



GIT & HEPATOBILIARY-II MODULE

4th Year MBBS

Table of Contents

Khyber Medical University (KMU) Vision:	3
Khyber Medical University (KMU) Mission:	3
Institute of Health Professions Education & Research (IHPER) Mission:	3
Introduction to Module	4
Teaching Hours Allocation	5
General Learning Objectives	6
Specific Learning Objectives	7
Theme-1 (Difficulty in swallowing).....	7
Theme-2 (Epigastric pain)	11
Theme-3 (Pain right upper abdomen).....	22
Theme-4: (Diarrhea and Constipation).....	31
Theme- 5 (Bleeding per Rectum)	39
Practical work	43
Learning Resources.....	46
Assessment Plan - 4 th Year MBBS	47
Assessment Blueprints	49

Khyber Medical University (KMU) Vision:

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Medical University (KMU) Mission:

Khyber Medical University aims to promote professional competence through learning and innovation for providing comprehensive quality health care to the nation.

Institute of Health Professions Education & Research (IHPER) Mission:

To produce leaders, innovators and researchers in health professions education who can apply global knowledge to resolve local issues.

Introduction to Module

Gastro-intestinal-II and Hepatobiliary-II Module is designed to provide both basic, clinical knowledge and skills to the medical students. The modules include sessions on important pathological diseases of gastrointestinal system and hepatobiliary system. The relevant clinical subjects are also taught under the shared themes with pharmacological explanation. The medical and surgical management and preventive aspect of the diseases is also addressed.

Table 1: Themes

S. No	Themes	Duration Weeks
1	Difficulty in swallowing	1
2	Pain epigastrium	1
3	Pain right upper abdomen	2
4	Diarrhea and constipation	3
5	Bleeding Per Rectum	1

Teaching Hours Allocation

Table 2: Total hours distribution of each subject

S. No	Subject	Hours
1	Pathology	49
2	Pharmacology	20
3	Forensic medicine	22
4	Community medicine	23
5	Medicine	13
6	Surgery	14
7	Pediatrics	4
8	Family medicine	3
9	Anatomy	1
10	PRIME	1
11	Research*	16**
	Total hours	153

General Learning Objectives

By the end of GIT-II Module, 4th year MBBS students will be able to:

1. Describe the etiology, pathogenesis, morphology, clinical features, laboratory diagnosis, medical and surgical management of diseases of GIT & hepatobiliary system.
2. Interpret the liver function tests in different hepatic diseases.
3. Describe the basic and clinical pharmacology of drugs used in GIT & hepatobiliary diseases.
4. Write prescriptions for common GIT & hepatobiliary disorders.
5. Describe medico legal aspects of abdominal trauma.
6. Describe medico legal aspects of vegetable acid, corrosive and irritants poisoning.
7. Describe the epidemiology and prevention of malnutrition and viral hepatitis.
8. Analyze demographic processes in context of public health care.

Specific Learning Objectives

Table 3: Theme wise learning objectives

Theme-1 (Difficulty in swallowing)				
Subject	Topic	Hours	S#	Learning objective
Pathology	Salivary Gland (Inflammation and tumors)	1	1	Classify the inflammatory and neoplastic diseases of salivary gland.
			2	Describe the etiology, morphology and clinical presentation of inflammatory and neoplastic diseases of salivary gland.
	Esophagus	2	3	Classify esophagitis.
			4	Describe the etiology, pathophysiology, morphology, clinical presentation and complications of esophagitis
			5	Classify esophageal tumors.
			6	Describe the etiology, pathogenesis, morphology, clinical presentation, diagnosis and complications of esophageal tumors
Medicine	Oral Cavity Diseases	1	7	Discuss the etiology of stomatitis and Aphthous ulcers

			8	Discuss the clinical features of stomatitis and Aphthous ulcers
			9	Discuss the investigations of stomatitis and Aphthous ulcers
			10	Devise a management plan for stomatitis and Aphthous ulcers
	Esophagus:	1	11	Discuss the causes of esophageal motility disorders
	1) Esophageal motility disorders		12	Discuss the clinical features of esophageal motility disorders
			13	Discuss the relevant investigations of esophageal motility disorders
			14	Devise a management plan of esophageal motility disorders
	2) Esophagitis	1	15	Discuss the etiology of esophagitis
			16	Discuss the clinical features of esophagitis
			17	Discuss the appropriate diagnostic testing for esophagitis
			18	Devise a management plan for esophagitis
	3) Cardia achalasia	1	19	Discuss the etiology, clinical features, investigations and management of Cardia achalasia

	4) Gastro Esophageal reflux disease (GERD)		20	Discuss the risk factors, etiology, clinical features, investigations, complications and management of GERD
ENT	Cleft lip and palate	1	21	Discuss the etiology, clinical features, investigations, complications and management of cleft lip and palate
	Pharyngitis and Tonsillitis	1	22	Discuss the etiology, clinical features, investigations, complications and management of Pharyngitis and acute Tonsillitis
			23	Explain the clinical features, and management of peritonsillar abscess
			24	Discuss the classification, etiology, clinical features, investigations, and management of Chronic Tonsillitis
	Oropharyngeal cancer	1	25	Discuss the classification, etiology, clinical features, investigations, and management of oropharyngeal cancers
	Salivary glands	1	26	Classify diseases of the salivary glands
27			Explain the etiology, clinical features, investigations and management of Mumps, and Sialadenitis	

			28	Explain the etiology, clinical features, investigations and management of salivary ducts stones
	Dysphagia	1	29	Explain the types, etiology, clinical features, investigations and management of a patient with dysphagia
Surgery	Tumors of the esophagus	1	30	Discuss the classification, etiology, clinical features, investigations, staging and management of Esophageal cancers
	Para-esophageal hiatus hernia		31	Explain the etiology, clinical features, investigations and management of Para-esophageal hiatus hernia
PRIME/Medical Education	Social accountability	1	32	Explain the concept of social accountability
			33	Differentiate between different social accountability issues

Theme-2 (Epigastric pain)

Theme-2 (Epigastric pain)				
Pathology	Gastritis	1	34	Explain the types, etiology, microscopic morphology and clinical features of Gastritis
	Peptic ulcers	2	35	Discuss the etiology, pathophysiology, morphology, complications and lab. diagnosis of peptic ulcer disease
			36	Discuss the role of H.Pylori & campylobacter in the causation of Peptic ulcer disease
			37	Discuss the morphology, virulence factors and lab diagnosis of H. Pylori & campylobacter
	Gastric polyps and tumors	1	38	Classify gastric polyps and tumors
			39	Describe the pathogenesis, morphology, lab diagnosis and complications of gastric polyps and tumors.
Medicine	Gastritis	1	40	Explain the types, etiology, clinical features, investigations, management and complications of Gastritis
	Peptic ulcer disease	2	41	Explain the types, etiology, clinical features, investigations, management and complications of Gastritis

			42	Describe H.pylori eradication therapy protocols in the treatment of peptic ulcer disease
	Upper GI Bleeding	1	43	Explain the etiology, clinical features, investigations and management of a patient with upper GI bleeding
			44	Describe the indications and procedures of pharmacological and endoscopic treatment of variceal bleeding
Pharmacology	Anti-emetics	2	45	Classify anti-emetic drugs
			46	Describe the mechanism of serotonin antagonists as anti-emetic agents.
			47	Enlist the clinical uses (anti-emetic) and adverse effects of serotonin antagonists.
			48	Describe the pharmacological basis of serotonin antagonists in chemotherapy induced vomiting
			49	Describe the mechanism of H1-antagonists as anti-emetic agents.
			50	Enlist the clinical uses (anti-emetic) of H1-antagonists.
			51	Describe the mechanism of anticholinergic drugs as anti-emetic agents.

			52	Enlist the clinical uses (anti-emetic) of anticholinergic drugs.
			53	Describe the pharmacological basis of scopolamine in motion sickness
			54	Describe the anti-emetic mechanism of D2-receptor blockers (Metoclopramide & Domperidone).
			55	Enlist the clinical uses (anti-emetic) and adverse effects of D2-receptor blockers.
			56	Compare the pharmacological features of metoclopramide & Domperidone.
			57	Describe the drug interaction of metoclopramide with levodopa.
			58	Describe the mechanism of neuroleptics as anti-emetic agent.
			59	Enumerate the clinical uses (anti-emetic) of neuroleptic drugs.
			60	Describe the antiemetic mechanism of benzodiazepines.
			61	Describe the antiemetic mechanism of glucocorticoids.

			62	Enumerate the indications (anti-emetic) of glucocorticoids.
			63	List anti-emetic drugs used in morning sickness.
			64	List anti-emetic drugs used in chemotherapy induced vomiting.
	Drugs used in the treatment of variceal bleeding		65	Enlist the drugs used in variceal hemorrhage
			66	Describe the mechanism of somatostatin and octreotide in variceal hemorrhage
			67	Describe the mechanism of Vasopressin & Terlipressin in variceal hemorrhage
			68	Describe the mechanism of beta-blockers in variceal hemorrhage
	Drugs used in the treatment of Peptic ulcer disease and Gastritis	2	69	Classify the drugs used in Peptic ulcer disease
			70	Describe the mechanism of action, indications and adverse effects of proton pump inhibitors (PPIs).
			71	Describe the pharmacokinetics of PPIs with special emphasis on time of administration
			72	Describe the drug interaction of Omeprazole & H2 blockers with Sucralfate
			73	Describe the drug interaction of Omeprazole with Clopidogrel

			74	Describe the mechanism of action, indications and adverse effects of H-2 blockers.
			75	Compare/differentiate H2-blockers in terms of bioavailability and involvement in drug interactions
			76	Describe the mechanism of action, indications and adverse effects of Antacids.
			77	Enumerate the properties of an ideal antacid.
			78	Describe the pharmacokinetics of antacids with special emphasis on time of administration
			79	Describe the drug interactions of antacids with tetracyclines, iron and fluoroquinolones.
			80	Describe the mechanism of sucralfate in the treatment of peptic ulcer
			81	List the indications of sucralfate.
			82	Discuss the drug interaction of sucralfate with digoxin, ketoconazole and tetracyclines.
			83	Describe the pharmacokinetics of sucralfate with special emphasis on time of administration.
			84	Describe the mechanism, indications and adverse effects of bismuth compounds.

			85	Describe the role of anticholinergic drugs in peptic ulcer.
			86	List the indications (anti-peptic ulcer) of anticholinergic drugs.
			87	Discuss the pharmacological basis for the use of prostaglandin analogues (Misoprostol) in the treatment of peptic ulcer.
			88	List the contraindications of misoprostol.
			89	Describe triple therapy for the eradication of H.pylori infection.
			90	Describe quadruple therapy for the eradication of H.pylori infection
Forensic medicine	Common house-hold poisons	1	91	Enlist, domestic, medicinal and garden poisons commonly used
	Corrosives/ Mineral acids		92	Enlist different commonly used mineral acids
			93	Enumerate physical appearance and uses of Sulphuric acid
			94	Describe mechanism of action, fatal dose & period of Sulphuric acid
			95	Describe clinical features and treatment of Sulphuric acid burns

			96	Describe postmortem appearance and forensic importance of Sulphuric acid burns
			97	Enumerate physical appearance and uses of nitric acid
			98	Describe mechanism of action and fatal dose & period of nitric acid
			99	Describe clinical features and postmortem appearance of nitric acid burns
			100	Enumerate physical appearance and uses of hydrochloric acid
			101	Describe clinical features and postmortem appearance of hydrochloric acid burns
	Corrosives/ Alkali	1	102	Enlist different commonly used alkali
			103	Enumerate physical appearance and uses of alkali
			104	Describe mechanism of action, clinical features and treatment of alkali burns
			105	Describe postmortem appearance and forensic importance of alkali burns
	Corrosive/ organic acid	1	106	Enlist different commonly used organic acids
			107	Enumerate physical appearance and uses of carbolic acid

			108	Describe mechanism of action, fatal dose & period of carbolic acid
			109	Describe clinical features and treatment of carbolic acid poisoning
			110	Describe postmortem appearance and forensic importance of carbolic acid poisoning
			111	Enumerate physical appearance and uses of oxalic acid
			112	Describe mechanism of action, fatal dose & period of oxalic acid
			113	Describe clinical features and treatment of oxalic acid poisoning
			114	Describe postmortem appearance and forensic importance of oxalic acid poisoning
	Corrosive/ vegetable acid and cyanides	1	115	Enumerate physical appearance, sources and uses of cyanides
			116	Describe mechanism of action, fatal dose & period of cyanides
			117	Describe clinical features and treatment of cyanide poisoning
			118	Describe postmortem appearance and forensic importance of cyanide acid poisoning

Surgery	Gastric cancer	1	119	Describe the types, etiology, risk factors, lab diagnosis and management of a patient with gastric cancer	
	Gastric outlet obstruction	1	120	Describe the etiology, diagnosis and management of a patient with gastric outlet obstruction	
Community medicine and public health	Health system of Pakistan: Introduction	2	121	Describe health care system of Pakistan using WHO Health system frame work	
	Primary health care (PHC)		122	Define PHC	
			123	Describe the history of development of PHC	
			124	Describe the concepts and components of PHC	
			125	Describe comprehensive & selective PHC	
			126	Describe reasons for failure of PHC	
			127	Describe Health Systems before & after PHC	
			128	Describe district health care system	
	129	Enumerate indicators for assessing PHC			
	Health education		3	130	Define health education
				131	Describe objectives and functions of health education
132				Describe the components of health education	
133				Describe the methods of health education	

			134	Describe the communication channel in health education
			135	Describe the constraints in health education
			136	Describe classification of theories of health education
			137	Describe the stages in health education
			138	Describe the principles of health education
			139	Describe the strategies for an effective health education program
			140	Explain the methods of evaluation and effectiveness of a health education project
	Health management information system (HMIS)		141	Define concept of HMIS
			142	Enumerate the components of HMIS
			143	Describe its importance in health care delivery system
			144	Enumerate the principles of HMIS
			145	Give the causes of failure of HMIS
	Hospital administration	1	146	Define health care delivery system
			147	Describe the need of a specialized hospital administration
			148	Describe the attributes of a good hospital administrator

		149	Describe functions involved in hospital administration
		150	Describe the levels of hospitals and management levels in a hospital
Health plans - Longitudinal, horizontal, integrated, 5 year, ADP, SAP, Short term, long term	1	151	Describe different health plans
		152	Describe characteristics of health plans
Health plans - MDGs	1	153	Enumerate MDGS
		154	Describe targets & indicators of various health related MDGs
		155	Describe reasons for failure to achieve MDGS
Health plans - SDGs	1	156	Enumerate SDGs related to health
		157	Describe targets & indicators of various health related SDGs
		158	Describe Pakistan progress on set targets
Health planning	1	159	Define health planning
		160	Describe importance & use of planning in health
		161	Explain the reasons for ineffective health planning in Pakistan
		162	Describe health planning cycle
		163	Describe the types of health planning

	Health economics	1	164	Define Health economics
			165	Explain the importance of economic studies in health
			166	Describe different tools used in economic evaluations
	Health policy	1	167	Define health policy
			168	Describe its role in health system
			169	Describe different stages in policy making
			170	Describe the different types of policies
			171	Describe the constraints in policy making
	Role of international health agencies in public health	1	172	Describe health policy of Pakistan.
			173	Enumerate international health agencies working in health sector.
174			Discuss structure and function of WHO & UNICEF	
			175	Explain the roles of WHO & UNICEF in Pakistan.
Theme-3 (Pain right upper abdomen)				
Anatomy	Gross anatomy	1	176	Explain the lobes and segments of the liver
			177	Discuss the gross structure of gall bladder and biliary channels
			178	Explain the gross and microscopic structure of the pancreas
	Liver histology		179	Explain the microscopic structure of the liver and gall bladder

Pathology	Liver Function Tests	1	180	Enumerate the functions of the liver. Explain the significance of different liver function tests. Interpret the Liver function tests in different diseases.
	Mechanisms of liver injury and repair	1	181	Describe the etiology and morphology of liver injury and repair
	Acute Liver failure		182	Describe the etiology, pathogenesis, clinical and biochemical and other features of acute liver failure
	Chronic Liver disease and liver cirrhosis	1	183	Describe the etiology, pathogenesis, clinical and biochemical and other features of chronic liver disease
			184	Explain the complications of liver cirrhosis
			185	Describe the etiology, pathogenesis, clinical features and complication of portal hypertension
	Viral hepatitis A and E	1	186	Explain the Etiology, pathogenesis, morphology and clinical features of Acute viral hepatitis A and E infection

Viral hepatitis B	2	187	Explain the Etiology, risk factors, pathogenesis, morphology and clinical features of Acute viral hepatitis B infection
		188	Explain the pathogenesis, morphology and clinical features of Chronic viral hepatitis B infection
		189	Discuss the stages of viral hepatitis B infections
		190	Discuss the complications of chronic Hepatitis B virus infection
		191	Discuss the serological markers of hepatitis B Virus infection
		192	Explain the preventive strategies of Hepatitis B virus infection
Viral Hepatitis C	1	193	Explain the Etiology, risk factors, pathogenesis, morphology and clinical features of viral hepatitis C infection
		194	Discuss the complications of chronic Hepatitis C virus infection
Autoimmune hepatitis	1	195	Define autoimmune hepatitis
		196	Explain the serological and morphological features of autoimmune hepatitis
Toxin and Drug induced hepatitis		197	Explain the etiology and morphological features of toxins and drug induced hepatitis

	Alcoholic liver disease	1	198	Discuss the morphology, pathogenesis and complications of Alcoholic liver disease
	Metabolic liver diseases	1	199	Describe the morphology, clinical features and complications of NAFLD, Hemochromatosis, Wilson`s disease and Alpha-1 Anti-Trypsin deficiency
	<ul style="list-style-type: none"> • Non-Alcoholic liver disease (NAFLD) • Hemochromatosis • Wilson`s disease • Alpha-1 antitrypsin deficiency 		200	Describe the etiology, morphology, clinical features and complications of Hemochromatosis
			201	Describe the etiology, morphology, clinical features and complications of Wilson`s disease
			202	Describe the etiology, morphology, clinical features and complication of Alpha-1 Anti-Trypsin deficiency
	Liver abscess	1	203	Describe the etiology, pathogenesis, morphology, clinical presentation, complications and lab diagnosis of Liver abscess
	Tumors of the liver	1	204	Classify liver tumors
			205	Explain the benign tumors of the liver
			206	Discuss the risk factors, etiology, morphology, clinical features, staging and complications of hepatocellular carcinoma

	Gall bladder	1	207	Discuss the types, risk factors, etiology, morphology, clinical features and complications of gall stones	
	• Gall stones			208	Discuss the risk factors, etiology, morphology, clinical features and complications of acute cholecystitis
	• Cholecystitis			209	Discuss the risk factors, etiology, morphology, clinical features and complications of Chronic cholecystitis
	• Gall bladder cancer	1	210	Discuss the risk factors, etiology, morphology, clinical features, staging and complications of carcinoma gall bladder	
	Pancreas		2	211	Enlist and define the congenital anomalies of pancreas
				212	Discuss the risk factors, etiology, morphology, clinical features and complications of acute pancreatitis
				213	Discuss the risk factors, etiology, morphology, clinical features and complications of chronic pancreatitis
214				Describe the pathogenesis and complications of pancreatic pseudocyst	

			215	Discuss the risk factors, etiology, morphology, clinical features, staging and complications of carcinoma of pancreas
Pediatrics	Hereditary hyperbilirubinemias	1	216	Classify hereditary hyperbilirubinemias
			217	Explain the types, clinical features, investigations and management of different hereditary hyperbilirubinemias
	Acute hepatitis A	1	218	Explain the Etiology, pathogenesis, clinical features, investigations and treatment of Acute viral hepatitis A infection
Medicine	Hepatitis B virus infection	1	219	Explain the Etiology, pathogenesis, clinical features, investigations and treatment of Acute viral hepatitis B infection
			220	Explain the Etiology, pathogenesis, clinical features, investigations and treatment of chronic viral hepatitis B infection
	Hepatitis C virus infection	1	221	Explain the Etiology, pathogenesis, clinical features, investigations and treatment of chronic viral hepatitis C infection
			222	Explain the clinical features, investigations, management and complications of liver cirrhosis

			223	Explain the treatment of a patient with hepatic encephalopathy
	Metabolic liver diseases	1	224	Discuss the management of a patient with Wilson`s disease
			225	Discuss the management of a patient with Hemochromatosis
			226	Discuss the management of a patient with primary biliary cirrhosis
			227	Discuss the management of a patient with autoimmune hepatitis
	Hepatic vein obstruction		228	Discuss the etiology, clinical features, investigations and management of a patient with hepatic vein obstruction
	Hepatocellular carcinoma	1	229	Explain the etiology, clinical features, investigations, treatment and complications of hepatocellular carcinoma
	Carcinoma of the pancreas		230	Discuss the risk factors, etiology, clinical features, staging and complications of carcinoma of pancreas
Surgery	Gall bladder and pancreas	2	231	Explain the etiology, clinical features, investigations, treatment and complications of gall stones

			232	Explain the etiology, clinical features, investigations, treatment and complications of acute and chronic cholecystitis
			233	Explain the etiology, clinical features, investigations, treatment and complications of acute and chronic pancreatitis
	Carcinoma of the gall bladder		234	Discuss the risk factors, etiology, clinical features, staging and complications of carcinoma of gall bladder
	Liver abscess	1	235	Explain the etiology, clinical features, investigations, treatment and complications of liver abscesses
	Hydatid liver cysts		236	Explain the etiology, clinical features, investigations, treatment, and complications of Hydatid liver cysts.
Pharmacology	Hepatotoxic drugs	1	237	Describe first pass hepatic metabolism
			238	Enlist common hepatotoxic drugs
			239	Explain the drug treatment of paracetamol poisoning.
	Drugs used in the treatment of hepatitis B	1	240	Classify the drugs for hepatitis B virus infection.
			241	Describe the duration and adverse effects of drugs used in the treatment of chronic hepatitis B.
	1	242	Classify the drugs for hepatitis C virus infection.	

	Drugs used in the treatment of hepatitis C		243	Describe the duration and adverse effects of drugs used in the treatment of chronic hepatitis C.
Community medicine	Viral Hepatitis	1	244	Describe the epidemiological determinants of Hepatitis B & C.
			245	Describe the prevalence and incidence with reference to local context.
			246	Describe the preventive & control measures for Hepatitis B & C.
Family Medicine	Acute and chronic hepatitis	1	247	Explain the etiology and clinical features of acute hepatitis.
			248	Explain the management strategies of acute hepatitis in family practice.
			249	Explain the etiology, clinical features and complications of Chronic hepatitis.
			250	Explain the management strategies of chronic hepatitis in family practice.
			251	Describe the red flags in a patient with acute and chronic hepatitis for referral to specialty care.

Theme-4: (Diarrhea and Constipation)

Pathology	Intestinal obstruction	1	252	Define hernia, adhesions, volvulus, and intussusception
	Ischemic bowel disease		253	Describe the etiology, pathogenesis, morphology, and complications of small bowel ischemia
	Diarrheas	1	254	Define malabsorption syndrome
			255	Classify diarrheas
			256	Explain the etiology, morphology, clinical features and complications of Celiac disease
	Bacterial enterocolitis	2	257	Explain the etiology, pathogenesis, and clinical features of bacterial enterocolitis
			258	Explain the etiology, pathogenesis, morphology and clinical features of Salmonellosis
	Parasitic enterocolitis	1	259	Classify the parasites invading the small gut
	Entamoeba histolytica	1	260	Discuss the life cycle, morphology, pathogenesis, clinical features and complications of Amebiasis
	Giardia lamblia	1	261	Discuss the life cycle, morphology, pathogenesis, clinical features and complications of Giardiasis
Hymenolepis nana	4	262	Discuss the life cycle, morphology, pathogenesis, clinical features and complications of H. nana infestation	

	Diphyllobothrium latum		263	Discuss the life cycle, morphology, pathogenesis, clinical features and complications of Diphyllobothrium latum
	Schistosoma hematobium, mansoni and japonicum		264	Enlist physical characteristics of Trematodes
			265	Classify Schistosoma on the basis of organ systems affected
			266	Describe the routes of infection, pathophysiology life cycle, clinical features and lab diagnosis of Schistosoma hematobium, mansoni and japonicum
			267	Compare the morphological characteristics of eggs of different species of Schistosoma.
	Ascaris lumbricoides	4	268	Discuss the life cycle, morphology, pathogenesis, clinical features and complications of Ascaris lumbricoides
	Strongyloides		269	Discuss the life cycle, morphology, pathogenesis, clinical features and complications of Strongyloides
	Ankylostoma duodenale		270	Discuss the life cycle, morphology, pathogenesis, clinical features and complications of Ankylostoma duodenale

	Enterobius vermicularis		271	Discuss the life cycle, morphology, pathogenesis, clinical features and complications of Enterobius vermicularis
Medicine	Intestinal tuberculosis	1	272	Discuss the etiology, pathogenesis, clinical features, investigations, treatment and complications of intestinal tuberculosis
Surgery	Acute appendicitis	1	273	Discuss the etiology, risk factors, pathogenesis, clinical features, differential diagnosis, investigations, treatment and complications of acute appendicitis
	Intestinal obstruction	1	274	Discuss the etiology, clinical features, investigations, management and complications of intestinal obstruction
Pharmacology	Antidiarrheal agents (Opioids, Colloidal bismuth compounds, Kaolin & Pectin, etc	1	275	Define and classify antidiarrheal agents
			276	Describe the mechanism of action of different antidiarrheal agents
	Laxatives (Bulk-forming, stool softeners, osmotic laxatives, stimulant laxatives, etc.	1	277	Define and classify laxative drugs
			278	Describe the mechanism of action of different laxatives

	Lactulose		279	Describe the pharmacological basis of Lactulose in the treatment of hepatic encephalopathy
	Anti-amoebic drugs	1	280	Classify anti-amoebic drugs
			281	Describe mechanism of actions of Metronidazole & Dialoxanide Furoate
			282	Enlist indications and adverse effect of Metronidazole & Dialoxanide Furoate.
			283	Describe the drug interaction of Metronidazole with Alcohol.
	Anthelmintics	1	284	Classify Anti-Helminthic drugs
			285	Enumerate clinical use(s), adverse effects and contraindications of Albendazole, Mebendazole, Pyrantal Pamoate, Ivermectin, Praziquantel & Niclosamide
			286	Describe mechanism of action of Albendazole, Mebendazole, Pyrantal Pamoate, Ivermectin, Praziquantel & Niclosamide
	Anti-Salmonellosis drugs	1	287	List the drugs used in enteric fever
			288	Describe the basis for selection of antibiotics in enteric fever based on age, pregnancy and resistance

			289	Describe the clinical applications of fluroquinolones in the treatment of gastrointestinal disorders
Forensic medicine	Irritants	3	290	Classify irritants poisons
	Irritants: Metallic poisons		291	Enlist common metallic irritant poisons
			292	Describe physical appearance, uses, mechanism, fatal dose, fatal period and signs and symptoms of Copper and Mercury poisons
			293	Describe the treatment, postmortem appearance and medicolegal importance of common Copper and Mercury poisons
			294	Describe the signs and symptoms, treatment, postmortem appearance and medicolegal importance of acute and chronic Arsenic poisoning
	295	Describe the signs and symptoms, treatment, postmortem appearance and medicolegal importance of acute and chronic Lead poisoning		
	Irritants /mechanical poisons/ powder glass	1	296	Enlist commonly encountered mechanical poisons
297			Enumerate symptoms and signs, treatment, postmortem appearance and forensic importance of powder glass	

	Irritants/ nonmetallic poisons	4	298	Enlist commonly encountered inorganic elements poisoning
			299	Enumerate physical appearance and uses of phosphorus
			300	Describe mechanism of action, fatal dose & period of phosphorus
			301	Describe clinical features and treatment of phosphorus poisoning
			302	Describe postmortem appearance and forensic importance of phosphorus poisoning
			303	Describe physical appearance, uses, mechanism of action, clinical features, treatment, postmortem appearance and forensic importance of aluminum phosphide
			304	Describe physical appearance, uses, mechanism of action, clinical features, treatment, postmortem appearance and forensic importance of chlorine
			305	Describe physical appearance, uses, mechanism of action, clinical features, treatment, postmortem appearance and forensic importance of iodine

	Irritants/ vegetable poisons	2	306	Enlist commonly encountered inorganic elements poisoning.
			307	Describe characteristics, active principles, and clinical features of vegetable poisons.
			308	Enumerate uses, fatal dose and fatal periods of vegetable poisons.
			309	Describe treatment, postmortem appearance, and forensic importance of vegetable poisons.
	Irritants/ animal poisons	2	310	Differentiate between poisonous and non-poisonous snakes
			311	Classify snakes on the basis of their venom.
			312	Describe the characteristics of snake venoms
			313	Classify different snakes venoms
			314	Describe steps of management of snake bite
			315	Describe post mortem appearance and medico legal aspects of venomous snake bite
			316	Describe sign and symptoms of scorpion bite
Community medicine	Overview of common intestinal worms' infestation and their control	1	317	Describe the common intestinal worm infestation in our local context
			318	Describe the epidemiological determinants of common worm infestation with reference to local context

			319	Describe the preventive & control measures for common worm infestation
	Control of dysentery	1	320	Describe the epidemiology of Dysentery.
			321	Describe the prevention & control measures of Dysentery.
	Food hygiene	1	322	Describe the term food Hygiene
			323	Describe the importance of food hygiene
			324	Describe the process of Food hygiene
Family medicine	Enteric infections	1	325	Classify enteric infections
			326	Describe the etiology, clinical features, investigations and management of Salmonellosis
			327	Describe the red flags in a patient with Salmonella infections for referral to specialty care.
		1	328	Explain the etiology, and management of acute gastroenteritis.
		329	Discuss the primary and secondary prevention of acute gastroenteritis in a primary healthcare setting.	
	330	Describe the red-flags in a patient with acute gastroenteritis for referral to specialty care.		

Pediatrics	Lactase deficiency	1	331	Describe the clinical features, investigations, complications, and management of Lactase deficiency.
	Infectious diarrhea		332	Describe the etiology, clinical features, investigations, complications, and management of infectious diarrheas in children.
	Celiac disease	1	333	Describe the etiology, clinical features, investigations, complications, and management of Celiac disease.
Theme- 5 (Bleeding per Rectum)				
Pathology	Inflammatory bowel disease (IBD)	2	334	Classify IBD
			335	Discuss the risk factors and etiology of IBDs
			336	Explain the pathogenesis clinical presentation of IBD
			337	Differentiate between Ulcerative colitis and Crohn`s disease
			338	Discuss the investigations and management of IBDs
			339	Explain the intestinal and extra-intestinal manifestations/complications of IBDs

			340	Explain the role of surveillance colonoscopy in patients with Ulcerative colitis
	Diverticular disease	1	341	Explain the etiology, pathogenesis, morphology and clinical features of Colonic diverticulosis
	Colonic polyps	1	342	Classify colonic polyps.
			343	Describe the pathogenesis, morphology, clinical presentation, complications and diagnosis of different types of colonic polyps
	Hemorrhoids		344	Define hemorrhoids
			345	Explain the morphology, pathogenesis and clinical features of Hemorrhoids
	Colorectal carcinoma	1	346	Describe the adenoma carcinoma sequence
			347	Describe the pathogenesis, morphology, clinical presentation, complications and staging of colorectal Carcinoma
Surgery	Ulcerative colitis	1	348	Explain the etiology, pathogenesis, clinical features, complications and surgical management of Ulcerative colitis
	Crohn`s disease	1	349	Explain the etiology, pathogenesis, clinical features, complications and surgical management of Crohn`s disease

	Diverticular disease	1	350	Explain the etiology, pathogenesis, clinical features, complications and management of Diverticulosis and Diverticulitis
	Anal diseases: <ul style="list-style-type: none"> • fistula • fissures • hemorrhoids 	1	351	Define perianal fistula and anal fissure
			352	Explain the risk factors and management of anal fistula and anal fissures
			353	Explain the risk factors and management of hemorrhoids
	Colorectal cancers	1	354	Classify colorectal cancers
			356	Describe the staging of colorectal cancers
			357	Explain the pathogenesis, risk factors and clinical features of colorectal cancers
			358	Explain the complications, management and prognosis of colorectal cancers
	Ischemic Colitis	1	359	Explain the etiology, pathogenesis, clinical features, complications and management of Ischemic colitis
Medicine	Irritable bowel syndrome	1	360	Explain the risk factors, clinical features, and management of Irritable bowel syndrome
	Ulcerative colitis	1	361	Explain the etiology, pathogenesis, clinical features, complications and surgical management of Crohn`s disease

	Crohn`s disease	1	362	Explain the etiology, pathogenesis, clinical features, complications and management of Crohn`s disease
	Ano-rectal infections	1	363	Classify anorectal infections
			364	Explain the risk factors, clinical features and management of anorectal infections including sexually transmitted infections
Pharmacology	Drugs used in the treatment of Irritable Bowel Syndrome (IBS)	1	365	Enlist the drugs used in IBS
			366	Describe the mechanism of action of antispasmodics (anticholinergics), 5-HT receptor antagonisms (Alosetron) in IBS
	Drugs used in the treatment of IBD	2	367	Classify the drugs used in IBD
			360	Describe the mechanism of actions of aminosalicylates, glucocorticoids, purine analogues, methotrexate, monoclonal antibodies and anti-integrin in IBDs
			369	Explain the adverse effects of drugs used in the treatment of IBD
Forensic medicine	Abdominal injuries	1	370	Describe injuries to abdominal wall
			371	Describe injuries to esophagus, intestine and stomach
			372	Describe injuries to liver and spleen

Practical work				
Pathology	Ascaris Lumbricoides	6	373	Identify the important morphological and staining characteristics of the ova
	Enterobius vermicularis		374	Identify the important morphological and staining characteristics of the ova
	Ankylostoma duodenale		375	Identify the important morphological and staining characteristics of the ova
	Liver Function Tests		376	To interpret normal and abnormal liver function tests in different clinical scenarios
Pharmacology	Peptic ulcer disease	5	377	construct prescription for Helicobacter-associated peptic ulcer disease (Triple therapy & Quadruple therapy)
	Anti-emetics		378	construct prescriptions for motion sickness, morning sickness, post-operative patient
			379	construct prescriptions for cancer chemotherapy-induced vomiting
		380	construct a prescription for a patient suffering from amoebic dysentery	
	Enteric fever	381	construct a prescription for a patient suffering from Enteric fever	
		382	Write a prescription for a patient suffering from Ascariasis	

Forensic medicine	Poisons	5	383	Identify corrosives
	Corosives		384	Case presentation of vitriolage
	Irritants		385	identify common irritant poisons
	Metallic poisons		386	identify common Metallic and non-metallic poisons
	Vegetable and animal poisons		387	identify common Vegetable and animal poisons
Community medicine	Protein calorie malnutrition	1.5	388	Identify the model
			389	Differentiate between the clinical features of 2 models
			390	Justify its public health importance
			391	Signify the concept of food fortification and food adulteration
	My food plate/ The pyramid	1.5	392	Identify the model
			393	Describe different components of the model
	Health education	1.5	394	identify a health education message on the problem/scenario provided
			395	Formulate a health education message on the problem/scenario provided
	House fly /arthropods	1.5	396	Identify the model
			397	Explain the disease caused by this vector and its control

	Aedes Egypti	1.5	398	Identify the model
			399	Explain the disease caused by this vector and its control
	Autoclave	1.5	400	Identify the model
			401	Explain the types of items for which autoclaves are used
			402	Explain the steps of instruments sterilization

Learning Resources

Table 4: Reference Textbooks

S#	Subjects	Resources
1.	Anatomy	A. Gross Anatomy 1. K.L. Moore, Clinically Oriented Anatomy B. Embryology 1. KeithL. Moore. The Developing Human 2. Langman’s Medical Embryology
2.	Community Medicine	1. Community Medicine by Parikh 2. Community Medicine by M Ilyas 3. Basic Statistics for the Health Sciences by Jan W Kuzma
3.	OBGYN	1. Obstetrics by Ten Teachers, Louise C. Kenny, Jenny E. Myers 2. Gynaecology by Ten Teachers, Louise Kenny, Helen Bickerstaff 3. Hacker & Moore's Essentials of Obstetrics and Gynecology 4. Textbook of Gynecology, Rashid Latif Khan 5. Fundamentals of Gynaecology, Dr Arshad Chohan
4.	Pathology	1. Robbins & Cotran, Pathologic Basis of Disease,9 th edition. 2. Rapid Review Pathology,4 th edition by Edward F. Goljan MD
5.	Physiology	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
6.	Paeds	Basis of Pediatrics (8th Edition Pervez Akbar)

Assessment Plan - 4th Year MBBS

The year-4 will be assessed in 4 blocks

- 1) Block-1 (Neurosciences-2 module) will be assessed in **paper-J**
- 2) Block-2 (GIT and hepatobiliary module) will be assessed in **paper-K**
- 3) Block-3 (Renal-2, Endocrine & Reproduction-2 module) will be assessed in **paper-L**
- 4) Block-4 (ENT and EYE modules) will be assessed in **paper-M**
- 5) Each written paper consists of 120 MCQs.
- 6) Internal assessment will be added to final marks in KMU as shown in below table.
- 7) In OSPE, each station will be allotted 6 marks, and a total of 120 (+10% marks of internal assessment) marks are allocated for each OSPE/OSCE examination.

4th Year MBBS Modules Assessment Plan

Theory paper	Modules	Theory marks	Internal assessment theory (10%)	OSPE/OSPE	Internal assessment OSPE/OSPE (10%)	Total Marks
Paper J	Neurosciences-2	120	13	120	13	266
Paper K	GIT & Hepatobiliary-2	120	13	120	13	266
Paper L	Renal-2, Endocrine & Reproduction-2	120	14	120	13	267
Paper M	ENT and EYE	120	13	120	13	266
Research*				20	15	35
Total Marks		480	53	500	67	1100

*Research viva of 20 marks will be conducted in paper-L. However, the rest of 15 marks will be decided by the concerned department internally for the contribution of the students in research project/thesis.

Assessment Blueprints

Table 5: Paper K (GIT & Hepatobiliary - II Module)

Subject	Total MCQs
Pharmacology	16
Pathology	41
Forensic medicine	16
Community medicine	18
PRIME	01
Medicine	11
Surgery	12
Pediatrics	03
Family medicine	02
Total	120

Table 6: OSPE/OSCE Distribution

Subject	Viva stations	OSPE/OSCE stations	Total
Pharmacology	2	2	4
Pathology	2	2	4
Forensic medicine	2	2	4
Community medicine	2	4	6
Medicine (GIT examination)	x	1	1
Surgery (GIT/local examination)	x	1	1
Total	8	12	20

* A minimum of 20 stations will be used in final exams. Total marks will be 120 (6 marks for each station).