males and females. Differentiate between direct and indirect inguinal hernia.
		Peritoneum.	Describe greater and lesser omentum. Describe the nerve supply of peritoneum. Describe the anatomy of lesser sac. Describe the boundaries of epiploiec foramen. Describe the various peritoneal pouches, recesses and ligaments.
		Stomach.	Describe the gross structure of stomach. Describe the blood supply and lymphatic drainage of stomach. Describe the anatomy of stomach bed.
		Duodenum	Describe the gross structure and blood

			supply of duodenum. Write the relations of various parts of duodenum.
		Pancreas.	Describe the gross structure of pancreas and its ductal system.
	Histology	Stomach	Enumerate the different layers of the stomach wall. Write a note on gastric glands. Differentiate between fundic and pyloric mucosa.
		Duodenum.	Discuss histological features of duodenum and describe duodenal glands.
		Pancreas.	Describe the histology of pancreas. Differentiate histologically between exocrine and endocrine portions of pancreas.
	Embryology	Development of foregut.	Describe the development of stomach. Describe the development of duodenum. Enlist various developmental anomalies of stomach. Enlist various developmental anomalies of duodenum.
		Pancreas.	Describe the development of pancreas. Enlist various anomalies of pancreas.
	Physiology	Motor function of Stomach.	Describe the motor function of stomach. Describe basic electrical rhythm of the stomach wall. Describe Pyloric pump. Describe role of the pylorus in controlling stomach emptying. Describe the regulation of gastric emptying.
		Gastric secretion.	Describe characteristics of the gastric secretions. Describe the mechanism of secretion of different gastric glands. Describe the phases and regulation of gastric secretion. Enlist the hormones that inhibit and increase gastric secretions. Enumerate the reflexes that inhibit and increase gastric secretions.
	Biochemistry.	Gastric secretions.	Describe the chemical composition of gastric secretions. Describe the functions of HCl and other constituents of gastric secretions. Discuss the mechanism of synthesis and secretion of HCl from gastric mucosa. Discuss the mechanism of secretion and role of Intrinsic factor from gastric parietal cells.
	Pathology.	Peptic ulcer disease.	Describe the mechanism of formation of peptic ulcers, its stages and complications.

			Describe the etiology, pathology and clinical presentation of gastric cancer. Describe the mechanism of development, presentation and complications of acute pancreatitis.
	Pharmacology.	Drugs used in Peptic ulcer.	Classify the drugs used in Peptic ulcer disease. Describe the mechanism of action of drugs used in Peptic ulcer.
	Forensic Medicine.	Poisons identification through gastric lavage.	Enlist indications and contraindications for gastric lavage Describe the sampling technique of gastric lavage fluid.
	Medicine	GERD and Peptic ulcer.	Describe the etiology, clinical features, complications and drug treatment of GERD and peptic ulcer disease.
	Surgery	Peptic ulcer.	Describe the complications of longterm peptic ulcer disease and its surgical management.
		Lump in the abdomen.	Describe common causes of lump in abdomen and enlist the common surgical procedures for treatment of hernia.
		Acute pancreatitis.	Describe the etiology, clinical features, complications and management of acute pancreatitis.

THEME 3: JAUNDICE

Introduction

It is a 2 weeks' module and consists of the anatomical and physiological study of liver and biliary apparatus. It will also include the anatomy of pancreas and spleen. Biochemical aspects of digestion and absorption of carbohydrates, lipids and proteins will also be taught to the students in this module. There is a lecture of community medicine discussing hepatitis B and C viruses and pharmacology of drugs harmful for the liver. This module consists of lectures, practicals, DSLs and SDLs.

SNO	SUBJECT	TOPICS	Learning Outcomes
	Gross Anatomy.	Liver.	Describe the borders and surfaces of liver. Describe the visceral surface of liver. Describe the peritoneal reflections and associated ligaments of liver. Describe the

			lobes and segments of liver. Describe the blood supply of liver. Describe the hepato renal pouch of morrison and its clinical significance.
		Extra hepatic billiary apparatus.	Describe the gross anatomy of gall bladder. Describe calot's triangle. Describe the gross anatomy of extra hepatic billiary tree.
		Spleen.	Describe the gross anatomy of spleen and blood supply of spleen.
		Hepatic portal venous system.	Describe the formation and tributaries / branches of hepatic portal venous system. Explain the clinical significance of hepatic portal system.
	Embryology.	Development of distal fore gut.	Describe the development of liver. Describe the development of gall bladder and billiary tree. Describe the developmental anomalies of liver and biliary tree.
	Histology.	Liver.	Discuss the histological features of liver. Describe liver parenchyma and general structural plan of the liver. Describe the histological features of the structures present in the portal triad.
		Spleen.	Discuss the histological features of spleen. Differentiate between red pulp and white pulp.
	Physiology.	Pancreatic secretion.	Describe the role of pancreatic secretions in digestion. Describe the phases and regulation of pancreatic secretion.
		Physiology of liver.	Describe Physiological Anatomy of the Liver. Describe blood flow through the liver. Describe metabolic functions of liver. Describe Regulation of Liver Mass—Regeneration. Describe Bilirubin formation and excretion.
		Secretion of bile by liver.	Describe the mechanism of secretion of bile by the liver. Describe the function of bile salts in fat digestion and absorption. Describe functions of the biliary tree in digestion.
	Biochemistry.	Bile.	Describe the constituents of bile. Describe the functions of bile. Describe the mechanism of gall stone formation.
	Pathology.	Acute/ chronic viral hepatitis.	Describe the different viruses causing acute and chronic hepatitis. Describe the pathogenesis, stages and clinical

			presentation of liver cirrhosis.
	Pharmacology.	First pass hepatic metabolism of drugs.	Describe the mechanism of drugs detoxification and metabolism in the liver.
		Hepatotoxic drugs.	Enlist some of the commonly used hepatotoxic drugs and their toxicities.
	Forensic Medicine.	Hepatotoxic poisons.	Enlist the poisons which cause hepatotoxicity Diagnose poisoning through routine toxicological sampling.
	Community Medicine.	Hepatitis B and C virus infection.	Describe the epidemiology of hepatitis B and C virus infection and its control measures. Describe water borne hepatitis (Hepatitis A and E) viruses and its control measures.
	Medicine.	Liver cirrhosis.	Describe the etiology, clinical features, complications and treatment options of liver cirrhosis.
	Surgery.	Obstructive jaundice.	Describe the etiology, clinical features, biochemical investigations and treatment options of obstructive jaundice.

Theme 4: Diarrhoea and Constipation

Introduction

This module consists of anatomy of the jejunum, ileum, Appendix and cecum and its arterial supply. It also includes development of midgut and an account of carbohydrate metabolism. There is also focus on anti-diarrheal drugs and drugs for constipation.

SNO	**SUBJECT**	**TOPICS**	**Learning Outcomes**
	Gross Anatomy.	Jejunum and ileum.	Describe the gross features of jejunum and ileum. Tabulate differences in gross features and blood supply of jejunum and ileum.
		Mesenteries.	Describe the mesentry of small intestine.
		Appendix.	Describe the gross features, blood supply and mesentery of appendix. Describe the clinical correlates of appendix
		Abdominal aorta.	Enumerate the branches of abdominal aorta. Describe the course and distribution of celiac trunk. Describe the course and distribution of superior mesenteric artery.

			Describe the course and distribution of inferior mesenteric artery.
		Inferior vena cava.	Describe the origin, course, tributaries and relations of inferior vena cava.
		Lymphatic drainage.	Describe the origin, course and relations of citerna chili. Describe the lymphatic drainage of abdominal organs.
	Embryology.	Development of midgut.	Describe the formation and rotation of midgut loop. Describe the physiological herniation of midgut loop. Enlist the derivatives of mid gut loop. Describe the development of mesenteries. Describe the various anomalies of midgut development.
	Histology.	Jejunum and ileum.	Discuss histological features of jejunum and describe plica circulares. Discuss histological features of ileum and describe Payers patches. Discuss the various structural specializations meant for increasing the surface area of small intestine (plica circulares, crypts of lieburkhun, villi and microvilli).
		Appendix.	Discuss histological features of appendix.
	Physiology.	Movements of the small intestine.	Describe different types of movements of small intestine. Describe the control of peristalsis by nervous and hormonal signals.
		Secretion of small intestine.	Describe secretion of mucus by Brunner's glands in the duodenum.
		Pancreatic enzymes.	Describe the chemistry, secretion, functions and regulation of pancreatic enzymes.
		Intestinal digestive enzymes.	Describe the chemistry, secretion, functions and regulation of small intestinal digestive enzymes. Describe secretion of intestinal digestive juices by the crypts of lieberkühn.
		Gastrointestinal hormones.	Describe the secretion, structure, functions and regulation of Gastrin, Secretin, Cholecystokinins and other GI hormones.
		Disorders of small intestine.	Describe abnormal digestion of food in the small intestine in pancreatic failure. Describe malabsorption by the small intestinal mucosa in Sprue.
	Biochemistry.	Pancreatic	Describe the composition of pancreatic

		secretions.	secretions. Describe the mechanism of secretion and actions of pancreatic enzymes. Describe the mechanism of synthesis of Bicarbonates.
		Digestion and absorption.	Describe the mechanism of digestion and absorption of fats in the intestines. Describe the mechanism of digestion and absorption of proteins in the intestines. Describe the mechanism of digestion and absorption of carbohydrates in the intestines. Describe the mechanism of absorption of Iron, Vitamin-B12 and Folate in the intestines.
		Energy requirement of human body.	Discuss the daily energy requirement of a human body in health and disease. Define BMR. Enlist the causes of high and low BMR. Describe the daily requirements of common vitamins, Iron, Calcium, Iodine and other minerals.
		Nutritional disorders.	Define Protein energy malnutrition and its associated clinical conditions.
		Adipose tissues.	Discuss adipose tissue homeostasis.
	Pharmacology.	Anti-diarrheal drugs.	Classify anti-diarrheal drugs and their mechanism of action.
		Drugs for constipation.	Classify drugs used in constipation, and their mechanism of action.
	Community Medicine.	Food borne infection.	Describe the epidemiology of food borne infections and their control measures.
	Paediatrics.	Acute gastroenteritis.	Describe the aetiology, clinical features, complications and treatment of acute gastroenteritis.

Theme 5: Bleeding Per Rectum.

Introduction

This is a 2 days' theme and consists of anatomy of large intestine and physiology of secretion and movement of colon. This theme consists of lectures, Practicals, DSLs and SDLs.

SNO	**SUBJECT**	**TOPICS**	**Learning Outcomes**
	Gross Anatomy.	Large intestine.	Describe the gross features of cecum, ascending, transverse and descending and sigmoid colon. Describe the mesentery of

			large intestine. Describe the gross anatomy of rectum. Describe the gross anatomy of anal canal. Describe the blood supply of anal canal and its clinical correlates. Describe the boundaries and contents of Ischiorectal (anal) fossa.
	Embryology.	Development of hind gut.	Describe the partitioning of cloaca. Enlist the derivatives of hind gut. Enlist the developmental anomalies of hindgut.
	Histology.	Colon.	Discuss the histological features of colon. Describe the characteristic features of intestinal glands
		Rectum.	Describe the histological features of Rectum.
	Physiology.	Movements of the Colon.	Describe different types of movements of colon. Describe gastro-colic reflex and duodeno-colic reflexes. Describe the mechanism of defecation reflex.
		Secretion of Large Intestine.	Describe secretion of mucus by the large intestine.
		Disorders of Large intestine.	Describe constipation, megacolon. Explain mechanism of diarrhea and its causes. Explain paralysis of defection in spinal cord injuries.
		General Disorders of the gastrointestinal tract.	Describe the mechanisms of Vomiting and Nausea. Describe Vomiting Act. Describe Gastrointestinal Obstruction. Describe gases in the gastrointestinal tract (flatus).
	Biochemistry.	Intestinal juices.	Describe the composition of intestinal juices.
	Pathology.	Carcinoma of colon and Rectum.	Describe the etiology, histological findings, clinical presentation and staging of carcinoma of colorectal carcinoma.
	Surgery.	Colorectal malignancies.	Describe the etiology, clinical features, investigations and management of colorectal cancers.

METABOLISM:

Theme-6: Glucose control (Carbohydrate metabolism).

Introduction

This is a long theme in which the students will study triglyceride, cholesterol and lipoprotein metabolism with their clinical aspects and hyperlipidemias. The students will perform practical on the determination of cholesterol in the serum. There is a small group discussion session on the production of energy when one molecule of palmitic acid is oxidized.

SNO	SUBJECT	TOPICS	Learning Outcomes
	Biochemistry.	Oxidative Phosphorylation.	Describe the generation of proton gradient & the resultant motive force across the inner mitochondrial membrane by transport of electrons through ETC which in turn produces ATP by oxidative phosphorylation. Describe the structure of ATP synthase enzyme(complex-V) & explain how it works as a rotary motor to synthesize ATP from ADP & Pi.
		Respiratory Chain Inhibitors & Uncouples.	Describe the control of the rate of respiration, oxidation of reducing equivalents via ETC & its tightly coupling with oxidative phosphorylation in mitochondria. Discuss certain common poisons which block respiration or oxidative phosphorylation & identify their site of action. Explain how uncouplers act as poisons by dissociating oxidation from oxidative phosphorylation via ETC but at the same time they may have a physiological role in generating body heat.
		Glycolysis.	Define Glycolysis. Describe the entry of glucose into different kinds of cells through various GLUT transporters. Describe the reactions of glycolysis. Describe the transportation of NADH to Mitochondria via various Shuttles. Describe the energetics of glycolysis. Describe the fates of pyruvate. Describe the types of glycolysis especially the anaerobic glycolysis. Describe the key enzymes and regulation of glycolysis.

			Discuss the glycolysis in RBC. Describe the biomedical Significance and clinical disorders of glycolysis. Discuss glycolysis in cancer cells.
		Oxidation of Pyruvate.	Describe the conversion of pyruvate into acetyl CoA. Enumerate the enzymes & coenzymes of PDH complex. Describe the sequence of reactions catalyzed by PDH complex. Describe the regulation of PDH complex. Discuss the clinical aspects of PDH complex especially the congenital lactic acidosis.
		Tricarboxylic Acid Cycle.	Define citric acid cycle. Describe the sources of acetyl CoA in mitochondria. Describe the reactions of TCA. Discuss the energetics of TCA. Discuss the energy yield of one molecule of glucose when it is converted into carbon dioxide and water. Name the vitamins that play key role in TCA. Describe the amphibolic nature of TCA. Discuss the regulation of TCA. Enumerate the inhibitors of TCA and their sites of inhibition.
		Gluconeogenesis.	Define Gluconeogenesis. Name the organs and sub cellular location where Gluconeogenesis occurs. Describe the substrates or precursors of Gluconeogenesis. Describe the three bypass reactions. Describe the Gluconeogenesis from Fatty Acids. Discuss the Cori's cycle. Discuss the regulation of Gluconeogenesis. Name the key enzymes of Gluconeogenesis.
		Hexose Mono Phosphate shunt.	Discuss the Role of Pentose Phosphate Pathway. Name the tissues where Hexose Mono Phosphate shunt occurs. Describe the reactions of the two parts of Hexose Mono Phosphate shunt. Describe the Role of thiamine in Hexose

			Mono Phosphate shunt. Enumerate the Similarities & differences b/w glycolysis and HMP shunt pathway. Discuss the functions of NADPH (produced in Hexose Mono Phosphate shunt) in various tissues and cells. Discuss G6PD deficiency and its effects in various tissues and cells. Describe the regulation of HMP shunt pathway.
		Uronic Acid Pathway.	Enumerate the products of Uronic acid pathway and their importance. Discuss why ascorbic acid is vitamin for humans.
		Galactose Metabolism.	Describe the Main source of Fructose. Discuss the various reactions with enzymes involved. Discuss the Fructose formation in Seminal fluid. Describe the mechanism of formation of diabetic cataract. Discuss the Defects in Fructose Metabolism and their effects.
		Glycogen Metabolism.	Describe the structure and functions of the glycogen especially the significance of its polymer nature. Describe the Difference between Liver & muscle glycogen. Describe the synthesis of glycogen by two mechanisms with its enzymes. Discuss the breakdown of glycogen with its enzymes. Describe the Regulation of Glycogen metabolisms. Discuss the glycogen storage diseases with deficient enzymes and cardinal clinical features.

Theme 7: Obesity (Fat metabolism).

SNO	**SUBJECT**	**TOPICS**	**Learning Outcomes**
	Biochemistr y	Fatty acid (FA) synthesis (De Novo)	Enumerate the organs where fatty acid synthesis occurs with sub cellular sites. Discuss the source of Acetyl CoA that will be used for FA synthesis with reason. Discuss how acetyl CoA comes out of mitochondria for the synthesis of FA. Describe the steps of FA synthesis with enzymes. Describe the FA synthase enzyme with its

			structure and components. Describe the product of FA synthase and the subsequent fate of this product. Discuss the regulation of FA synthesis. Discuss why animals cannot convert fatty acids into glucose. Describe the further elongation and desaturation of FA and its regulation.
		Mobilization of stored fats (oxidation of FA).	Describe how fats are mobilized from adipose tissues to the organs where they will be used for oxidation. Enumerate the various methods of oxidation of FA. Discuss the stages of beta oxidation with its reactions. Calculate the no. of ATP obtained when one molecule of palmitic acid is oxidized completely. Describe the genetic deficiencies of FA oxidation i.e. MCAD & CAT deficiencies with their hallmarks. Discuss the oxidation of odd-chain FA. Compare the processes of FA synthesis with FA oxidation.
		Metabolism of Ketone bodies.	Enumerate the ketone bodies. Define ketogenesis. Describe the steps of ketogenesis. Discuss the energy yield during ketogenesis in liver. Enumerate the conditions in which there is increased ketogenesis. Discuss utilization of ketone bodies. Discuss the energy yield in ketone bodies utilization in extra hepatic tissues. Describe the regulation of ketogenesis in wellfed healthy conditions, during early stages of starvation & in prolonged starvation. Discuss the ketoacidosis in diabetes.
		Complex Lipid metabolism.	Describe the synthesis of triacylglycerol by two mechanisms. Describe the synthesis of phosphatidic acid. Enumerate the substances formed from phosphatidic acid. Describe the synthesis of glycerophospholipids. Discuss the degredation of

			glycerophospholipids. Describe the synthesis of ceramide and sphingophospholipids (shingomyelin). Discuss the degradation of shingomyelin. Discuss Niemann-Pick disease with its cardinal clinical features. Discuss Farber disease with its cardinal clinical features. Describe the synthesis of glycosphingolipids. Describe the degradation of glycosphingolipids. Describe the abnormalities of phospholipid metabolism i.e. true demyelinating diseases and sphingolipidosis.
		Eicosanoid metabolism.	Define eicosanoids and describe their two classes. Describe the synthesis of prostanoids by cycooxygenase pathway. Enumerate the two isomers of cyclooxygenase with their inhibition. Discuss why low dose aspirin therapy is used in strokes and heart attacks. Describe biochemical reason for the adverse effects of NSAIDs & steroids. Describe the catabolism of the prostanoids. Describe the lipoxygenase pathway for synthesis of Leukotrienes and lipoxins. Describe the synthesis of leuktriene biosynthesis inhibition. Enumerate the leukotriene receptor antagonists.
		Metabolism of cholesterol.	Describe the major sites of cholesterol synthesis as well as sub cellular sites. Describe the source of cholesterol synthesis. Describe the various steps of cholesterol synthesis. Discuss the regulation of cholesterol synthesis. Enumerate the inhibitors of HMG CoA reductase inhibitors. Describes the degradation and excretion of cholesterol with synthesis of bile acids, their conjugation, bile salt formation and micelle formation in lumen of the intestine. Discuss the enterohepatic circulation of bile salts.

			Discuss the role of bile acid sequestrants i.e. cholestyramine and dietary fiber. Discuss the regulation of bile acid synthesis.
		Metabolism of lipoproteins.	Describe the structure of a typical lipoprotein particle. Enymerate the various classes of LP. Enumerate the functions of apolipoproteins. Describe the steps of chylmicrons' metabolism. Describe the metabolism of VLDL. Describe the metabolism of LDL. Describe the metabolism of HDL.
		Disturbances of Lipid metabolism.	Differentiate between hyperlipidemia and dyslipidemia. Describe the Classification of hyperlipidemia with enzyme deficiency.
	Medicine.	Hyperlipidemias.	Describe the epidemiology, preventive strategies and diseases associated with hyperlipidemias.

Theme 8: Wasting (Protein metabolism).

Introduction This theme consists of lectures, practicals, SDLs and visit to Paediatric Ward. It is a seven days long theme in which amino acid and protein metabolism, the formation of ammonia and its conversion to urea will be discussed. In Community Medicine the students will learn about the writing of research proposal. In vertical integration the students will be taught the protein calorie malnutrition in pardritics.

SNO	**SUBJECT**	**TOPICS**	**Learning Outcomes**
	Biochemistry	Amino acid pool & chemical processes for dissimilation of proteins. about the writing of research proposal. In vertical integration the students will be taught the protein calorie malnutrition in	Discuss how amino acid pool is formed. Discuss the chemical processes responsible for dissimilation of proteins: transamination, deamination and transdeamination. Discuss the clinical importance of transaminases.

		Ammonia transport and effects of ammonia toxicity on brain.	Discuss how ammonia is formed in various tissues and transported to liver. Discuss the effects of ammonia toxicity in brain.
		Urea cycle & its associated inherited disorders.	Describe The Krebs-Henselet Cycle of Urea Formation in Liver. Describe the clinical significance of various enzymes involved in urea formation.
		Metabolism of aromatic amino acids.	Discuss biosynthesis, fate, metabolic functions and related inherited disorders of aromatic amino acids.
		Metabolism of sulphur containing amino acids.	Discuss biosynthesis, fate, metabolic functions and related inherited disorders of sulphur containing amino acids.
		Metabolism of individual amino acids.	Discuss biosynthesis, fate, metabolic functions and related inherited disorders of Glycine, serine, and alanine. Discuss biosynthesis, fate, metabolic functions and related inherited disorders of acidic amino acids. Discuss biosynthesis, fate, metabolic functions and related inherited disorders of branched chain amino acids.
		Purine nucleotide metabolism.	Enumerate purine and Pyrimidine bases. Describe the steps of de novo synthesis of the parent purine nucleotide i.e Inosine mono phosphate (IMP). Discuss the conversion of IMP to AMP & GMP. Describe the regulation of purine synthesis. Describe the salvage pathway of purine synthesis with its regulation. Describe Lesch-Nyhan syndrome with its cardinal clinical features. Discuss the anti-metabolites of purine nucleotides i.e purine analogs, amino acid analogs & folic acid analogs. Enumerate the synthetic inhibitors of purine synthesis with their mechanisms. Discuss the synthesis of deoxy ribonucleotides. Describe the mechanism of action of ribonucleotide reductase with its inhibitors.

			Describe the degradation of purine nucleotides. Describe the fate of adenine. Describe why the average serum level of uric acid in humans is close to the solubility limit. Discuss the diseases associated with purine degradation i.e. gout. Describe the types of gout. Discuss why allopurinol is used in the treatment of gout. Discuss adenosine deaminase deficiency.
		Pyrimidine nucleotide metabolism.	Discuss the steps of de novo Pyrimidine synthesis. Discuss the synthesis of thymidine mono phosphate from deoxy uridine mono phosphate with its inhibition. Describe the salvage pathway of pyrimidines. Describe the degradation of Pyrimidine nucleotides. Discuss the abnormalities of Pyrimidine metabolism. Discuss Orotic aciduria. Discuss the regulation of Pyrimidine metabolism.

List of practical work:

SNO	**SUBJECT**	**TOPICS**	**Learning Outcomes**
	Histology.	Lips and tongue.	Identify the histological features of lips and tongue under the microscope.
		Esophagus.	Identify the histological features of esophagus under the microscope.
		Stomach.	Identify the histological features of stomach under the microscope.
		Duodenum.	Identify the histological features of duodenum under the microscope.
		Liver.	Identify the histological features of liver under the microscope.
		Gall bladder.	Identify the histological features of gall bladder under the microscope.
		Jejunum and Ilium.	Identify the histological features of Jejunum and Ilium under the microscope.
		Appendix.	Identify the histological features of Appendix under the microscope.
		Colon and	Identify the histological features of Colon

		Rectum.	and Rectum under the microscope.
	Physiology.	Examination of abdomen.	Examine a standardized patient`s abdomen.
	Biochemistry.	Determination of plasma proteins.	Estimate the plasma proteins in a given blood sample.
		Determination of free, total and combined acidity of the Gastric juice.	Estimate free, total and combined acidity of gastric juice.
		Determination of serum Bilirubin.	Estimate serum Bilirubin in a given blood sample.
		Determination of Titrable acidity of urine.	Estimate the Titrable acidity of urine.
		Determination of serum cholesterol.	Estimate serum Cholesterol in a given blood sample.

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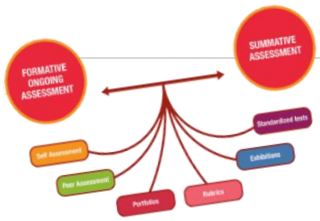
MIT:mode of information transfer. E.g. lecture, SGD, DSL, Practical, skill lab etc etc



7.Examination and Methods of Assessment:

7.1 Instruction:

EXAMINATION RULES & REGULATIONS

- Student must report to examination hall/venue,in time for smooth conduction of the exams.
- No student will be allowed to enter the examination hall after 10 minutes of scheduled examination time.
- No students will be allowed to sit in exam without College ID Card, and Lab Coat
- Students must sit according to their roll numbers mentioned on the seats.
- Student must bring their own stationary items (Pen, Pencil, Eraser, and Sharpener) – Sharing is prohibited
- Any disturbance or Indiscipline in the exam hall/venue is not acceptable.
- Students must not possess any written material or communicate with their fellow students
- Cell phones are strictly not allowed in examination hall. If any student is found with cell phone in any mode (silent, switched off or on) he/she will be **not be allowed to continue their exam.**
- **No student is allowed to leave the examination hall before half the time is over, paper is handed over to the examiner and properly marking the attendance**.

7.2 INTERNAL: total 10% (24 marks)

- Students will be assessed comprehensively through multiple methods.
- 10% marks of internal evaluation will be added to the KMU annual professional exam.

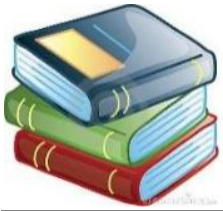
The marks distribution is based on Formative Assessment done individually by all the concerned departments. It may include:
Class participation and attitude of the students, class tests/ quiz, assignment, presentations, peer assessments, practicals log books and the internal exam results, all have specific marks allocation.

- NOTE: **at least 75% attendance is mandatory** to appear in the annual university examination.
  Biochemistry department is responsible to maintain the attendance record for BLOCK –E in coordination with all the concerned departments.

7.3 **UNIVERSITY EXAM: Exam has 90% (210) marks in total**

Year 2 Professional Exam in System-based Curriculum-

THEORY PAPERS	***MODULES***	***THEORY MARKS***	***INTERNAL ASSESSMENT THEORY(10%)***	***OSPE /VIVA***	***INTERNAL ASSESSMENT OSPE(10%***	***TOTAL MARKS***
PAPER-A	***NS -1***	***120***	***14***	***90***	***10***	***234***
	NS -2					
PAPER-B	***GIT/LIVER***	***120***	***13***	***90***	***10***	***233***
	RENAL					
PAPER-C	***ENDOCRINE***	***120***	***13***	***90***	***10***	***233***
	REPRODUCTION					
TOTAL MARKS		***360***	***40***	***270***	***30***	***700***



8 Learning Opportunities and Resources

8.1 Instruction (if any)

- Try to be regular in the classes as teacher is the best guide.
- Make your studies a primary goal as you have to deal with precious human lives.
- Stick to one book of your choice and stick the relavent high yield points from other sources to that single book of choice –it will make your examination and preps a lot easier
- Try to have as many sources of MCQ book as possible –it will help you focus on the most relevant and high yield knowledge.

8.2 Books:

CORE SUBJECTS	*RESOURCES*	*CHAPTERS/ pages*
ANATOMY	A. GROSS ANATOMY 1. Clinical Anatomy by Regions by Richard S. Snell 2. K.L. Moore, Clinically Oriented Anatomy 3. General Anatomy by BD Churissia B. HISTOLOGY 1. B. Young J. W. Health Wheather's Functional Histology C. EMBRYOLOGY 1. Keith L. Moore. The Developing Human 2. Langman's Medical Embryology B. REFERENCE BOOKS Gray's Anatomy for Students	
BIOCHEMISTRY	A. TEXTBOOKS for 2nd PROFESSIONAL 1.Lippincott's illustrated Biochemistry. 2.Pankaja Naik Or 3. Satyanarayana & Chakrapani 4.MCQ's Books & OLD PAPERS B. REFERENCE BOOKS 1. Harper's Illustrated Biochemistry 2. Textbook of medical biochemistry by Chatterjee-8thEdition 3.Lehninger Principle of Biochemistry 4. Biochemistry by Devlin	
PHYSIOLOGY	A. TEXTBOOKS	

	1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong ' S Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne & Levy Physiology 5. Best & Taylor Physiological Basis of Medical Practice B. REFERENCE BOOKS 1. Guyton & Hall Physiological Review 2. Essentials Of Medical Physiology by Jaypee 3. Textbook Of Medical Physiology by InduKhurana 4. Short Textbook Of Physiology by Mrthur 5. NMS Physiology	

8.3 Other learning sources:

Hands-on Activities/ Practical	Students will be involved in Practical sessions and hands-on activities that link with the foundation and Blood modules to enhance the learning
Labs	Utilize the lab eg. Histology lab and Anatomy Museum, Biochemistry and Physiology labs. to relate the knowledge to the specimens and models available
Skill Labs	A skills lab provides the simulators to learn the basic skills and procedures. Drawing blood and different procedures at biochemistry and Physiology labs. This helps build the confidence to approach the patients
Videos	Lot of good academic high quality Videos are easily available on Youtube..
Computers Lab.	In the present day the students must be computer literate. Fortunately computer lab with internet faciliy is available on the campus. Students have the access to Digital library, various websites for articles and different topics. This can be an additional advantage to increase learning.
Self Learning	Self Learning is scheduled to search for information to solve cases, read through different resources and discuss among the peers and with the faculty to clarify the concepts
Peer learning	Students may study in groups as per convience.

9 Timetables

BLOCK -E GIT, HEPATOBILIARY & METABOLISM AND RENAL MODULE

SUBJECTS	MODULE	TOPICS	TEACHER NAME	MODE OF TEACHING	VENUE
ANATOMY	GIT, HEPATOBILIARY & METABOLISM				
	RENAL				
	HISTOLOGY PRACTICALS				Histology Lab (1^{st} Floor Biochemistry Dept)
BIOCHEMISTRY	GIT, HEPATOBILIARY & METABOLISM	Carbohydrate Metabolism	Prof Dr.Norin Sultan	Lecture/ LGD	LECTURE HALL -1
		Lipid metabolism	Dr. Nadia Haleem	Lecture/ LGD	
		Protein & amino acid Metabolism.	Dr. Ayesha Awan	Lecture/ LGD	
		Nutrition	Prof. Dr. Ruhila Hanif	Lecture/ LGD	
		Digestion & Absorption	Dr Sofia Shoukat	Lecture/ LGD	
	RENAL	Bioenergetics and oxidative phosphorylation	Dr. Sarwat Abbasi	Lecture/ LGD	
		Acid Base Balance	Dr. Ayesha Awan	Lecture/ LGD	
	PRACTICALS	Details shared	Dr. Asma Rafique Dr. Maria Khan Dr Fizza Gul	Practicala performance and + Scedulled SGDs	Biochemistry Lab (Ground Floor) & Demo Room
PHYSIOLOGY	GIT, HEPATOBILIARY & METABOLISM				
	RENAL				

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TIME TABLE OF 2ND YEAR MBBS CLASS FOR THE SESSION 2024

BLOCK -2 GIT and METABOLISM WEEK-01

D A Y S	**8:00-10:00**				**10.00- 11.00**	**11.00- 12.00**	**12.00-12.45**	**12.45- 1.15**	**1.15- 3.00**
MONDAY	PRACTICAL			Self -directed learning	Biochemistry (Dr Ayesha) (LH-2) Protein 1	Physiology Dr Munazza (LH-2)	Prime-1 Comm-med-1 (DR zainab)	**PRAYER BREAK**	D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
	Histology **Biochem lab 1st floor**	**Physiology Pharmacodynamics lab**	Biochemistry **Biochem lab Ground Floor**						
	A Dr Rizwana	**B Dr faisal iftikhar**	**C Dr Fizza**	**D**					
TUESDAY	**B Dr Rizwana**	**D Dr asfandyar qureshi**	**A Dr Fizza**	**C**	Biochemistry (Dr Nadia) (LH-2) Lipid 1	Physiology dr Shazia tauqeer (LH-2)	Gross Anatomy Dr Humaira imtiaz (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
WEDNESDAY	**C Dr Rizwana**	**A Dr sajad**	**D Dr Maria**	**B**	Biochemistry (Dr Noreen) (LH-2) CHO 1	Physiology Dr Munaza (LH-2)	Histology Dr Fatma Shireen (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
THURSDAY	**D Dr Rizwana**	**C Dr faisal**	**B Dr Asma**	**A**	Biochemistry (Dr Sophia) (LH-2) GIT 1	Physiology Dr Shazia tauqeer (LH-2)	Medicine -1 Dr Zabiullah (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
FRIDAY	Biochemistry (8:00-9:00) (Dr sarwat) (LH-2) Oxi phos 1			Pharma -1 (9:00-10:00) Dr wajid Ali (LH-2)	Embryology Dr Ishfaq (LH-2)	Pathology-1 Dr Maleeha (LH-2)	Pak. Studies-1 Manzoor qadir (LH-2)		**HALF DAY**

Prof Dr Ruhila Hanif
Block -2 Coordinator
(GIT, Hepatobiliary Metabolism
Module)Chairperson Dept. of Biochemistry

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TIME TABLE OF 2ND YEAR MBBS CLASS FOR THE SESSION 2024

BLOCK -2 GIT and METABOLISM WEEK-02

DAYS	8:00-10:00				10.00- 11.00	11.00- 12.00	12.00-12.45	12.45- 1.15	1.15- 3.00
MONDAY	PRACTICAL			Computer Science / Skill Lab.	Biochemistry (Dr Ayesha) (LH 2) Protein 2	Physiology Dr Munaza (LH 2)	Prime -2 Com –med-2 (dr zainab)		DISSECTION Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
	Histology Biochem lab 1st floor	Physiology Pharmacodynamics lab	Biochemistry Biochem lab Ground Floor						
	A Dr Rizwana	B Dr faisal iftikhar	C Dr Fizza	D					
TUESDAY	B Dr Rizwana	D Dr asfandyar qureshi	A Dr Fizza	C	Biochemistry (Dr Nadia) (LH 2) Lipid 2	Physiology Dr Shazia Tauqeer (LH 2)	Gross Anatomy Dr Humaira Imtiaz (LH 2)		DISSECTION Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
WEDNESDAY	C Dr Rizwana	A Dr sajad	D Dr Maria	B	Biochemistry (Dr Noreen) (LH 2) CHO 2	Physiology Dr Munaza (LH 2)	Histology Dr Fatima (LH 2)		DISSECTION Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
THURSDAY	D Dr Rizwana	C Dr faisal	B Dr Asma	A	Biochemistry (Dr Sophia) (LH 2) GIT -2	Physiology Dr Shazia Tauqeer (LH 2)	Surgery-1 Dr Babar (LH 2)	PRAYER BREAK	DISSECTION Batch A: Dental college hall -1 Batch B Dental college hall-2 Batch C: LH-1 Batch D: GCR
FRIDAY	Biochemistry (8:00-9:00) (Dr sarwat) (LH-2) Oxi phos -2			Pharma -2 (9:00-10:00) Dr Jamila sahir (LH 2)	Embryology Dr Ishfaq (LH 2)	Pathology-2 Dr Maleeha (LH 2)	Islamiyat-1 Aftab Ahmed (LH 2)		HALF DAY

Prof Dr Ruhila Hanif
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TIME TABLE OF 2ND YEAR MBBS CLASS FOR THE SESSION

BLOCK -2 GIT and METABOLISM WEEK-03

DAYS	8:00-10:00				10.00- 11.00	11.00- 12.00	12.00-12.45	12.45- 1.15	1.15- 3.00
	PRACTICAL			Self -directed learning					
	Histology **Biochem lab 1st floor**	**Physiology** **Pharmacodynamics lab**	Biochemistry **Biochem lab Ground Floor**						
MONDAY	**A** **Dr Rizwana**	**B** **Dr faisal iftikhar**	**C** **Dr Fizza**	**D**	Biochemistry (Dr Ayesha) (LH 2) Protein 3	Physiology Dr Munaza (LH 2)	Prime-3 Community med-3 (LH 2) (Dr zainab)	PRAYER BREAK	D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
TUESDAY	**B** **Dr Rizwana**	**D** **Dr asfandyar qureshi**	**A** **Dr Fizza**	**C**	Biochemistry (Dr Nadia (LH 2)) Lipid 3	Physiology Dr Shazia tauqeer (LH 2)	Gross Anatomy Dr Humaira Imtiaz (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
WEDNESDAY	**C** **Dr Rizwana**	**A** **Dr sajad**	**D** **Dr Maria**	**B**	Biochemistry (Dr Noreen) (LH 2) CHO 3	Physiology Dr Munaza (LH 2)	Histology Dr Fatima Shireen (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
THURSDAY	**D** **Dr Rizwana**	**C** **Dr faisal**	**B** **Dr Asma**	**A**	Biochemistry (Dr Sophia) GIT 3	Physiology Dr Shazia tauqeer	Medicine -2 Dr Farhat		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
FRIDAY	Biochemistry (8:00-9:00) (Dr sarwat) (LH-2) Oxi phos 3			Pharma -3 (9:00-10:00) Dr Noman (LH 2)	Embryology Dr Ishfaq (LH 2)	Pathology-3 Dr maleeha (LH 2)	Pak. Studies-2 Manzoor Qadir (LH 2)		**HALF DAY**

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Block -2 Coordinator
(GIT, Hepatobiliary Metabolism
Module)Chairperson Dept. of Biochemistry

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TIME TABLE OF 2ND YEAR MBBS CLASS FOR THE SESSION 2024

BLOCK -2 GIT and METABOLISM WEEK-04

DAYS	8:00-10:00				10.00- 11.00	11.00- 12.00	12.00-12.45	12.45- 1.15	1.15- 3.00
	PRACTICAL			Self-Directed learning					
	Histology **Biochem lab 1st floor**	**Physiology Pharmacodynamics lab**	Biochemistry **Biochem lab Ground Floor**						
MONDAY	**A Dr Rizwana**	**B Dr faisal iftikhar**	**C Dr Fizza**	**D**	Biochemistry (Dr Ayesha) (LH 2) Protein 4	Physiology Dr munaza (LH 2)	Prime-4 Community med-3 (LH 2) (Dr zainab)	PRAYER BREAK	D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
TUESDAY	**B Dr Rizwana**	**D Dr asfandyar qureshi**	**A Dr Fizza**	**C**	Biochemistry (Dr Nadia) (LH 2) Lipid 4	Physiology Dr shazia tauqeer (LH 2)	Gross Anatomy Dr Humaira Imtiaz (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
WEDNESDAY	**C Dr Rizwana**	**A Dr sajad**	**D Dr Maria**	**B**	Biochemistry (Dr Noreen) (LH 2) CHO 4	Physiology Dr munaza (LH 2)	Histology Dr Fatima Shireen (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
THURSDAY	**D Dr Rizwana**	**C Dr faisal**	**B Dr Asma**	**A**	Biochemistry (Dr Sophia) (LH 2) GIT 4	Physiology Dr shazia tauqeer (LH 2)	Surgery-2 (dr amjad farooq)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
FRIDAY	Biochemistry (8:00-9:00) (Dr sarwat) (LH-2) Oxi phos 4			Pharma -4 (9:00-10:00) Dr maha aziz (LH 2)	Embryology Dr Ishfaq (LH 2)	Pathology-4 Dr maleeha (LH 2)	Islamiyat-2 Aftab Ahmed (LH 2)		**HALF DAY**

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TIME TABLE OF 2ND YEAR MBBS CLASS FOR THE SESSION 2024

BLOCK -2 GIT and METABOLISM WEEK-05

DAYS	8:00-10:00				10.00- 11.00	11.00- 12.00	12.00-12.45	12.45- 1.15	1.15- 3.00
	PRACTICAL			Self-Directed learning					
	Histology **Biochem lab 1st floor**	**Physiology Pharmacodynamics lab**	Biochemistry **Biochem lab Ground Floor**						
MONDAY	**A Dr Rizwana**	**B Dr faisal iftikhar**	**C Dr Fizza**	**D**	Biochemistry (Dr Ayesha) (LH 2) Protein 5	Physiology Dr munaza (LH 2)	PRIME-5 (Community Medicine-1) Dr zainab nazneen (LH 2)	**PRAYER BREAK**	D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
TUESDAY	**B Dr Rizwana**	**D Dr asfandyar qureshi**	**A Dr Fizza**	**C**	Biochemistry (Dr Nadia) (LH 2) Lipid 5	Physiology Dr shazia tauqeer (LH 2)	Gross Anatomy Dr humaira Imtiaz (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
WEDNESDAY	**C Dr Rizwana**	**A Dr sajad**	**D Dr Maria**	**B**	Biochemistry (Dr Noreen) (LH 2) CHO 5	Physiology Dr munaza (LH 2)	Histology Dr Fatima Shireen (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
THURSDAY	**D Dr Rizwana**	**C Dr faisal**	**B Dr Asma**	**A**	Biochemistry (Dr Sophia) (LH 2) GIT-5	Physiology Dr shazia tauqeer (LH 2)	Medicine-3 Dr touqeer (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
FRIDAY	Forensic Medicine -1 (8:00-9:00) Dr zartash (LH 2)			Biochemistry (9:00-10:00) (Dr ruhila) (LH-2) Nutrition-1	Embryology Dr Ishfaq (LH 2)	Pathology -5 Dr abid (LH 2)	Pakistan studies-3 Mr manzoor qadir (LH 2)		**HALF DAY**

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TIME TABLE OF 2ND YEAR MBBS CLASS FOR THE SESSION 2024

BLOCK -2 GIT and METABOLISM WEEK-06

DAYS	8:00-10:00				10.00- 11.00	11.00- 12.00	12.00-12.45	12.45- 1.15	1.15- 3.00
	PRACTICAL			Self-Directed Learning					
	Histology **Biochem lab 1st floor**	**Physiology** **Pharmacodynamics lab**	Biochemistry **Biochem lab Ground Floor**						
MONDAY	**A** **Dr Rizwana**	**B** **Dr faisal iftikhar**	**C** **Dr Fizza**	**D**	Biochemistry (Dr Ayesha) (LH 2) Protein-6	Physiology Dr munaza (LH 2)	(Community Medicine-1) Dr arooj (LH 2)	PRAYER BREAK	D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
TUESDAY	**B** **Dr Rizwana**	**D** **Dr asfandyar qureshi**	**A** **Dr Fizza**	**C**	Biochemistry (Dr Nadia) (LH 2) Lipid-6	Physiology Dr shazia tauqeer (LH 2)	Gross Anatomy Dr humaira Imtiaz (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
WEDNESDAY	**C** **Dr Rizwana**	**A** **Dr sajad**	**D** **Dr Maria**	**B**	Biochemistry (Dr Noreen) (LH 2) CHO-6	Physiology Dr munaza (LH 2)	Histology Dr Fatma Shireen (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
THURSDAY	**D** **Dr Rizwana**	**C** **Dr faisal**	**B** **Dr Asma**	**A**	Biochemistry (Dr Sophia) (LH 2) GIT-6	Physiology Dr shazia tauqeer (LH 2)	Surgery-3 Dr kashif (LH 2)		D I S S E C T I O N Batch A: Dental college hall -1 Batch B : Dental college hall-2 Batch C: LH-1 Batch D: GCR
FRIDAY	Forensic Medicine -2 (8:00-9:00) Dr sadia habiba (LH 2)			Biochemistry (9:00-10:00) (Dr ruhila) (LH-2) Nutrition-2	Embryology Dr Ishfaq (LH 2)	Pathology-6 Dr avid (LH 2)	Islamiyat-3 Aftab Ahmed (LH 2)		**HALF DAY**

Prof Dr Ruhila Hanif
Block -2 Coordinator
(GIT, Hepatobiliary Metabolism
Module)Chairperson Dept. of Biochemistry

ASSOCIATE DEAN (UG)
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DEPARTMENT OF BIOCHEMISTRY –AYUB MEDICAL COLLEGE ABBOTTABAD.

10 Course Feedback Form

Course Title: _____

Semester/Module _____ Dates:_____

Please fill the short questionnaire to make the course better.

Please respond below with 1, 2, 3, 4 or 5, where 1 and 5 are explained.

THE DESIGN OF THE MODLUE

A. Were objectives of the course clear to you? Y ☐ N ☐

B. The course contents met with your expectations ☐
   1. Strongly disagree 5. Strongly agree

C. The lecture sequence was well-planned ☐
   1. Strongly disagree 5. Strongly agree

D. The contents were illustrated with ☐
   1. Too few examples 5. Adequate examples

E. The level of the course was ☐
   1. Too low 5. Too high

F. The course contents compared with your expectations ☐
   1. Too theoretical 5. Too empirical

G. The course exposed you to new knowledge and practices ☐
   1. Strongly disagree 5. Strongly agree

H. Will you recommend this course to your colleagues? ☐
   1. Not at all 5. Very strongly

THE CONDUCT OF THE MODLUE

A. The lectures were clear and easy to understand ☐
   1. Strongly disagree 5. Strongly agree

B. The teaching aids were effectively used ☐
   1. Strongly disagree 5. Strongly agree

C. The course material handed out was adequate ☐
   1. Strongly disagree 5. Strongly agree

D. The instructors encouraged interaction and were helpful ☐
   1. Strongly disagree 5. Strongly agree

E. Were objectives of the course realized? Y ☐ N ☐

F. Please give overall rating of the course

90% - l00%	( )	60% - 70%	( )
80% - 90%	( )	50% - 60%	( )
70% - 80%	( )	below 50%	( )

Please comment on the strengths of the course and the way it was conducted.

Please comment on the weaknesses of the course and the way it was conducted.

Please give suggestions for the improvement of the course.

Optional – Your name and contact address:

Thank you!!