

# **Gastrointestinal and Hepatobiliary-II Module**

**(total weeks-8)**

**Prepared by**

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## Introduction to the 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.

### Duration of Module 8 weeks

S. No	Themes	Topics covered	Duration Weeks
1	Difficulty in swallowing	Oral cavity Salivary glands Esophagus	1
2	Pain epigastrium	Stomach and duodenum	1
3	Pain right upper abdomen	Liver Gall bladder Pancreas	2
4	Diarrhea and constipation	Small intestine	3
5	Bleeding Per Rectum	Large intestine	1
6	Practical work		

### General learning outcomes

By the end of the module, students of 4<sup>th</sup> year MBBS should 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

Theme-1 (Difficulty in swallowing)				
Subject	Topic	Hours need ed	S. No	Learning objective
				<i>At the end of year-4, the students of MBBS will be able to:</i>
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) Esophageal motility disorders	1	11	Discuss the causes of 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
<b>Theme-2 (Epigastric pain)</b>				
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 fluroquinolones.
		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 household 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
			172	Describe health policy of Pakistan
	Role of international health agencies in public health	1	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
<b>Theme-3 (Pain right upper abdomen)</b>				

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
	Portal hypertension		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 <ul style="list-style-type: none"> <li>• Non-Alcoholic liver disease (NAFLD)</li> <li>• Hemochromatosis</li> <li>• Wilson`s disease</li> <li>• Alpha-1 antitrypsin deficiency</li> </ul>	1	199	Describe the morphology, clinical features and complications of NAFLD, Hemochromatosis, Wilson`s disease and Alpha-1 Anti-Trypsin 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 <ul style="list-style-type: none"> <li>Gall stones</li> </ul>	1	207	Discuss the types, risk factors, etiology, morphology, clinical features and complications of gall stones
	<ul style="list-style-type: none"> <li>Cholecystitis</li> </ul>		208	Discuss the risk factors, etiology, morphology, clinical features and complications of acute cholecystitis
			209	Discuss the risk factors, etiology, morphology, clinical features and complications of Chronic cholecystitis
	<ul style="list-style-type: none"> <li>Gall bladder cancer</li> </ul>	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
	Drugs used in the treatment of hepatitis C	1	242	Classify the drugs for hepatitis C virus infection
			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
<b>Theme-4: (Diarrhea and Constipation)</b>				
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	1	277	Define and classify laxative drugs

	softners, osmotic laxatives, stimulant laxatives, etc.			
			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 fluoroquinolones 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
<b>Theme- 5 (Bleeding per Rectum)</b>				
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"> <li>• fistula</li> <li>• fissures</li> <li>• hemorrhoids</li> </ul>	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
<b>Practical work</b>				
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

### 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**
	<b>Total hours</b>	<b>153</b>

\* two hours per week for research project in the whole academic session

\*\*the marks of research activities are neither included in the final document nor in written assessment and as there are special marks allocated for it in viva.