



RAI FOUNDATION MEDICAL COLLEGE GIT & NUTRITION I MODULE

SECOND YEAR MBBS, ACADEMIC SESSION 2025-26

**BLOCK: IV(GIT & NUTRITION- I)
Academic Year: 2025
Duration: 6 Weeks**



DISCLAIMER

- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- It is to declare that the learning objectives (general and specific) and the distribution of assessment tools (both theory and practical) are obtained from Rai Foundation Medical College, Sargodha. These can be obtained from: <https://www.uhs.edu.pk/>
- The time tables are for guiding purpose. It is to advise that final timetables are always displayed over the notice boards of each lecture hall.
- Students are encouraged to provide feedback via module coordinator.

Vision Statement

To be an institution of excellence in medical education, research, and patient care, fostering innovation, compassion, and a profound commitment to addressing healthcare challenges at local and global levels.

Mission Statement

We are dedicated to producing competent, ethical medical graduates who exemplify empathy, social accountability, and excellence in patient care. Through innovative education and critical thinking, they will advance clinical practice, scientific research, and lifelong learning to meet local and global healthcare needs.

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Module Committee

Sr.no	Name	Department	Role
1.		Principal	
2.		DME	Director
3.		DME	Assistant Director
4.		DME	Senior Demonstrator
Module Team			
5.		Professor Physiology	Block Coordinator
6.		Asst. Prof. Biochemistry	Module Coordinator
7.		Asst Professor DME	Module Developer
8.		Senior Demonstrator	Module Developer
9.		Professor Anatomy	Member
10.		HOD Biochemistry	Member
11.		HOD Anatomy	Member
12.		Asso. Prof. Physiology	Member
13.		Asst Professor Pathology	Member
14.		Asst.Prof. Pharmacology	Member
15.		Professor Medicine	Member
16.		Professor Surgery	Member
17.		Senior Lecturer Community Medicine	Member
18.		Asst. Prof. Psychiatry (Behavioral Science)	Member

Introduction to 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.

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.

Module Outcomes:

- Provides a list of learning resources such as books, computer-assisted learning programs, web links, 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.

Achievement of Objectives:

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

STUDENTS WILL EXPERIENCE IN INTEGRATED CURRICULUM:

Integrated Curriculum:

An integrated curriculum is all about making connections, whether to real life or across the disciplines, about skills or about knowledge. An integrated curriculum fuses subject areas, experiences, and real-life knowledge together to make a more fulfilling and tangible learning environment for students. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples. Case based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab are characteristics of integrated teaching program.

Marks Distribution

BLOCK IV – GIT & NUTRITION I + RENAL MODULE					
Theory	Part I - MCQs	85 Marks	Practical	OSPE	56 Marks
	Part II- SEQs	35 Marks		OSCE	16 Marks
	Internal Assessment	30 Marks		OSVE	48 Marks
	Total	150 Marks		Internal Assessment	30 Marks
				Total	150 Marks

Theme	Subject	MCQ (1 Mark)	SEQ (5Mark each)	Marks	Oral / Practical / Clinical Exam			
					OSPE (08 Marks each)	OSCE (10 Marks each)	Structure d OSVE (16 Marks each)	Marks
Normal Structure	Anatomy & Applied / Clinical	20	3	35	3	-	1	40
Normal Function	Physiology & Applied / Clinical	22	2	32	2	-	1	32
	Biochemistry & Applied / Clinical	22	2	32	2	-	1	32
Disease Burden & Prevention	Community Medicine Public Health	05	-	05	-	-	-	-
	Behavioral Sciences	05	-	05	-	-	-	-
Pathophysiology & Pharmacotherapeutics	Pathology	06	-	06	-	-	-	-
	Pharmacology	05	-	05	-	-	-	-
CFRC	CFRC 2-1	-	-	-	-	1	-	08
PERLS	PERLS 2-1	-	-	-	-	1	-	08
		85	7×5 = 35	120	08×7 = 56	2×08 = 16	3 × 16= 48	120

Organization of Module

INTRODUCTION

The gastrointestinal system is a vital component of the human body that is mainly responsible for food intake, digestion, and absorption in order to regularly supply the body with nutrients and calories, which are necessary for the fundamental operation of every organ in the body. The many components of the digestive system, including their physiological and biochemical features as well as their functional, histological, and embryological anatomy, will be thoroughly studied. Additionally, pharmacological therapies, clinical and pathological features, and preventative measures for prevalent disorders associated with the system will be briefly reviewed with the students.

This study guide has been developed to help guide you and keep you focused on the objectives for this module.

Welcome to the field of medicine and hope that the journey ahead will be exciting and fulfilling for you all!!

Teaching and learning strategies:

The following teaching / learning methods are used to promote better understanding:

1. Interactive Lectures
2. Hospital / Clinic visits
3. Small Group Discussion
4. Practical
5. Skills session in skill labs
6. Case-Based Learning (tutorials)
7. Directed Self-Learning

- **Interactive lectures:**

An interactive lecture is an easy way for instructors to intellectually engage and involve students as active participants in a lecture - based class of any size.

- **Hospital / Clinic visits:**

In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.

- **Small group discussion (SGD):**

Students learn from each other. Everyone gets more practice at expressing their ideas. A two-way discussion is almost always more creative than individual thoughts. Social skills are practiced in a 'safe' environment e.g. tolerance, cooperation.

- **Skills session:**

Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Laboratories of various departments.

- **Case Based Learning (CBL):**

A small group discussion format where learning is focused on a series of questions based on

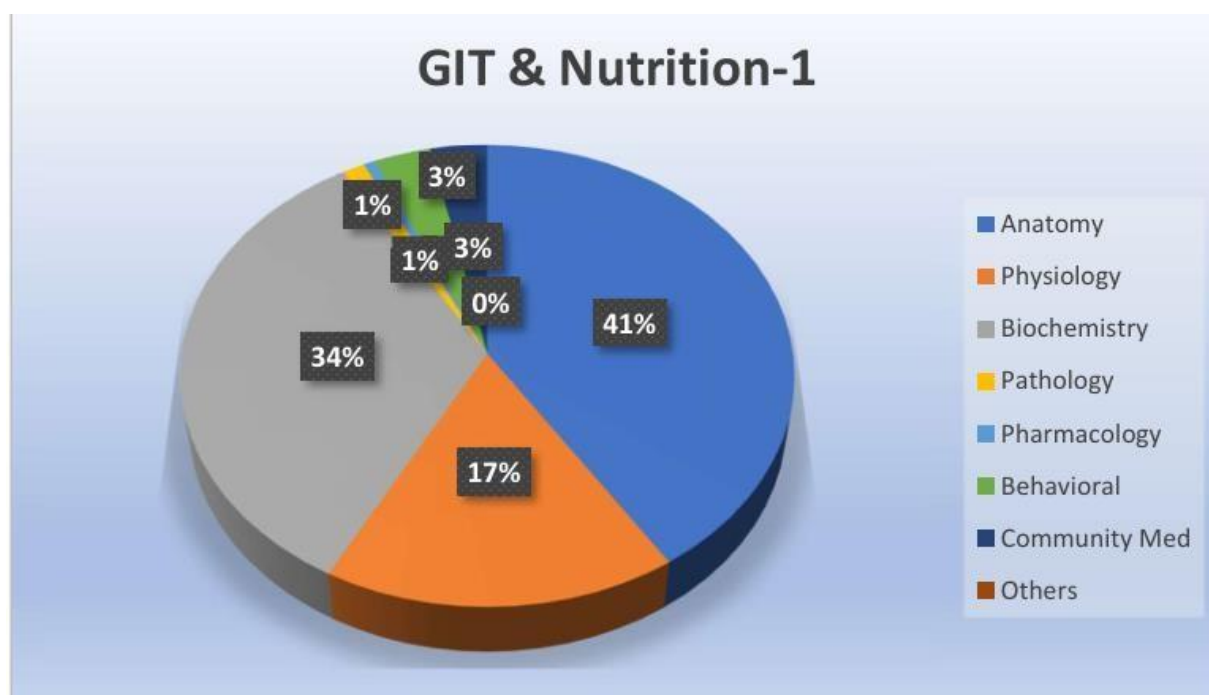
a clinical scenario. Students discuss and answer the questions by applying relevant knowledge gained previously in clinical and basic health sciences during the module and construct new knowledge. The CBD will be provided by the concerned department. It is an active learning & teaching strategy which promotes application of foundational knowledge in relevant clinical scenarios.

- **Directed Self-learning (DSL):**

Directed Self-learning, which involves studying with indirect supervision in a classroom/Library, is a valuable way to learn and is quickly growing in popularity among parents and students.

Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Centre, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

Integrating Disciplines of GIT & Nutrition I Module



Module Outcomes

By the end of GIT & Nutrition I module, students of 2nd year MBBS will be able to

- Describe gross and microscopic anatomy of different parts of gastrointestinal system and associated organs
 - Describe the embryological development of different parts of gastrointestinal system and associated organs
 - Describe the functional anatomy and physiology of different parts of gastrointestinal system and associated organs
 - Describe the motility, secretory and digestive function of gastrointestinal system
 - Describe the biochemical aspects of carbohydrate metabolism To discuss pathological aspect and management of gastrointestinal related diseases
 - Discuss the pharmacological treatment of diarrhea
 - Discuss the psychosocial impact of gastrointestinal diseases in society
 - Discuss the preventive measures related to gastrointestinal diseases
 - Comprehend concept of balanced diet and malnutrition
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Themes of GIT & Nutrition I Module

S. No	Theme	Duration
1.	Oral Cavity	1 week
2.	Esophagus & Stomach	1 week
3.	Small Intestine	1 week
4.	Liver & Pancreas	1 week
5.	Large Intestine	1 week
6.	Nutrition	1 week

Specific Learning Objectives

ANATOMY				
GROSS ANATOMY				
Topic	Specific Learning objectives	Teaching strategy	Levels C/P/A	Assessment
Oral Cavity and Oropharynx	Describe the gross anatomical features of oral cavity with its neurovascular supply and lymphatic.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Discuss the location, anatomical features, relations and vascular supply of tonsils: nasopharyngeal, palatine and lingual.		C2	
	Discuss the skeletal framework of hard palate with its neurovascular supply and lymphatic drainage.		C2	
	Describe the gross anatomical features of soft palate with its neurovascular supply and lymphatic drainage.		C2	
	Describe the attachments, nerve supply and actions of muscles of soft palate.		C2	
	Describe the structure of tongue with attachments of muscles, blood supply, nerve supply and lymphatic drainage.		C2	
	Discuss the anatomical basis of injury to hypoglossal nerve.		C2	
	Describe anatomical features, relations and neurovascular supply of parotid gland and its duct, mentioning the structures entering and exiting the gland.		C2	
	Discuss the clinical correlates of parotid gland: Parotiditis, Mumps, Frey's syndrome, parotid duct injury and parotid tumor surgery with its complications.		C3	
	Describe the Waldeyer's ring.		C2	
	Describe anatomical features, relations and neurovascular supply of submandibular and sublingual glands with their ducts.		C2	
	Describe parts of pharynx giving their extent, anatomical features, structure, neurovascular supply and lymphatic drainage.		C2	
	Discuss pharyngeal constrictor muscles along with their attachments, innervation and structure traversing the gaps between adjacent muscles.		C2	
Anterior Abdomen Wall	Describe the planes and quadrants of abdomen.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Draw and label the cutaneous innervation and dermatomes of anterior abdominal wall and anterolateral Abdominal wall.		C2	

	Describe the clinical correlates (Abdominal pain, Muscle rigidity, referred pain, anterior abdominal nerve block).		C3	
	Describe the fascia of anterior abdominal wall with its clinical significance.		C2	
	Describe anterolateral Abdominal wall arteries, Veins and Lymphatics and related clinical correlates—Caput Medusae.		C2	
	Describe the attachments, nerve supply and actions of muscles of anterior abdominal wall.		C2	
	Identify the muscles of anterolateral abdominal wall on anatomical model and/or cadaver.		C2	
	Describe the extent, formation and contents of rectus sheath.		C2	
	Give the formation and extent of inguinal ligament.		C2	
	Describe the formation of superficial and deep inguinal rings and conjoint tendon.		C2	
	Locate the position of superficial and deep inguinal rings on simulated subject or Cadaver.		C2	
	Describe the extent, boundaries and contents of inguinal canal.		C2	
	Define the following hernias: umbilical, epigastric, incisional, Spigelian, lumbar, femoral, internal and inguinal.		C1	
	Differentiate between direct and indirect inguinal hernias.		C2	
	Describe the location of abdominal surgical incisions.		C2	
	Mark the abdominal incisions on simulated patient/ subject explain their anatomical basis.		C2 / P	
	List the structures and coverings of spermatic cord.		C1	
Peritoneum	Trace the horizontal and vertical peritoneal reflections.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Describe the relationship of viscera to the peritoneum.		C2	
	Describe the gross anatomical features of the following: Mesentery, omentum, peritoneal ligaments, peritoneal fold, peritoneal sac, recesses, spaces & gutters.		C2	
	Describe the nerve supply of Peritoneum.		C2	
	Describe the anatomical basis and manifestations of the following: 1. Peritonitis and ascites 2. Peritoneal adhesions 3. Abdominal paracentesis		C3	

Esophagus	Describe the extent of esophagus, its constrictions, neurovascular supply and lymphatic drainage.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Discuss the anatomical basis of esophageal varices, achalasia and Gastro Esophageal Reflux Disease (GERD).		C3	
Stomach	Describe the location, position, parts, external and internal structure, relations, vascular and nerve supply and lymphatic drainage of stomach.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Draw and label a diagram illustrating the lymphatic drainage of Stomach.		C2	
	Describe the clinical presentation and the anatomical basis and manifestations of the Carcinoma of stomach and peptic ulcers.		C2	
	Demonstrate the parts, external and internal features of stomach on anatomical model and cadaver.		C2 / P	
Small & Large Intestine	Describe the location, position, parts, relations, neurovascular supply and lymphatic drainage of duodenum.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Describe the anatomical basis and manifestations of the following conditions: 1. Duodenal Ulcers 2. Ileal diverticulum 3. Diverticulosis 4. Large bowel cancer 5. Appendicitis 6. Volvulus 7. Intussusception		C3 / C3	
	Demonstrate the various positions of appendix.		C2 / P	
	Identify and demonstrate the Parts and external features of small and large intestines on anatomical model and cadaver.		C2/ P	
Liver	Describe the origin, course, branches (tributaries in case of veins) and distribution of the blood vessels of GIT.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Describe the formation, tributaries and drainage of hepatic-portal vein.		C2	
	Discuss the sites and vessels contributing in portosystemic anastomosis.		C2	
	Describe the clinical picture and anatomical basis for the blockage of porto-systemic anastomosis.		C2	
	Identify the blood vessels supplying GIT on anatomical model and cadaver.		C2	
	Describe location, lobes, important relations, peritoneal ligaments, blood supply, lymphatic drainage, nerve supply, related clinical correlates of liver and subphrenic spaces.		C2	
Biliary	Describe components of Biliary tree-hepatic duct and bile duct.	SGD (Dissection	C2	MCQs, SEQs, OSVE, OSPE

System	Describe relations, functions, blood supply, lymphatic drainage and nerve supply of gallbladder.	Hall & Museum)	C2	
	Describe related clinical correlates- gall stones, biliary colic, cholecystectomy, gallbladder gangrene.		C3	
Pancreas	Describe the location, surfaces, peritoneal reflections, relations, neurovascular supply and lymphatic drainage of pancreas.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Describe the anatomical basis and manifestations of pancreatitis & pancreatic cancer.		C2	
	Identify the parts of the pancreas.		C2 / P	
Sigmoid Colon, Rectum & Anal Canal	Describe the gross anatomical features, peritoneal relations, blood supply, nerve supply and lymphatic drainage of sigmoid colon, rectum and anal canal.	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Describe the anatomical basis for Sigmoidoscopy, rectal prolapse, rectal examination, rectal cancer and hemorrhoids.		C2 / C3	
Surgical Intervention	Outline the anatomical basis and surgical treatment plan for the following diseases: <ol style="list-style-type: none"> 1. Esophageal Injuries 2. Gastric Carcinoma 3. Intestinal Obstruction 4. Pancreatic Carcinoma 5. Obstructive Jaundice 6. Gall Stones 	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
EMBRYOLOGY & POST- NATAL DEVELOPMENT				
Topic	Specific Learning objectives	Teaching strategy	Levels C/P/A	Assessment
Oral Cavity	Describe the development of tongue.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the embryological basis of tongue tie.		C2	
	Describe the development of palate.		C2	
	Describe the embryological basis of various facial clefts.		C2	
Foregut	Describe the formation and divisions of gut tube.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the development of mesenteries.		C2	
	Describe the development of esophagus.		C2	
	Describe the embryological basis of esophageal atresia and/or tracheoesophageal fistula.		C2	
	Describe the development and rotation of stomach.		C2	
	Describe the embryological basis of pyloric stenosis.		C2	
	Describe the development of duodenum, liver and gall bladder.		C2	

	Describe the embryological basis of intrahepatic and extrahepatic biliary atresia.		C2	
	Describe the development of pancreas.		C2	
	Describe the embryological basis of annular pancreas.		C2	
Midgut	Describe the development of midgut especially mentioning physiological herniation, rotation, retraction of herniated loops and mesenteries of the intestinal.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the embryological basis of the following 1. Mobile cecum 2. Volvulus 3. Retro colic hernia 4. Omphalocele 5. Gastroschisis		C2 / C3	
	Describe the embryological basis of Meckel's diverticulum.		C2	
	Describe the embryological basis of 1. Gut rotation defects 2. Gut atresia and stenosis		C2	
Hindgut	Describe the development of hindgut.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the embryological basis of; 1. Rectourethral and rectovaginal fistulas 2. Recto anal fistulas and atresia 3. Imperforate anus 4. Congenital megacolon		C2 / C3	
	Identify the parts of the developing foregut, midgut and hindgut originating from the endoderm.		C2	
MICROSCOPIC ANATOMY (HISTOLOGY)				
Topic	Specific Learning objectives	Teaching strategy	Levels C/P/A	Assessment
Oral Cavity & Esophagus	Describe the light microscopic structure of; 1. Lips 2. Tongue including lingual papillae and taste buds 3. Oral Cavity (Cheeks, Teeth gums, hard & Soft palate)	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the histological structure of parotid, submandibular and sublingual glands		C2	
	Compare and contrast the histological structures of parotid, submandibular and sublingual glands.		C2	
	Describe the serous and mucous acini and give histological differences between the two.		C2	
	Describe the structure and location of serous demilunes.		C2	
	Describe histology of oropharynx and relate the characteristics of various layers of GIT with their function		C2	

	Describe the light microscopic structure of esophagus.		C2	
	Tabulate the histological differences between different parts of esophagus.		C2	
	Correlate the histological changes associated with reflux esophagitis and Barrett's esophagus.		C3	
Stomach	Describe the light microscopic structure of stomach.	LGIS	C2	MCQs, SEQs, OSVE
	Describe the role of parietal cells in pernicious anemia		C2	
Small Intestine	Describe the light microscopic structure of 1. Duodenum 2. Jejunum 3. Ileum	LGIS	C2	
	Discuss the histological basis of celiac disease		C2	
	Discuss the histological basis of Crohn's disease		C2	
Large Intestine	Describe the light microscopic structure of 1. Colon 2. Appendix 3. Rectum	LGIS	C2	MCQs, SEQs, OSVE
	Define colorectal cancer, anal abscess, hemorrhoids.		C1	
HISTOLOGY (Practical)				
Topic	Specific Learning objectives	Teaching strategy	Levels C/P/A	Assessment
Oral Cavity	Identify, draw and label the histological sections of Tongue and Lips and enumerate points of identification	Practical	P	Integrated OSPE
Salivary Gland	Identify, draw and label the histological sections of Salivary glands (Submandibular, Sublingual and Parotid).	Practical	P	
Upper GIT	Identify, draw and label the histological structure of the esophagus and enumerate points of identification. Identify, draw and label the histological structure of stomach and enumerate points of identification	Practical	P	
Small Intestine	Identify, draw and label the histological structure of small intestine (Duodenum, Jejunum, and Ileum) and enumerate points of identification.	Practical	P	
Large Intestine	Identify, draw and label the histological structure of large intestine and enumerate points of identification	Practical	P	
Organs associated with GIT	Identify, draw and label the histological sections of Gall bladder, liver and enumerate points of identification.	Practical	P	
	Identify, draw and label the histological sections of pancreas and enumerate points of identification	Practical	P	

Lymphatic Tissue	Identify, draw and label the histological sections of Palatine tonsil, appendix, peyer's patches and enumerate points of identification.	Practical	P	
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PHYSIOLOGY				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
General Principles of GIT Function	Classify the components of enteric nervous system	LGIS	C1	MCQs, SEQs, OSVE
	Discuss the location & significance of myenteric & Meissner's plexus		C2	
	Explain the mechanism of developing slow waves & spike potential		C2	
	Enlist the factors that depolarize & hyperpolarize the GIT membrane	SGD	C1	
	Enlist the excitatory & inhibitory neurotransmitters of enteric nervous system		C1	
	Explain the role of sympathetic & parasympathetic nervous system in controlling GIT function.	LGIS	C2	MCQs, SEQs, OSVE
	Enlist the gastrointestinal reflexes & explain the functions of these reflexes		C2	
	Enlist the hormones acting on GIT, their stimuli, site of release and actions	LGIS	C2	
	Enumerate different types of movements that occur in GIT		C2	
	Discuss the functions and control of GIT movements		C2	
	Discuss the effect of gut activity and metabolic factors on GIT blood flow	LGIS	C2	
	Explain the nervous control of GIT blood flow		C2	
Propulsion & Mixing of Food	Trace the reflex arc of mastication	LGIS	C2	MCQs, SEQs, OSVE
	Explain the process and importance of chewing reflex		C2	
	Enlist the stages of swallowing		C1	
	Describe the mechanism of voluntary stage of swallowing		C2	
	Trace the reflex arc of involuntary stage of swallowing			
	Enlist the steps involved in involuntary stage of swallowing		C1	
	Explain the effect of swallowing on respiration		C2	
	Discuss the mechanism of esophageal stage of swallowing		C2	
Dysphagia	Enlist causes of dysphagia	LGIS	C1	MCQs, SEQs, OSVE
	Explain the types and role of different peristalsis originating in esophagus		C2	
	Discuss the role of Lower Esophageal Sphincter (Gastroesophageal)		C2	

	Discuss the pathophysiology of achalasia & Megaesophagus	CBL	C2	
	Enlist the features and treatment of achalasia		C1	
Motor functions of stomach	Explain storage function of stomach	SGD	C2	MCQs, SEQs, OSVE
	Describe the basic electrical rhythm of stomach wall		C2	
	Explain the role of pyloric pump and pyloric sphincter in gastric emptying		C2	
	Explain the factors that promote Stomach Emptying		C2	
	Enlist the factors that initiate enterogastric inhibitory reflexes		C1	
Gastritis	Enumerate the causes, features, and pathophysiology of gastritis	LGIS	C3	MCQs, SEQs, OSVE
	Explain the physiological basis of each feature of gastritis		C3	
	Recommend treatment of gastritis		C4	
Peptic ulcer	Enumerate the causes, features, and pathophysiology of peptic ulcer		C3	
	Explain the physiological basis of each feature of peptic ulcer		C2	
Movements of small & large intestine	Enumerate and explain the hormones and movements of small intestine	LGIS	C2	MCQs, SEQs, OSVE
	Explain the term “peristaltic rush”		C2	
	Explain the functions of ileocecal valve and sphincter		C2	
	Enumerate the types of intestinal sprue		C1	
	Enlist the features of intestinal sprue		C1	
	Explain the consequences of sprue on the body		C3	
	Enumerate the types of movements taking place in colon		C3	
	Explain the mechanism of developing movements of colon and their control through gastrocolic & duodenocolic Reflexes		C3	
Defecation	Enlist the defecation reflexes	LGIS	C1	MCQs, SEQs, OSVE
	Explain the mechanism of defecation reflex		C2	
	Trace the reflex arc of defecation		C3	
Constipation	Name the other autonomic reflexes that affect bowel activity	SGD	C1	
	Explain the pathophysiology of constipation		C2	
Malabsorption & Diarrhea	Discuss the causes of diarrhea		C3	
	Define acute & chronic diarrhea		C3	
	Describe the cause of Hirschsprung’s disease.		C4	
Liver & Gall	Explain the functions of liver	LGIS	C3	

Bladder	Differentiate between liver and gall bladder bile and the hormones acting on them		C2	
	Enumerate the causes and composition of developing gall stones		C2	
Pancreas	Explain function and secretions of pancreas	LGIS	C2	MCQs, SEQs, OSVE
	Enlist the causes and pathophysiology of acute and chronic pancreatitis		C1	
	Enumerate the features of acute pancreatitis and explain the physiological basis of each feature of pancreatitis		C2	
Vomiting	Describe the stages of vomiting act	LGIS	C2	MCQs, SEQs, OSVE
	Trace the reflex arc of vomiting			
Motion Sickness	Explain the role of chemoreceptor trigger zone for initiation of vomiting by drugs or by motion sickness.		C2	
Malnutrition	Define Malnutrition.	LGIS	C1	MCQs, SEQs, OSVE
	Identify various causes of malnutrition.		C2	
	Identify the risk factors of malnutrition.		C2	
	Outline treatment strategies.		C1	
PRACTICAL				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Cranial Nerve	Demonstrate Cranial nerve V, IX & X testing.	Lab	C2 / P	OSPE, OSCE

BIOCHEMISTRY

Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
GIT secretions & digestion and absorption of dietary carbohydrates	Give the composition and importance of saliva.	LGIS / SGD	C2 / C3	MCQs, SEQs, OSVE
	Discuss the cause and clinical manifestations of xerostomia			
	Give the composition and importance of gastric juice with special reference to mechanism of HCl secretion, its regulation.		C2	
	Apply knowledge of acid secretion to discuss the cause and clinical manifestations of achlorhydria and gastric ulcer		C3	
	Give the composition and importance of pancreatic juice, bile and succus entericus.		C2	
	Apply knowledge of pancreatic secretions to discuss the cause and clinical manifestations of Pancreatitis, cystic fibrosis, cholelithiasis.		C3	
	Describe digestion and absorption of dietary carbohydrates along with		C2 / C3	

	inherited and acquired disorders (lactose intolerance, sucrase-isomaltase deficiency)			
Entry of glucose into cells	Elaborate key features of various transport systems for entry of glucose into cells	LGIS / SGD	C2	MCQs, SEQs, OSVE
Hormonal control of blood sugar levels	Enlist the hormones that play important roles in regulating carbohydrate metabolism.		C1	
	Elaborate the metabolic effects of these hormones.		C2	
	Infer the consequences of deficiency and excess of these hormones		C2 / C3	
Glycolysis	Describe the glycolytic pathway along with its regulation and significance.	LGIS / SGD	C2	MCQs, SEQs, OSVE
	Compare key features of aerobic and anaerobic glycolysis.		C2	
	Calculate the number of ATP produced during aerobic and anaerobic glycolysis.		C2	
	Explain hemolytic anemia in subjects with pyruvate kinase deficiency based on your biochemical knowledge.		C3	
	Clearly differentiate between substrate level phosphorylation and oxidative phosphorylation		C2	
Metabolic fates of pyruvate	Discuss the metabolic fates of pyruvate.	LGIS / SGD	C2	MCQs, SEQs, OSVE
	Describe the transport of pyruvate from cytosol to mitochondria.		C2	
	Elaborate the reaction catalyzed by pyruvate dehydrogenase complex (PDH) along with regulation and significance.		C2	
	Enlist inherited and acquired causes of lactic acidosis and give biochemical explanation for lactic acidosis in each condition.		C1/ C2	
Kreb's Cycle	Describe the TCA cycle along with regulation & significance.	LGIS	C2	MCQs, SEQs, OSVE
	Calculate the energy yield of TCA		C2	
Gluconeogenesis	Define gluconeogenesis and enumerate gluconeogenic substrates (precursors)	LGIS / SGD	C1	MCQs, SEQs, OSVE
	Delineate the reactions involved in synthesis of glucose from various gluconeogenic substrates.		C2	
	Elaborate the regulation and importance of gluconeogenesis		C2	
	Explain the significance of Cori cycle and glucose alanine cycle		C2	
Glycogen metabolism	Illustrate the reactions of glycogenesis, glycogenolysis along with their regulation and significance		C2	MCQs, SEQs, OSVE
	Enlist various types of glycogen storage diseases (GSDs)		C1	

	Infer the key biochemical and clinical features of various GSDs from the respective enzyme deficiencies.		C2	
Hexose Mono Phosphate Pathway (HMP)	Describe the reactions and regulation of Hexose Mono Phosphate Pathway (HMP).		C2	MCQs, SEQs, OSVE
	Discuss the importance of HMP shunt		C2	
	Explain hemolytic anemia in subjects suffering from G6PD deficiency.		C2	
	Diagnose G6PD (glucose-6-phosphate dehydrogenase) deficiency based on given data.		C3	
Uronic acid & sorbitol pathway	Describe the reactions, regulation, and biomedical importance of uronic acid pathway and sorbitol pathway.	LGIS / SGD	C2	MCQs, SEQs, OSVE
Metabolism of galactose & fructose	Outline the reactions involved in metabolism of galactose and fructose.		C1	
	Infer the key biochemical and clinical features of galactosemia, essential fructosuria, and hereditary fructose intolerance (HFI) from the respective enzyme deficiencies.		C2	
	Explain hypertriacylglycerolemia, hypercholesterolemia, and hyperuricemia associated with fructose loading of liver.		C2	
Ethanol metabolism	Outline the reactions involved in ethanol metabolism.	SGD	C1	MCQs, SEQs, OSVE
	Explain how ethanol consumption causes hypoglycemia and fatty liver.		C2	
Electron Transport Chain	Diagrammatically illustrate the organization of electron transport chain (ETC) depicting the flow of electrons	LGIS / SGD	C2	
	Enlist the components of complex I, II, III, and IV		C1	
	Enumerate clinically important inhibitors of electron transport chain and mention their site of action.		C1	
ATP Synthesis	Elaborate the structure of ATP synthase (complex V).	LGIS / SGD	C2	MCQs, SEQs, OSVE
	Explain how the free energy generated by the transport of electrons by ETC is used to produce ATP from ADP + Pi (i.e. chemiosmotic hypothesis)		C2	
	Elaborate the effect of oligomycin and uncouplers on ATP production.		C2	
	Describe the effect of arsenic poisoning on carbohydrate metabolism and ATP production.		C2	
	Elaborate the glycerol 3-P shuttle and malate-aspartate shuttle for the transfer of reducing equivalents from cytosol into the mitochondria		C2	

Nutrition/ Balanced Diet	Classify nutrients into macro and micronutrients.	LGIS/ SGD	C2	MCQs, SEQs, OSVE
	Elaborate the concept and importance of Balanced Diet		C2	
	Enlist the components of balanced diet.		C1	
	Elaborate the importance of each component of balanced diet.		C2	
Special Nutritional Requirements	Delineate special nutritional requirements during pregnancy, lactation, growth, and old age.	LGIS/ SGD	C2	MCQs, SEQs, OSVE, OSPE
	Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids.		C2	
Caloric Requirements	Define energy balance.		C1	
	Compare the energy content of macro nutrients and alcohol.		C2	
	Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults		C2	
Basal Metabolic Rate (BMR)	Define basal metabolic rate (BMR)		C1	MCQs, SEQs, OSVE, OSPE
	Elaborate the effect of various physiological and pathological factors on BMR.			
Vitamins	Describe sources, Recommended Dietary Allowance (RDA), biochemical functions, deficiency, and toxicity of vitamin B1, B2, B3, B5 and B7.	LGIS/ SGD	C2	
	Describe sources, RDA, biochemical functions, deficiency, and toxicity of vitamin E and vitamin K.		C2	
Minerals	Classify minerals according to their daily requirements.	LGIS/ SGD	C2	
	Give sources, functions and biomedical importance of Na, K and Cl.		C2	
	Describe sources, functions and biomedical importance of Mg, Se, I, F, Cu, Cr, Mn, Mo, Zn and Co.		C2	
PRACTICAL BIOCHEMISTRY				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Estimations of Blood / Urine Analytes	Estimate blood glucose level by glucose oxidase method and interpret the results	Practical Lab	C2 / P	OSPE / OSVE
	Determine blood glucose level by glucometer and interpret the result.			
	Perform Glucose tolerance test (GTT) and interpret the results.			
	Determine urine glucose by dipstick method and interpret the result.			

Interpretation of Results	Estimate serum amylase and interpret the result.		C2 / P	
	Interpret the results of Lactose tolerance test.		C2 / P	
	Determine BMI of given subject and interpret the results.		C2 / P	

Community Medicine				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Protein Energy Malnutrition	Enlist causes and types of Protein Energy Malnutrition (PEM).	LGIS	C1	MCQs
	Discuss risk factors, prevention and management of protein energy malnutrition (PEM)		C2	
	Differentiate between Kwashiorkor and Marasmus based on the given data.		C2	
	Enlist symptoms and signs		C1	
	Outline treatment strategies		C1	
BMI & Obesity	Define body mass index (BMI).	LGIS	C1	MCQs
	Categorize individuals into underweight, normal, overweight, obese, and morbidly obese based on their BMI values.		C2	
	Elaborate the role of genetic, environmental, and behavioral factors in determining body weight.		C2	
	Clearly differentiate between upper body obesity and lower body obesity.		C2	
	Enlist health risks associated with obesity.		C1	
Epidemiology of communicable diseases (Intestinal infection)	Describe prevention and control of polio, viral hepatitis A, cholera, typhoid and food poisoning.	LGIS	C2	MCQs
	Describe prevention and control of amoebiasis, ascariasis, hook worm infestation.		C2	
Preventive Medicine	Describe the advice to be given for breast feeding, weaning and childhood.	LGIS	C2	
Nutrition & Health	Describe balanced diet for adult and obesity.		C2	
	Plot and interpret growth chart for children under 5 years of age		C2	
	Describe prevention and control of deficiency of Vitamin A and D		C2	
AGING				
Preventive Medicine in Geriatrics	Identify causes and risk factors for malnutrition in elderly & Outline treatment strategies	LGIS	C2	

BEHAVIORAL SCIENCE				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Health related behaviors & Beliefs	Identify health related behaviors and apply principles of learning to modify eating and addictive patterns	LGIS	C1	MCQs
	Discuss health belief model and its application in managing common presentations related to gastro intestinal system		C2	
	Explain the transtheoretical model of changing behaviors to modify the diseases pattern		C2	
Management of Obesity	Describe motivational interviewing and outline a management plan to help the individuals with obesity and diabetes to lose weight	LGIS	C2	
Medically Undescribed Symptoms	Describe and distinguish Medically Undescribed Symptoms (MUS)	LGIS	C2	
	Describe the association of psychosocial factors with MUS		C2	
	Outline the principles of management plan according to biopsychosocial model		C1	
	Describe role of Cognitive Behavioral Therapy (CBT)		C2	
Nutritional Disease & Mental Development	Identify effect on mental development of nutritional deficiencies	LGIS	C1	

MEDICINE				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Acute & Chronic Hepatitis	Define Acute Hepatitis	LGIS	C1	MCQs
	Define Chronic Hepatitis		C1	
	Enlist various causes for acute and chronic hepatitis		C1	
	Describe various symptoms and signs of chronic hepatitis		C2	
	Outline treatment strategies		C1	

PATHOLOGY				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Peptic Ulcer	Describe the etiology, pathogenesis, morphology and clinical features of peptic ulcer disease	LGIS	C2	MCQs
Infectious Agents causing Diarrhea	Enumerate common infectious agents of diarrheal diseases		C1	
	Discuss pathogenesis and clinical features of common pathogens		C2	

PHARMACOLOGY				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Antidiarrheal Agents	Classify anti diarrheal drugs and describe the pharmacokinetics, mechanism of action, pharmacological effects, uses and adverse effects.	LGIS	C2	MCQ

CLINICAL SKILLS (CSIM)				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Abdominal Examination	Demonstrate steps of abdominal examination	Clinical Rotation	C2 / P	OSCE
	Demonstrate the procedure of shifting dullness.		C2 / P	
Radiographs	Identify organs on X-ray abdomen.	Skill Lab	C2	
Dehydration	Assess dehydration in infant/young child and explain procedure of making home made ORS	Clinical Rotation	C2 / P	

PERLS (PROFESSIONALISM, ETHICS, RESEARCH, LEADERSHIP SKILLS)				
Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Professionalism	Develop a dress code for your class	SGD	C2	OSCE
	Demonstrate improvement in one area of weakness identified in the previous year	Assignment	C2	
	Develop a code of conduct for students in the small group discussions in teams	SGD	C2	
Digital Citizen	Upgrade the portfolio with at least two academic and personal achievements in last one year.	Portfolio Entry	C2	
Research	Identify a topic for literature review	SGD	C2	
Leadership	Write a report on different coping mechanisms used during year 1,	Assignment	C3	

Time Tables:

The timetables for the module will be shared via WhatsApp groups and the notice boards in advance.

Assessment Tools

Theoretical knowledge is tested by a written examination system constituted by multiple choice questions (MCQ) and SEQs. The assessment of practical knowledge involves oral, spot, or objective structured practical examinations (OSPE).

Multiple Choice Questions (MCQ/SEQs):

Multiple choice questions (MCQ/SEQs) are a form of assessment for which students are asked to select the best choice from a list of answers.

MCQ/SEQ consists of a stem and a set of options. The stem is usually the first part of the assessment that presents the question as a problem to be solved; the question can be an incomplete statement which requires to be completed and can include a graph, a picture or any other relevant information. The options are the possible answers that the student can choose from, with the correct answer called the key and the incorrect answers called distractors.

Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.

Students mark their responses on specified computer-based sheet designed for the college.

The block exam will comprise of 85 MCQ/ 7 SEQs each of 5 marks and will be compiled according to the shared blueprint.

Short Essay Questions (SEQ)

Short Essay questions generally ask for brief, text-based responses. They can be used to assess students' understanding of and ability to think with subject matter content, discourage guessing of answers, in-depth knowledge of concepts, and formulation of an answer.

Objective Structured Practical or Clinical Examination (OSCE / OSPE)

- The content may assess application of knowledge, or practical skills.
- Student will complete task in define time at one given station.
- All the students are assessed on the same content by the same examiner in the same allocated time.
- A structured examination will have observed, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Rest station is a station where there is no task given, and in this time student can organize his/her thoughts.
- The Block OSPE / OSCE will be comprise of 12 examined stations. The stations will be assigned according to the shared blueprint.

Internal Evaluation:

Internal evaluation is a process of quality review undertaken within an institution for its own ends. Internal evaluation criteria will be shared with faculty and 20 % on internal assessment will be observed in each module.

Attendance Requirement:

A minimum of 85% attendance is mandatory to sit for the examinations.

Professional Examination:

Criteria for appearing in Professional examination are according to rules and regulations shared by UHS which are available on their website. The criteria is;

- At least 85 % cumulative attendance in all blocks.
 - An average 50 % minimum score in all blocks
 - Certificate of good conduct from college
 - Certificate of having appeared in all block exams conducted by the college
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Learning Resources for Students

Anatomy

- Snell Clinical Anatomy 10th ed
- B.D Churasia
- Nelter Atlas
- Langman Embryology (12th Edi)
- Laiq Hassain Basic Histology (8th Ed)
- Difore Atlas Histology

Physiology

- Guyton and Hall physiology (14th Ed)
- Essentials of Medical Physiology by Mushtaq Ahmed

Biochemistry

- Harpers Illustrated Biochemistry (32nd Ed)
- Lippincott's Biochemistry
- Essentials of Medical Biochemistry vol 1&2 by Mushtaq Ahmed.

Community Medicine:

- Parks Textbook of Preventive and Social Medicine. K. Park (Editor)

Pathology:

- Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pathologic basis of disease. WB Saunders.

Pharmacology:

- Basic and Clinical Pharmacology by Katzung, McGraw-Hill.

Behavioral Sciences:

- Handbook of Behavioural Sciences by Prof. Mowadat H.Rana, 3rd Edition

Apart from these resource learning, students can consult books available in library or recommended by the specialty experts.
