Jinnah Medical & Dental College

Gastrointestinal Tract & Hepatobiliary System

Modules 1 & 2

Study Guide

MBBS
2022-23

Let food be thy medicine and
medicine be thy food

Hippocrates

VISION

To set local and global standards for quality patient outcomes – creating a culture of excellence to promote a transformative experience for the 21st century clinicians, educators and researchers to benefit all humanity.

MISSION

To develop well-rounded academicians, thinkers, clinicians and researchers by strengthening a global view, broadening intellectual foundations and teach effective communication. It is our aspiration to cultivate creative and critical thinking skills for problem solving, sensitive to cultural and ethical values and responsibilities. Our graduates will be role models and society leaders.

Team Members of Gastrointestinal Tract & Hepatobiliary System
Modules I &II
2022-23

Name	Committee	Department
Professor Dr. Muhammad Baqir Soomro	Member	Anatomy
Professor Dr. Shahid Ahsen	Member	Biochemistry
Professor Dr. Sadaf Fatima	Member	Physiology
Professor Dr. Sanower Ali	Member	Community Medicine
Professor Dr. Imran Afzal	Member	Forensic Medicine
Professor Dr. Mahdev Harani	Member	Pathology & Microbiology
Professor Dr. Samia Perwaiz Khan	Member	Pharmacology
Dr. Zeelaf Shahid Associate Director	Member	Medical Education

Introduction

Greetings and a very warm welcome to medical students in the Gastrointestinal Tract module. This module has been developed to impart integrated teaching as a part of modular curriculum in Jinnah Medical & Dental College, Karachi. GIT 1 module (2nd year) is covered in 4 weeks and GIT 2 module (3rd year) covered in 7 weeks.

Patients in Pakistan sought treatment for gastric ulcers, inflammatory bowel diseases, complication of hepatitis and H-Pylori infection. Gastroesophageal issues in Pakistan are rising. Awareness among the masses is essential with these diseases and preventing them. Hepatitis C has taken a form of epidemic in our country. There is 30% increase in GIT diseases as compared to previous years.

This module will focus on the normal structure and function of the GIT system and will help students apply this information to solve clinically relevant problems suitable for this level of students.

Rationale

It is designed to provide students with not only knowledge about basics of Gastrointestinal tract but also develop their ability to apply information to solve problems.

JMDC CURRICULUM SEQUENCE: MBBS 1-5 YEARS

Year 1	Module 1	EOM	Module 2	EOM	Module 3	EOM	Module 4	EOM	Module 5	EOM* Exam of Module
	Foundation-1 8 weeks		Blood-1 4 weeks		Locomotor-1 8 weeks		Respiratory-1 4 weeks		CVS-1 4 weeks	
	PAKISTAN STUDIES & ISLAMIAT									

2	Module 6	EOM	Module 7	EOM	Module 8	EOM	Module 9	EOM	Module 10	EOM	Module 11	EOM	Module 12	EOM
	GIT-1 4 weeks		Head & Neck-1 5 weeks		Neurosciences-1 7 weeks		Special Senses 3 weeks		Endocrine-1 5 weeks		Reproductive-1 4weeks		Urinary-1 5weeks	
	Communication Skills						Patient Safety & Infection Control				Professionalism & Ethics			

3	Module 13	EOM	Module14	EOM	Module15	EOM	Module16	EOM	Module17	EOM	Module 18	EOM
	Foundation 2 10 weeks		Blood-2 5weeks		Locomotor-2 4 weeks		Respiratory-2 4 weeks		CVS-2 5 weeks		GIT-2 7weeks	

Clinical Rotations (Each Batch) WT* = Ward test

Communication Skills — Patient Safety & Infection Control — Professionalism & Ethics

R1	Medicine 2 weeks	WT	Psychiatry 2weeks	WT	Surgery 2 weeks	WT	Orthopedics 2 weeks	WT	OBS/ GYN 2 weeks	WT	Pediatrics 2 weeks	WT	Eye 2 weeks	WT	Ent 3 weeks	WT
R2	Medicine 2 weeks		Psychiatry 2weks		Surgery 2 weeks		Orthopedics 2weeks		OBS/ GYN 2 weeks		Pediatrics 2 weeks		Eye 2 weeks		Ent 3 weeks	

4	Module 19	EOM	Module 20	EOM	Module 21	EOM	Module 22	EOM	Module 23	EOM	Module 24	EOM	Module 25	EOM	Module 26	EOM	Module 27	EOM
	Nervous Sys & Psychiatry 2 8 weeks		H & N & SP Senses 2 (Eye) 4 weeks		H & N & SP Senses 3 (ENT) 4 weeks		Endocrinology 2 4 weeks		Repro 2 6 weeks		Urinary 2 4 weeks		Derma 2 weeks		Orthopedics 2 weeks		Rehab 2 weeks	

Lectures Eye/ENT

Clinical Rotations (Each Batch)

Communication Skills — Patient Safety & Infection Control — Professionalism & Ethics

R1	Medicine 3 weeks	WT	Psychiatry 3 weeks	WT	Surgery 3 weeks	WT	Orthopedics 3 weeks	WT	OBS/ GYN 3 weeks	WT	Pediatrics 3 weeks	WT	Eye 3 weeks	WT	Ent 3 weeks	WT
R2	Medicine 3weeks	WT			Surgery 3weeks	WT			Eye 3weeks	WT			Ent 3weeks	WT		

LECTURES R***= Rotation

5	Medicine	Surgery	OBS/Gynae	Pediatrics
	Clinical Rotations			
	Communication Skills	Patient Safety & Infection Control		
R1	Medicine 4 weeks	Surgery 4 weeks	OBS/ GYN 4 weeks	Pediatrics 4 weeks
R2	Medicine 5 weeks	Surgery 5 weeks	OBS/ GYN 5 weeks	Pediatrics 5 weeks

Final Exam

Students Assessment

There will be an end of module/rotation test after completion of module/clinical posting which will comprise the following components: -

i. Written Assessment

The theory paper will have components of one – best type multiple – choice questions (MCQs).

ii. Practical / lab examination:

This will comprise Objective Structured Clinical Examination (OSCE) The OSCE will have both observed and non-observed stations. The end of clinical posting will be of 2 hours duration. This will comprise the following components:

The OSPE/ OSCE will be conducted in batches. The students will be having different patterns of OSPE/OSCE in the subject of Gastrointestinal Tract.

Summary of marks of each module exam

Theory (BCQs) = 100 marks

OSPE (10 stations) = 100 marks

Total = 200 marks

Internal Assessment:

• Continuous monitoring of attendance and practical assessment in short groups By

Mini CEX and logbooks.

• It may be in the form of MCQs (BCQs), Ward tests, and OSCE.

• Internal assessment carries 20% weightage

Course Evaluation:

Course evaluation will be obtained through a feedback form which will be posted on the JMC website

Mandatory Policy:

Eligibility for sitting in Professional Examinations is as follows:

- 75% overall Class Attendance
- 75% Attendance all Clinical Wards with passing marks in all Clinical Ward Tests.
- Minimum 40% aggregate marks on all Internal Examinations (Module Tests, Midterm, Pre-Professional Examinations)
- MBBS 1stYear: Complete all Professional Communication assignments with passing marks
- MBBS 1st& 2ndYear: Obtain passing marks in Behavioral Sciences & Research Module assessments
- MBBS 2ndYear: Presentation in Journal club at least twice in a year
- MBBS 4th& Final Year: CPC Presentation at least once in a year
- Skills Labs: Must be completed with passing marks
- Research Paper must be completed before MBBS 4 Professional Examination

Failure to Meet the Eligibility Requirements:

- A Student failing to meet the above listed eligibility for sitting in the professional examination will NOT be allowed to sit in 1st attempt of the Professional Examination. The college has the right to withhold all students who however, not met the eligibility requirements from sitting in the 1st attempt.
- Such students who have been withheld from sitting in the 1st attempt of the Professional exam because of failure to meet the eligibility requirements will be allowed only to sit in the retake of that examination.

  It is expected that deficiency in requirements of Professional communication assignments, Behavioral Sciences & Research Module assessments, journal Club presentations, CPC, Skills Labs must be made up and fulfilled before a student will allowed to sit in the retake exam.

Details of ATTENDANCE POLICY

The CR is responsible to bring attendance sheets from Student Affairs Office to each class. At the end of class, the attendance sheet must be signed and returned by the faculty member to the Student Affairs Office. No attendance sheets from students will be accepted.

These attendances will be compiled together as follows:

LECTURE ATTENDANCE = # Lectures Attended / Total # of Lectures

PRACTICAL ATTENDANCE = # Practicals Attended / Total # of Practicals

TUTORIAL ATTENDANCE = # Tutorials Attended / Total # of Tutorials

NOTE: All tutorials will be conducted by a Senior Faculty Member (AP or above), assisted by a Junior Faculty Member (Lecturer)

FINAL CLASS ATTENDANCE =

%Lecture Attendance + %Tutorial Attendance + %Practical Attendance

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Teaching / Learning Methods

The teaching learning sessions of this module will be of diverse types:

a. Large group interactive sessions (LGIS)
b. Small group teaching will include tutorials and, case – based learning session.
c. Problem – based learning sessions.
d. Practical session will comprise sessions on early exposure to clinical methods and practical laboratory demonstrations.
e. Seminars: on different topics, in which students will make oral presentations on different aspects of the allocated topic.
f. Self-directed learning sessions: This is the time during which students are expected to revise what they have learnt in the class, clear their concepts by consulting different textbooks, reference material and prepare their assignments and projects.

Main Content Areas

Anatomy

- Introduction & divisions of GIT + abdominal quadrants
- Anterior Abdominal wall
- Inguinal Canal
- Oesophagus
- Stomach
- Peritoneum
- Small Intestine & large intestine
- Liver, Gall bladder and extra biliary apparatus
- Hepatic Portal System
- Pancreas
- Anal Canal
- Posterior abdominal wall (boundaries, lumbar vertebrae, muscles, fascia)
- Abdominal Aorta + blood supply of abdomen
- Inferior vena cava + venous drainage of abdomen
- Lymphatic drainage and innervation of abdomen
- Surface anatomy of abdomen
- Radiology of GIT
- General histological plan of G.I.T
- Histology of esophagus, stomach, small & large intestine, liver, gall bladder and pancreas
- Development of GIT-I (derivatives of fore gut)
- Development of GIT- II (derivatives of mid and hind gut)
- Development of liver, Gall bladder and Pancreas

Biochemistry

- Digestion & Absorption of Carbohydrates
- Digestion & Absorption of Proteins
- Digestion & Absorption of Lipids
- Glycolytic pathway of Carbohydrates Metabolism
- TCA cycle of Carbohydrate metabolism
- Metabolism of Glycogen with its disorders
- Metabolic pathway of Gluconeogenesis
- Metabolic pathway of HMP Shunt
- Metabolic pathways of Fructose, Galactose & Uronic Acid
- Bioenergetics & Biological Oxidation
- Oxidative Phosphorylation & Electron Transport Chain
- Metabolic role of Liver & its detoxification
- Degradation of Haemoglobin and Bilirubin Metabolism
- Jaundice and its biochemical investigations

Physiology

- Introduction to the digestive system
- Functions of the smooth muscle and their electrical properties
- Nervous and hormonal control of GIT
- Secretion of saliva
- Mastication & Deglutition reflex
- Functions of stomach
- Gastric secretion
- Movements of small and large intestine
- Secretions of small and large intestine
- Pancreatic secretions
- Bile secretion
- Vomiting & Defecation reflexes
- Disorders of gastro-intestinal tract

Community medicine

- Introduction to nutrition
- Balanced diet and bioavailability of nutrients
- Food hygiene and food poisoning
- Assessment of nutritional status- Growth Chart
- Malnutrition and prevention
- Hepatitis, its types and prevention
- Enteric Fever and its prevention
- Cholera and its prevention
- Diarrheal diseases and its prevention
- Worm infestations and their prevention
- Amoebiasis and its prevention
- Zoonotic Diseases and its prevention
- Leishmaniasis and its prevention
- Water Pollution and Water Related Diseases
- Water Purification

Forensic Medicine

- Regional Injuries-I
- Regional Injuries-II
- Regional Injuries-III
- Regional Injuries-IV
- Special Trauma-Road Traffic Accidents
- Special trauma (Blast Injuries)
- Causes of death due to trauma
- Forensic Psychiatry-I

- Forensic Psychiatry-II
- Metallic Poisons-Arsenic and Mercury
- Metallic Poisons-Lead and Copper
- Opium & its derivative poisons
- Food poisoning

Pathology

- Lesions of oral cavity
- Inflammation & neoplasms of salivary glands
- Congenital abnormalities of GIT
- Oesophageal obstruction, achalasia, esophagitis & Barrett oesophagus
- Oesophageal tumours
- Gastritis, Stress related mucosal disease, Chronic Gastritis
- Complications of chronic gastritis
- Infections of the upper Gastrointestinal tract
- Gastric polys & tumours of stomach
- Intestinal obstruction/ Ischemic bowel diseases/ Angiodysplasia
- Malabsorption & Diarrhea
- Food Poisoning
- Infectious enterocolitis due to Escherichia coli and Mycobacterium tuberculosis
- Infectious enterocolitis due to Salmonella species and Shigella
- Infectious enterocolitis due to Vibrio cholera, Campylobacter Jejuni, Yerseni Enterocolitica
- Role of viruses in infecting gastrointestinal tract
- Intestinal protozoa
- Intestinal Cestodes
- Trematodes
- Intestinal Nematodes-I
- Intestinal Nematodes-II
- Irritable bowel syndrome (IBS), Inflammatory bowel disease (IBD), Indeterminate colitis & Colitis associated neoplasia
- Polyps of small & large intestine
- Tumours of small & large intestines, Haemorrhoids, appendicitis, Peritonitis, tumours of anal canal & peritoneum
- Anaerobic infections of the Gastrointestinal tract
- General features of liver diseases
- Hepatotropic Viruses-I
- Hepatotropic viruses -II
- Bacterial and Parasitic infections relating to the liver
- Hepatitis; Viral, Autoimmune & Drug Induced.
- Alcoholic & Non-Alcoholic Liver Disease (NAFLD)
- Storage and metabolic disorders of liver
- Cholestatic Diseases, Autoimmune Cholangiopathies. & structural anomalies of the

biliary tree

- Circulatory Disorders, Hepatic complications of organ or Hematopoietic stem cell transplantation, Hepatic diseases associated with pregnancy
- Tumours of liver
- Pathological diseases, and tumours of gall bladder
- Non neoplastic diseases of pancreas
- Neoplastic cysts, Neoplasms of Pancreas

Pharmacology

- Prokinetics and Anti-Emetics
- Mechanism of action of Laxative agents
- Serotonin Agonists & Antagonists
- Drugs used in Acid Peptic Disorder including H. Pylori-I & II
- Drug Management of Viral Hepatitis
- Laxatives
- Treatment of Amebiasis
- Anti-Diarrheal Drugs & Treatment of Irritable Bowel Syndrome
- Anti-Helminthic Drugs

GENERAL LEARNING OBJECTIVES:

By the end of this module, the students will be able to:

ANATOMY

- Discuss abdominal quadrants and their contents of GIT
- Describe the anterior Abdominal wall
- Describe the formation and contents of Inguinal Canal
- Describe the gross features of Oesophagus
- Describe the gross features of Stomach
- Describe the general features of Peritoneum
- Describe the gross features of Intestine & large intestine
- Describe the gross features of Liver, Gall bladder and extra biliary apparatus
- Explain Hepatic Portal System
- Describe the gross features of Pancreas
- Describe the gross features of Anal Canal
- Describe the boundaries and contents of Posterior abdominal wall
- Describe the formation and branches of Abdominal Aorta and blood supply of abdomen
- Describe the formation and tributaries of Inferior vena cava and venous drainage of abdomen
- Describe llymphatic drainage and innervation of abdomen
- Describe surface anatomy of abdomen
- Describe radiology of GIT
- Explain general histological Plan of G.I.T
- Explain histology of esophagus, stomach, small & large intestine, liver, gall bladder and pancreas
- Describe development and derivatives of fore gut
- Describe development and derivatives of mid and hind gut
  Describe development of liver, Gall bladder and Pancreas

Biochemistry

- Discus Digestion & Absorption of Carbohydrates
- Discuss Digestion & Absorption of Proteins
- Describe Digestion & Absorption of Lipids
- Describe Glycolytic pathway of Carbohydrates Metabolism
- Explain TCA cycle of Carbohydrate metabolism
- Discuss Metabolism of Glycogen with its disorders
- Discuss Metabolic pathway of Gluconeogenesis
- Discuss Metabolic pathway of HMP Shunt
- Discuss Metabolic pathways of Fructose, Galactose & Uronic Acid
- Explain Bioenergetics & Biological Oxidation

- Describe Oxidative Phosphorylation & Electron Transport Chain
- Explain Metabolic role of Liver & its detoxification
- Discuss Degradation of Haemoglobin and Bilirubin Metabolism
- Explain Jaundice and its biochemical investigations

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- Explain the digestive system
- Describe Functions of the smooth muscle and their electrical properties
- Discuss Nervous and hormonal control of GIT
- Explain Secretion of saliva
- Discuss Mastication & Deglutition reflex
- Explain Functions of stomach
- Discuss Gastric secretion
- Explain Movements of small and large intestine
- Describe Secretions of small and large intestine
- Discuss Pancreatic secretions
- Explain Bile secretion
- Discuss Vomiting & Defecation reflexes
- Discuss Disorders of gastro-intestinal tract

Community medicine

- Discuss nutrition
- Describe Balanced diet and bioavailability of nutrients
- Explain Food hygiene and food poisoning
- Discuss Assessment of nutritional status- Growth Chart
- Discuss Malnutrition and prevention
- Explain Hepatitis, its types and prevention
- Explain Enteric Fever and its prevention
- Discuss Cholera and its prevention
- Describe Diarrheal diseases and its prevention
- Describe Worm infestations and their prevention
- Explain Amoebiasis and its prevention
- Discuss Zoonotic Diseases and its prevention
- Discuss Leishmaniasis and its prevention
- Explain Water Pollution and Water Related Diseases
- Describe Water Purification

Forensic Medicine

- Discus Regional Injuries-I
- Discuss Regional Injuries-II
- Discuss Regional Injuries-III
- Explain Regional Injuries-IV
- Describe Special Trauma-Road Traffic Accidents

- Explain Special trauma (Blast Injuries)
- Discuss Causes of death due to trauma
- Explain Forensic Psychiatry-I
- Explain Forensic Psychiatry-II
- Describe Metallic Poisons-Arsenic and Mercury
- Explain Metallic Poisons-Lead and Copper
- Describe Opium & its derivative poisons
- Explain Food poisoning

Pathology

- Describe Lesions of oral cavity
- Discuss Inflammation & neoplasms of salivary glands
- Explain Congenital abnormalities of GIT
- Describe Oesophageal obstruction, achalasia, esophagitis & Barrett oesophagus
- Discuss Oesophageal tumours
- Explain Gastritis, Stress related mucosal disease, Chronic Gastritis
- Discuss Complications of chronic gastritis
- Explain Infections of the upper Gastrointestinal tract
- Discuss Gastric polys & tumours of stomach
- Describe Intestinal obstruction/ Ischemic bowel diseases/ Angiodysplasia
- Discuss Malabsorption & Diarrhea
- Explain Food Poisoning
- Discuss Infectious enterocolitis due to Escherichia coli and Mycobacterium tuberculosis
- Describe Infectious enterocolitis due to Salmonella species and Shigella
- Explain Infectious enterocolitis due to Vibrio cholera, Campylobacter Jejuni, Yersenia Enterocolitica
- Discuss Role of viruses in infecting gastrointestinal tract
- Explain Intestinal protozoa
- Describe Intestinal Cestodes
- Discuss Trematodes
- Discuss Intestinal Nematodes-I
- Describe Intestinal Nematodes-II
- Discuss Irritable bowel syndrome (IBS), Inflammatory bowel disease (IBD), Indeterminate colitis & Colitis associated neoplasia
- Explain Polyps of small & large intestine
- Explain Tumours of small & large intestines, Haemorrhoids, appendicitis, Peritonitis, tumours of anal canal & peritoneum
- Discuss Anaerobic infections of the Gastrointestinal tract
- Describe General features of liver diseases
- Explain Hepatotropic Viruses-I
- Discuss Hepatotropic viruses -II
- Discuss Bacterial and Parasitic infections relating to the liver

- Describe Hepatitis; Viral, Autoimmune & Drug Induced.
- Explain Alcoholic & Non-Alcoholic Liver Disease (NAFLD)
- Describe Storage and metabolic disorders of liver
- Explain Cholestatic Diseases, Autoimmune Cholangiopathies. & structural anomalies of the biliary tree
- Discuss Circulatory Disorders, Hepatic complications of organ or Hematopoietic stem cell transplantation, Hepatic diseases associated with pregnancy
- Describe Tumours of liver
- Explain Pathological diseases, and tumours of gall bladder
- Discuss Non neoplastic diseases of pancreas
- Describe Neoplastic cysts, Neoplasms of Pancreas

Pharmacology

- Discuss Prokinetics and Anti-Emetics
- Explain Mechanism of action of Laxative agents
- Describe Serotonin Agonists & Antagonists
- Explain Drugs used in Acid Peptic Disorder including H. Pylori-I & II
- Describe Drug Management of Viral Hepatitis
- Explain Laxatives
- Discuss Treatment of Amebiasis
- Explain Anti-Diarrheal Drugs & Treatment of Irritable Bowel Syndrome
- Discuss Anti-Helminthic Drugs

Recommended Reading Material

Anatomy

A. GROSSANATOMY
1. K.L. Moore, Clinically Oriented Anatomy
2. Richard L. Drake, Gray's anatomy for students

B. HISTOLOGY
1. B. Young J. W. Health Wheather's Functional Histology
2. di Fiore's Atlas of histology and functional correlations

C. EMBRYOLOGY
1. Keith L. Moore. The Developing Human
2. Langman's Medical Embryology

Biochemistry

TEXT BOOKS
1. Harper's Illustrated Biochemistry
2. Lippincott's Illustrated reviews of Biochemistry
3. Lehninger's Principles of Biochemistry
4. Biochemistry by Devlin

Physiology

A. TEXTBOOKS
1. Textbook of Medical Physiology by Guyton And Hall
2. Human Physiology by Lauralee Sherwood
3. Berne & Levy Physiology
4. Best &Taylor Physiological Basis of Medical Practice

B. REFERENCEBOOKS
1. Ganong's Review of Medical Physiology

Community Medicine

- Public Health and Community Medicine by Shah Ilyas Ansari, 8th Edition
- Park's Textbook of Preventive and Social Medicine by K Park 24th Edition Epidemiology and Biostatistics:
- Epidemiology by Leon Gordis, Fifth Edition

- Basic Statistics for the Health Sciences by Jan W. Kuzma, Fifth Edition.

Forensic Medicine

- Gautam Biswas Book of Forensic Medicine
- Parikh's Book of Forensic Medicine

Pathology

- Basis of Pathology by Robbins & Cotran
- Review of Microbiology by Livingston

Pharmacology

- Katzung. Basic & Clinical Pharmacology. 14th Edition.
- Katzung & Trevor's. Pharmacology. 12th Edition.
- Rang & Dales. Pharmacology.

Gastrointestinal Tract & Hepatobiliary system Module 1

Organization

Time requirements:

• Anatomy	45 Hours
• Physiology	21 Hours
• Biochemistry	62Hours
	128 Hours

Gastrointestinal Tract & Hepatobiliary system Module II

Organization

Time requirements:

• Community Medicine	17 Hours
• Forensic Medicine	26 Hours
• Pathology & Microbiology	77 Hours
• Pharmacology	9 Hours
	129 Hours

Total = 257 Hours

Gastrointestinal Tract & Hepatobiliary System - Module- 1

ANATOMY

LECTURES / DEMONSTRATIONS

S. NO.	LEARNING OBJECTIVES By the end of the module, the student should be able to	Content	TEACHING Activity Duration	ASSESSMENT
	ANATOMY			
1	• Describe the divisions and parts of digestive tract • List the abdominal quadrants & regions of GIT **(K)(S)**	Introduction & divisions of GIT + abdominal quadrants	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
	Embryology			
2	• Describe the divisions of primitive gut • Describe the development of foregut • Name the derivatives of foregut • List the congenital anomalies of Foregut • Discuss the features of the following congenital anomalies of foregut: Hernias, Esophageal atresia, oesophageal stenosis, congenital hypertrophic pyloric stenosis, duodenal stenosis & atresia, anomalies of liver, extrahepatic, biliary atresia, annular pancreas, accessory pancreatic tissue, & accessory spleen **(K)(S)**	Development of **GIT - I**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
3	• List the development derivatives of primitive gut tube (pharynx. oesophagus stomach, intestine) • Describe the derivatives of midgut and hindgut • Describe rotation of gut • Describe the formation of greater, lesser omentum and omental bursae • Describe the congenital anomalies of gut • List the special features associated with common anomalies related to gut including Congenital omphalocele, umbilical hernia, gastroschisis, anomalies of midgut, internal hernia, stenosis, atresia of intestine, Mal-rotation of gut, Ileal diverticulum, duplication of intestine, anomalies of hindgut, Hirschsprung disease, imperforate anus, anal stenosis, rectal atresia **(K)(S)**	**Development Anatomy of GIT- II (derivatives of mid and hind gut)**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE

4	• Describe the development of liver • Discuss the formation of bile & hepatic cells • Discuss the molecular regulation of liver induction • Explain the formation of gallbladder & cystic duct • Name the anomalies of Liver & gallbladder • Discuss the formation of pancreatic bud and islet of Langerhan • Discuss molecular regulation of pancreas development • Describe Pancreatic abnormalities **(K)(S)**	Development of liver, Gall bladder and Pancreas	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
HISTOLOGY				
5	• List the divisions of digestive tract • Describe the general histological features of GIT, specially of oesophagus **(K)(S)**	**General Plan of G.I.T + Oesophagus**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
6	• Describe the functions of the layers, component and cells in the wall of the digestive tract • Explain how they differ in the pharynx, oesophagus and stomach. **(K)(S)**	**Stomach**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
7	• Explain the different layers of small intestine • Discuss the cells present in the small intestine **(K)(S)**	**Small intestine**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
8	• Enumerate the different layers of large intestine • Describe the cells and glands present in large intestine • Explain the difference between small and large intestine **(K)(S)**	**Large intestine**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
9	• Explain the histology of liver • Explain the arrangement of liver parenchyma • Describe the general concepts underlying classical hepatic lobule, portal lobule and hepatic acinus • Describe the microscopic structure of gall bladder **(K)(S)**	**Liver and gall bladder**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
10	• Explain the histology of Pancreas • Explain the arrangement of Pancreatic parenchyma **(K)(S)**	**Pancreas**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE

GROSS ANATOMY				
11	• Name the structures forming anterior abdominal wall • Identify the boundaries of anterior abdominal wall • Describe the muscles and fasciae of anterior abdominal wall • Discuss the clinical conditions associated with the anterior abdominal wall **(K)(S)**	**Anterior Abdominal wall**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
12	• Describe the boundaries and content of the inguinal canal • Discuss clinical correlation of the inguinal canal **(K)(S)**	**Inguinal Canal**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
13	• Explain gross features of oesophagus & stomach • List their peritoneal & visceral relations • Explain their blood supply, lymphatic drainage & nerve supply **(K)(S)**	**Oesophagus (Abdominal Part), Stomach**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
14	• Explain different parts of small intestine • Describe the blood supply and nerve supply of small intestine • Discuss the lymphatic drainage of small intestine • Discuss the relevant clinical conditions, e.g. Meckel's diverticulum etc. **(K)(S)**	**Small Intestine**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
15	• Explain different parts of large intestine • Describe the blood supply and nerve supply of large intestine • List the structural differences between small and large intestine • Discuss the lymphatic drainage of large intestine • Discuss the relevant clinical conditions like volvulus & intussusceptions etc. **(K)(S)**	**large intestine**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
16	• Describe liver with its anatomical positions • Identify lobes and surfaces of liver and visceral relations and impression. • Identify the segments of liver **(K)(S)**	**Liver**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE

17	• Explain the anatomical features and blood supply of gall bladder • Discuss the different components of biliary tract **(K)(S)**	**Gall bladder and Biliary tree**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
18	• Identify the venous drainage of the organs of GI tract, and veins of hepatic portal system • Describe the venous drainage of the organs of GI tract and the veins of hepatic portal system • Describe the clinical importance of the hepatic portal system and its connections **(K)(S)**	**Hepatic Portal System**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
19	• Discuss the gross features of different parts of pancreas • Describe the location, relations, and morphological and secretory parts of Pancreas • Describe the arterial supply, venous drainage and nerve supply of pancreas • Discuss the clinical relevance of pancreas **(K)(S)**	**Pancreas**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
20	• Identify the level of vertebrae with respect to the three major orifices in the diaphragm • Identify the location of these orifices with respect to vertebral level • Enumerate the structures forming the posterior abdominal wall • Identify the boundaries of posterior abdominal wall • Discuss the general characteristics of lumbar vertebrae • Describe the muscles and fasciae of posterior abdominal wall • Discuss the clinical conditions associated with the posterior abdominal wall **(K)(S)**	**Posterior abdominal wall (boundaries, lumbar vertebrae, muscles, fascia)**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
21	• Describe the Anorectal junction • Describe the Nerve supply and blood supply of anal canal • Describe Anorectal fistula, Polyps and diverticulum **(K)(S)**	**Anal Canal**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
22	• Describe the course of abdominal aorta • List the paired and unpaired branches of abdominal aorta • Discuss the arteries which supply the abdominal walls **(K)(S)**	**Abdominal Aorta + blood supply**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
23	• Describe the formation of inferior vena cava • List the tributaries of inferior vena cava • Explain the relations of inferior vena cava • Discuss the clinical conditions	**Inferior vena cave + venous drainage of abdomen**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE

	associated with inferior vena cava **(K)(S)**			
24	• Explain the groups of lymph nodes draining the abdomen • Describe the formation and drainage of lymphatic trunks, cisterna chyli and, the thoracic duct • Discuss the sympathetic trunk, splanchnic nerves, prevertebral plexus & ganglia supplying the GIT **(K)(S)**	**Lymphatic drainage and innervation of abdomen**	LGIS 50 Mins + Demonstration 90 mins	MCQs OSPE
Surface anatomy				
25	•Identify the bony landmarks of the abdomen • Discuss the abdominal regions and quadrants • List the abdominal organs in each quadrant • Discuss the surface anatomy of stomach and spleen in relation to anterior abdominal wall **(K)(S)**	**Surface anatomy of Abdomen**	SGD 90 mins + Demonstration 90 mins	MCQs OSPE

ANATOMY **TUTORIALS**

S. NO.	LEARNING OBJECTIVES By the end of this module, students will be able to:	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Identify various parts of normal GIT on a plain X ray • Discuss the importance of various radiological techniques in the diagnosis of GIT abnormalities **(K)**	**Radiological Anatomy**	SGD 90 mins	MCQs

ANATOMY PRACTICALS

S. NO.	LEARNING OBJECTIVES By the end of this module, students will be able to:	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Identify the slides of oesophagus and stomach under microscope according to their histological features • Describe the general histological features of GIT **(S)**	**General Plan of G.I.T + Histology of esophagus + Histology of Stomach**	Demonstrations 90 mins	OSPE
2.	• Identify the slides of small and large intestine under microscope according to their histological features **(S)**	**Histology of Small & Large intestine**	Demonstrations 90 mins	OSPE
3.	• Identify the slides of liver, gall bladder & pancreas under microscope according to their histological features **(S)**	**Histology of Liver, gall bladder and Pancreas**	Demonstrations 90 mins	OSPE

BIOCHEMISTRY LECTURES / DEMONSTRATIONS

S.NO.	LEARNING OBJECTIVES By the end of module, the students should be able to	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Classify dietary carbohydrates with examples • Explain the significance of the glycaemic index • Describe the importance of dietary fibre • List the main digestive enzymes and describe their action on carbohydrate • Discuss the abnormalities due to digestive enzyme deficiency • Explain the absorption of monosaccharaides by the intestinal mucosal cells • Discuss the clinical significance of abnormalities of digestion and absorption (e.g. lactose intolerance) **(K)(S)**	**Digestion & Absorption of Carbohydrates**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE
2.	• List the various sources of dietary protein • Discuss the digestion of protein • List and explain the functions of the proteolytic enzymes • Explain the mechanism of absorption of amino acids • Discuss the significance of amino acid pool • Explain the significance of nitrogen balance. • Discuss the clinical significance of protein allergy, celiac sprue and cystinuria **(K)(S)**	**Digestion & Absorption of Proteins**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE

3.	• List the constituents of dietary lipids • Discuss the digestion of lipids • Explain the role of lipases in lipid digestion • Discuss the digestion of dietary cholesterol and phospholipids • Explain the hormonal regulation of lipid Digestion • Discuss the absorption of lipids by the intestinal mucosal cells • Discuss the re-synthesis and secretion of lipids by the enterocytes • Discuss the secretion of chylomicrons by the enterocytes • Define Steatorrhea • List causes of Steatorrhea • Discuss the abnormalities of lipid digestion and absorption with especial reference to cystic fibrosis **(K)(S)**	**Digestion & Absorption of Lipids**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE
4	• Differentiate between aerobic and anaerobic glycolysis • Explain the role of insulin in transport of glucose inside the cells • List the reactions of the two stages of glycolysis viz energy investment and energy generation • Explain the hormonal regulation of glycolysis • Discuss the fate of pyruvate • Explain the process of glycolysis in RBC's • Discuss the abnormalities of glycolysis	**Glycolytic pathway of Carbohydrates Metabolism**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE
5	• Discuss the significance of TCA cycle as an amphibolic pathway • Discuss the reactions of the TCA cycle and its regulatory steps • Describe the energy produced from TCA cycle • Explain the disorders of TCA cycle **(K)(S)**	**TCA cycle of Carbohydrate metabolism**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE
6	• Explain the structure and functions of glycogen • Describe the mechanism of glycogen synthesis and its regulation • Describe the mechanism of glycogenolysis and its regulation • Discuss the maintenance of blood glucose level • Explain the various form of glycogen storage diseases **(K)(S)**	**Metabolism of Glycogen with its disorders**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE
7	• Describe the mechanism of gluconeogenesis • List the reactions which are unique to gluconeogenesis • Describe the regulation of gluconeogenesis • Explain the Cori cycle **(K)(S)**	**Metabolic pathway of Gluconeogenesis**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE

8	• Describe the significance of hexose monophosphate shunt • Describe the oxidative and non-oxidative stages of HMP shunt • Discuss the enzymes of the HMP shunt and its regulation. • Explain the abnormalities of the HMP shunt especially G6PD. • Discuss the significance of reactive oxygen species • Discuss the functions of NADPH and glutathione **(K)(S)**	**Metabolic pathway of HMP Shunt**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE
9	• List the sources of fructose • Discuss the alternative mechanism of monosaccharide metabolism • Discuss the important enzymes of fructose metabolism • Explain the metabolic pathway of fructose • Explain the disorders of fructose metabolism due to enzyme deficiencies • Discuss the important enzymes of Galactose metabolism • Explain the metabolic pathway of Galactose metabolism • Explain the disorders of Galactose metabolism due to enzyme deficiencies • Explain the uronic acid pathway and its biochemical significance. • Describe the importance of uronic acid pathway in liver detoxification **(K)(S)**	**Metabolic pathways of Fructose, Galactose & Uronic Acid**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE
10	**BIOLOGICAL OXIDATION** • List high energy and low energy phosphate • List the oxido-reductase enzymes • Define bioenergetics and explain the general laws of thermodynamics • Define free energy and equilibrium constant **(K)(S)**	**Bioenergetics & Biological Oxidation**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE
11	• List the ion transporters in the inner mitochondrial membrane • Describe the organization of the electron transport chain • Discuss the functions of each complex of ETC • Explain the energy currency of the body • Explain the site and mechanism of synthesis of ATP • Describe how proton are pumped from the matrix to the intermembrane space • Discuss the significance of co-enzyme Q and the Q-cycle • Discuss the inhibitors and uncouplers of ETC and their mechanism of action • Discuss how electron transport chain releases free energy • Discuss the generation of proton gradient • Explain the significance of P.O. Ratio • Explain Mitchell's chemiosmosis theory of electrochemical gradient • Explain the glycerophosphate and malate shuttle • List the genetic defects of oxidative phosphorylation • Explain the clinical conditions which inhibit the electron transport chain **(K)(S)**	**Oxidative Phosphorylation & Electron Transport Chain**	LGIS 50 Mins + Demonstrations 90 mins	MCQ's OSPE

12	**BIOCHEMICAL FUNCTIONS OF LIVER** • Discuss the metabolic, synthetic, excretory, detoxification and storage functions of liver • List the liver function tests based on the five main functions of the liver • Explain the normal level of serum bilirubin (total, conjugated and unconjugated), urinary urobilinogen, urinary bilirubin, faecal stercobilin in different types of Jaundice • Discuss the importance of serum enzymes in the differential diagnosis of Jaundice (ALT, AST, ALP, LDH, GGT, and 5'-Nucleotidase) • Discuss the importance of albumin, total protein and prothrombin time in diagnosing liver disease **(K)(S)**	Metabolic role of Liver & its detoxification	LGIS 50 Mins + Practical 90 mins	MCQ's OSPE
13	• List the steps of heme degradation to bilirubin • Discuss the role of liver in bilirubin uptake and conjugation • Discuss the secretion of bilirubin in bile • Explain the fate of bilirubin in the intestine and its excretion in urine and stool **(K)(S)**	Degradation of Haemoglobin and Bilirubin Metabolism	LGIS 50 Mins + Practical 90 mins	MCQ's OSPE
14	• Describe the disorders of bilirubin metabolism • Explain the types of bilirubin in the blood • Classify jaundice • Explain the causes with examples and diagnostic investigations of pre-hepatic, hepatocellular & post-hepatic and obstructive jaundice **(K)(S)**	Jaundice and its biochemical investigations	LGIS 50 Mins + Practical 90 mins	MCQ's OSPE

BIOCHEMISTRY TUTORIALS

S. NO.	LEARNING OBJECTIVES	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	**DIGESTION & ABSORPTION** • Discuss the clinical importance of abnormalities of digestion & absorption (e.g. Lactose Intolerance) • Correlate the interpretation of laboratory investigations with relevant clinical conditions **(K)**	Abnormalities of digestion & absorption	SGD 90 mins	MCQ's
2	**METABOLIC PATHWAYS OF CARBOHYDRATES** □ Discuss the clinical importance of disturbances in carbohydrate metabolism (e.g. G6PD deficiency) □ Correlate the interpretation of laboratory investigations with relevant clinical conditions **(K)**	**Disturbances in Carbohydrate Metabolism**	SGD 90 mins	MCQ's

3	**ELECTRON TRANSPORT CHAIN** • Discuss the clinical importance of disturbances of electron transport chain (e.g. Carbon monoxide poisoning) • Correlate the interpretation of laboratory investigations with relevant clinical conditions **(K)**	**Disturbances of Electron Transport Chain**	SGD 90 mins	MCQ's
4	**JAUNDICE** • Classify Jaundice • List the causes of each type • Correlate the interpretation of laboratory investigations with relevant clinical condition **(K)**	**Jaundice and its biochemical investigations**		MCQ's

BIOCHEMISTRY PRACTICALS

S. NO.	LEARNING OBJECTIVES	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	**DIGESTION & ABSORPTION** • List and explain the biochemical investigations done for Diabetes Mellitus • Outline the method for serum glucose estimation by spectrophotometer • Estimate the serum glucose levels and give its interpretation • Correlate the interpretation of laboratory investigations with relevant clinical conditions **(S)**	**Serum Glucose Estimation**	Demonstration 90 mins	OSPE
2	**JAUNDICE** • List and explain the Liver function tests • Identify the chemical tests and bio-techniques used to perform Liver function tests • Interpret the serum Liver function test • Correlate the interpretation of laboratory investigations with relevant clinical condition **(S)**	Serum LFT's (Liver function test) profile	Demonstration 90 mins	OSPE
3	• Identify the chemical tests and bio-techniques used to perform serum Aminotransferase • Estimate the serum Aminotransferase level (ALT) • Interpret the serum Aminotransferase level (ALT) • Correlate the interpretation of laboratory investigations with relevant clinical condition **(S)**	Serum Aminotransferase (ALT)	Demonstration 90 mins	OSPE

4	• Explain the method used to perform Serum Bilirubin by Spectrophotometer • Estimate serum Bilirubin level (Total, Direct & Indirect Bilirubin) • Interpret serum Bilirubin level • Correlate the interpretation of laboratory investigations with relevant clinical condition **(S)**	Serum Bilirubin	Demonstration 90 mins	OSPE

PHYSIOLOGY

S. NO.	LEARNING OBJECTIVES	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Describe characteristics of gastrointestinal wall • Explain functional types of movements in gastrointestinal tract • Briefly state the gastrointestinal blood flow **(K)**	**Introduction to the digestive system**	SGD 90 mins	MCQ's
2.	• List the electrical properties of smooth muscle • Explain the mechanism of smooth muscle contraction • Differentiate smooth muscle from skeletal muscle • Describe genesis of BER and its role in GI motility **(K)**	**Functions of the smooth muscle and their electrical properties**	SGD 90 mins	MCQ's
3.	• List hormones of GIT and their role in process of digestion • Describe autonomic nervous system Explain Myenteric and Meissner's plexus • Describe the Gastrointestinal reflexes (gastro-colic, entero-gastric, colono-ileal reflexes) **(K)**	**Nervous and hormonal control of GIT**	SGD 90 mins	MCQ's
4.	• List the salivary glands, composition and their functions • Describe stimuli that increase salivary secretion • Explain control of salivary secretion **(K)**	**Secretion of saliva (composition, function and regulation)**	SGD 90 mins	MCQ's
5.	• Describe mechanism of mastication • Explain different phases of deglutition • Explain lower esophagus tone and motility defects in esophagus **(K)**	**Mastication & Deglutition reflex**	SGD 90 mins	MCQ's
6.	• Describe motor functions of stomach • Explain regulation of stomach emptying **(K)**	**Functions of stomach**	SGD 90 mins	MCQ's

7.	• List composition of secretions of gastric glands • Describe role of gastric secretions in digestion • Describe the regulation of gastric secretion **(K)**	**Gastric secretion (composition, function and regulation)**	SGD 90 mins	MCQ's
8.	• Explain the following functions: Segmentation, Peristalsis, Mass movement and Defecation reflex • Describe the effects of autonomic system in modulating intestinal motility **(K)**	**Movements of small and large intestine**	SGD 90 mins	MCQ's
9.	• List secretion of different enzymes in small and large intestines • Describe the regulation of small and large intestinal secretions **(K)**	**Secretions of small and large intestine**	SGD 90 mins	MCQ's
10.	• Describe composition & secretions of pancreatic juice • Explain phases of pancreatic secretion • Describe the regulation of pancreatic secretion **(K)**	**Pancreatic secretions (composition, function and regulation)**	SGD 90 mins	MCQ's
11.	• List the composition of bile and factors for its release • Explain the mechanism of conjugation and secretion of bile salts • Describe role of bile acids and emulsification of fats • Describe enterohepatic circulation of bile salts	**Bile secretion (composition, function and regulation)**	SGD 90 mins	MCQ's
12.	• Explain vomiting reflex & its causes • Explain defecation reflex & its regulation **(K)**	**Vomiting & Defecation reflexes**	SGD 90 mins	MCQ's
13.	• Discuss the common disorders of GIT and its related glands **(K)**	**Disorders of gastro-intestinal tract**	SGD 90 mins	MCQ's

Week 4

End of Module

Gastrointestinal Tract & Hepatobiliary System -I

Module Test Theory

Gastrointestinal Tract Module & Hepatobiliary System -II

Module Test OSCE

Gastrointestinal Tract & Hepatobiliary System

Module -2

Community Medicine Lectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	☐ Define Nutrition ☐ Classify micro and macronutrients ☐ List the diseases caused by micronutrient deficiencies ☐ Explain prevention of micronutrient deficiencies **(K)**	**Introduction to nutrition**	LGIS 50mins	MCQs
2.	☐ Describe the composition of macronutrient in balanced diet ☐ Describe standard nutrient intake and recommendation ☐ Calculate energy value from macronutrient **(K)**	**Balanced diet and bioavailability of nutrients**	LGIS 50mins	MCQs
3.	☐ Define food borne illness ☐ Discuss physical, biological and chemical hazards of food ☐ Describe the preservation of food ☐ Define fortification ☐ Explain food adulteration **(K)**	**Food hygiene and food poisoning**	LGIS 50mins	MCQs
4.	☐ Describe nutritional assessment ☐ Explain Nutritional Care Process (NCP) ☐ List the tools for nutritional status ☐ Explain the importance of Growth Charts **(K)**	**Assessment of nutritional status- Growth Chart**	LGIS 50mins	MCQs
5.	☐ Define malnutrition ☐ Classify malnutrition ☐ Explain the process of assessment of malnutrition ☐ Discuss control and prevention of malnutrition **(K)**	**Malnutrition and prevention**	LGIS 50mins	MCQs
6.	☐ Classify Hepatitis ☐ Discuss the clinical features of Hepatitis ☐ Explain the epidemiological triangle of Hepatitis ☐ Explain the control and prevention of Hepatitis ☐ Discuss the Hepatitis control programme in Pakistan **(K)**	**Hepatitis, its types and prevention**	LGIS 50mins	MCQs
7.	☐ Describe enteric fever ☐ Discuss the epidemiology of enteric fever ☐ Describe the measures of control and prevention of enteric fever **(K)**	**Enteric Fever and its prevention**	LGIS 50mins	MCQs

8.	☐ Describe diarrheal disease ☐ Classify diarrheal disease ☐ Describe the epidemiology of diarrheal diseases ☐ Explain the clinical features, assessment and diagnostic criteria of diarrheal diseases ☐ Discuss measure of control and prevention of diarrheal diseases **(K)**	**Diarrheal diseases and its prevention**	LGIS 50mins	MCQs
9.	☐ Describe cholera disease ☐ Describe the epidemiology of cholera. ☐ List risk factors of cholera ☐ Discuss the measures of control and prevention of Cholera **(K)**	**Cholera and its prevention**	LGIS 50mins	MCQs
10.	☐ Describe worm infestation ☐ Classify medically important worms ☐ Describe the epidemiology of worm infestations ☐ List the risk factors of worm infestation ☐ Discuss measures of control and prevention of worm infestations	**Worm infestations and their prevention**	LGIS 50mins	MCQs
11.	☐ Describe Amoebiasis ☐ Describe epidemiology of Amoebiasis ☐ Discuss risk factors of Amoebiasis ☐ Discuss measures of control and prevention of Amoebiasis **(K)**	**Amoebiasis and its prevention**	LGIS 50mins	MCQs
12.	☐ Describe Zoonosis ☐ Classify medically important zoonotic diseases ☐ Describe epidemiology of zoonotic diseases ☐ Describe Scabies ☐ Discuss measures of control and prevention of zoonotic diseases **(K)**	**Zoonotic Diseases and its prevention**	LGIS 50mins	MCQs
13.	☐ Describe Leishmaniasis ☐ Discuss epidemiology of Leishmaniasis ☐ List risk factors of Leishmaniasis ☐ Discuss measures of control and prevention of Leishmaniasis **(K)**	**Leishmaniasis and its prevention**	LGIS 50mins	MCQs
14.	☐ Describe water pollution ☐ List the sources of water pollution ☐ Classify water related diseases ☐ Discuss control and prevention of water related Diseases **(K)**	**Water Pollution and Water Related Diseases**	LGIS 50mins	MCQs
15.	☐ Describe Water purification ☐ Enumerate the methods of water purification ☐ Explain WHO standards for water safety **(K)**	**Water Purification**	LGIS 50mins	MCQs

Forensic Medicine Lectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	☐ Describe Injuries of the scalp including forensic aspects of anatomy of the scalp and their medico legal aspects ☐ Enumerate the types of fractures of the skull and their forensic aspects ☐ Explain the mechanism of production of fractures of the skull and their medico legal Significance **(K)**	**Regional Injuries-I (Head, injuries to scalp & Fractures of Skull)**	LGIS 50mins	MCQs
2.	☐ Describe the types of intracranial haemorrhages along with forensic anatomy of blood vessels commonly involved ☐ List the signs and symptoms of different types of intracranial haemorrhages and methods to diagnose them ☐ Explain the medico legal aspects of intracranial haemorrhages' **(K)**	**Regional Injuries-II (Intracranial haemorrhages)**	LGIS 50mins	MCQs
3.	☐ Enumerate the different types of injuries to the brain and spine ☐ Explain the mechanisms of brain injuries such as Concussion/Contusion/ Irritation, Coup and contre coup injuries ☐ Describe the mechanism and sign and symptoms of brain injuries to boxers ☐ Discuss Spinal injuries with special emphasis on Railway spine ☐ Describe the medico legal aspects of brain and spinal injuries **(K)**	**Regional Injuries-III (Brain Injuries, Spinal Injuries)**	LGIS 50mins	MCQs
4.	☐ Describe the common injuries of medico legal significance to the face and neck including i. Cervical fractures ii. Whiplash injuries iii. Homicidal and suicidal cut throat iv. Chest injuries including traumatic asphyxia, injuries to ribs, lungs, heart with special emphasis on penetrating injuries and Commotio Cordis ☐ Describe the abdominal injuries with medico legal aspects of rupture of liver, spleen, injuries to abdominal aorta and intestines ☐ Discuss Pelvic injuries of medico legal significance **(K)**	**Regional Injuries-IV (Injuries of Face, Neck, Chest, Abdomen, Pelvis)**	LGIS 50min	MCQs

5.	☐ Define common terms related to blast injuries ☐ Classify explosives ☐ Discuss the physics of bomb blast ☐ Describe the various types of blast injuries ☐ Discuss the management of blast injuries **(K)**	**Special trauma (Blast Injuries)**	LGIS 50min	MCQs
6.	☐Describe the immediate and delayed (remote) causes of death due to wounds **(K)**	**Causes of death due to trauma**	LGIS 50min	
7.	☐ State the salient features of Mental Health Ordinance 2001 ☐ Define insane person as per law ☐ Differentiate between Legal and Medical Insanity ☐ Describe subjective disorders as delusions, hallucinations, illusion, obsession, impulse and their medico legal significance **(K)**	**Forensic Psychiatry-I**	LGIS 50min	MCQs
8.	☐ Define the various terms of medico legal significance such as affect, fugue, confabulation, I.Q, psychopath, twilight state ☐ Discuss legal tests of insanity i.e. McNaughton's Rule ☐ List motives of feigned insanity ☐ Differentiate between true and feigned insanity ☐ Explain the procedure of admission in a mental hospital ☐ Discuss the civil and criminal responsibilities of insane **(K)**	**Forensic Psychiatry-II**	LGIS 50min	MCQs
9.	☐ Explain the sign and symptoms, diagnosis, treatment, post mortem findings and medico legal importance of acute and chronic poisoning by Lead and Copper **(K)**	**Metallic Poisons-Arsenic and Mercury**	LGIS 50min	MCQs
10.	☐ Explain the sign and symptoms, diagnosis, treatment, post mortem findings and medico legal importance of acute and chronic poisoning by Lead and Copper **(K)**	**Metallic Poisons-Lead and Copper**	LGIS 50min	MCQs
11.	☐ Enumerate the types of food poisoning ☐ Differentiate between Toxin type and Infection type of food poisoning ☐ Explain the sign and symptoms, diagnosis, and post mortem findings of food poisoning ☐ Discuss role of forensic expert in cases of food Poisoning **(K)**	**Food poisoning**	LGIS 50min	MCQs
12.	☐ Enumerate the derivatives of Opium ☐ Explain the sign and symptoms, diagnosis, treatment, post mortem findings and medico legal importance of Opium poisoning **(K)**	**Opium & its derivative poisons**	LGIS 50min	MCQs

Forensic Medicine Tutorials

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	☐ Discuss the sign and symptoms, treatment and medico legal significance of corrosive poisons; including HCL, H_2SO_4, Nitric acid, Vitriol age **(K)**	**Corrosives poisoning**	SGDs 1hour (Tutorials)	MCQs
2.	☐ Discuss the sign and symptoms, treatment and medico legal significance of: i. Oxalic acid ii. Carbolic acid iii. Salicylic acid iv. Hydrocyanic acid & cyanides, v. Alkalis; Caustic Soda and Caustic Potash **(K)**	**Organic Acids and Alkalis**	SGDs 1hour (Tutorials)	MCQs
3.	☐ Discuss the sign and symptoms, treatment and medico legal significance of Phosphorus **(K)**	**Non-Metallic Poison-Phosphorus**	SGDs 1hour (Tutorials)	MCQs
4.	☐ Describe the mode of action, signs and symptoms depending upon concentration in blood, treatment and post mortem findings of therapeutic poisons Barbiturates, Diazepam and Tranquilizer ☐ Enumerate common household poisons ☐ Discuss the sign and symptoms, treatment and medico legal significance of common household poisons **(K)**	**Therapeutic poisons-II (Barbiturates, Diazepam and Tranquilizer) and common household poisons**	SGDs 1hour (Tutorials)	MCQs
5.	☐ Define drug addiction and dependence ☐ List the drugs that cause addiction and dependence ☐ Discuss their sign and symptoms, treatment and medico legal significance **(K)**	**Drug addiction and dependence**	SGDs 1hour (Tutorials)	MCQs

Pathology Lectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	☐ Discuss apthous ulcers & fibroproliferative lesions of oral cavity ☐ Discuss the characteristic features of precancerous oral cavity lesions ☐ List the risk factors for oral cancer especially squamous cell carcinoma ☐ Discuss the pathogenesis, molecular biology and morphology of squamous cell Carcinoma **(K)**	**Lesions of oral cavity (Inflammatory/reactive, precancerous and cancerous)**	LGIS 50min	MCQs
2.	☐ Discuss sialadenitis and mucocele ☐ Classify common benign and malignant tumours of salivary glands ☐ Describe the characteristic features, pathogenesis and morphology of the most common salivary gland tumours **(K)**	**Inflammation & neoplasms of salivary glands**	LGIS 50min	MCQs
3.	☐ Describe the congenital abnormalities of GIT including Atresia, fistulae, duplications, Diaphragmatic Hernia, Omphalocele, Gastroschisis. Ectopia, Meckel diverticulum, Congenital hypertrophic pyloric stenosis, Hirschsprung disease **(K)**	**Congenital abnormalities of GIT**	LGIS 50min	MCQs
4.	☐ Explain oesophageal obstruction, varices and achalasia ☐ Classify esophagitis ☐ Discuss the risk factors, pathogenesis, morphology and clinical features of Barrett Oesophagus **(K)**	**Oesophageal obstruction, achalasia, esophagitis & Barrett oesophagus**	LGIS 50min	MCQs
5.	☐ Classify tumours of oesophagus ☐ Explain the aetiology and pathogenesis of oesophageal tumours ☐ Identify the morphology and common clinical features of oesophageal tumours **(K)**	**Oesophageal tumours**	LGIS 50min	MCQs
6.	☐ Define Gastritis ☐ Describe its pathogenesis, morphology & clinical features ☐ Define stress related mucosal disease ☐ Discuss its pathogenesis, morphology & clinical features ☐ Explain the pathogenesis, morphology & clinical features of chronic gastritis (with special emphasis on H. Pylori gastritis and autoimmune eosinophilic, lymphocytic & granulomatous gastritis) **(K)**	**Gastritis, Stress related mucosal disease, Chronic Gastritis**	LGIS 50min	MCQs

7.	☐ Discuss risk factors, pathogenesis, morphology, clinical features & complications of peptic ulcer disease ☐ Define mucosal atrophy, intestinal metaplasia, dysplasia & gastritis cystica in relation to gastritis ☐ Discuss hypertrophic gastropathies **(K)**	**Complications of chronic gastritis**	LGIS 50min	MCQs
8.	☐ List the microorganisms which causes infections of oral cavity & upper GI tract ☐ Discuss the important properties of Helicobacter pylori and Candida ☐ Describe the pathogenesis, epidemiology clinical findings and laboratory diagnosis of H. Pylori & Candida **(K)**	**Infections of the upper Gastrointestinal tract**	LGIS 50min	MCQs
9.	☐ Discuss the types, sites, risk factors & morphology of gastric polyps. ☐ Classify gastric tumours based on macroscopic and microscopic grounds ☐ Discuss epidemiology, risk factors, pathogenesis, molecular biology, morphology and clinical features of gastric adenoma & adenocarcinoma ☐ Explain gastric lymphoma, carcinoid tumour and gastrointestinal stromal tumours **(K)**	**Gastric polys & tumours of stomach**	LGIS 50min	MCQs
10.	☐ Describe types of intestinal obstructions ☐ Discuss the risk factors and morphology of intestinal obstructions ☐ Describe the pathogenesis, morphology, clinical features of Ischemic bowel disease ☐ Define Angiodysplasia ☐ Discuss the pathogenesis and morphology of Angiodysplasia **(K)**	**Intestinal obstruction/ Ischemic bowel diseases/ Angiodysplasia**	LGIS 50min	MCQs
11.	☐ Define malabsorption & diarrhea ☐ Classify diarrhea ☐ Enumerate different malabsorption diseases including Cystic fibrosis, Celiac disease, environmental enteropathy, Autoimmune enteropathy, Lactase deficiency & Abetalipoproteinemia ☐ Discuss the pathogenesis, risk factors, morphology and clinical features of Celiac disease ☐ Discuss etiopathogenesis of Whipple disease **(K)**	**Malabsorption & Diarrhea**	LGIS 50min	MCQs
12.	☐ Define food poisoning ☐ List the causative microorganisms of food poisoning ☐ Briefly discuss food poisoning due to Staphylococcus Aureus & Listeria ☐ Discuss the important properties, pathogenesis, epidemiology, clinical findings, laboratory diagnosis, treatment and prevention of Bacillus and Clostridia ☐ Discuss antibiotic associated pseudomembranous colitis due to Clostridium Difficile **(K)**	**Food Poisoning**	LGIS 50min	MCQs

13.	☐ Define the term diarrhea ☐ List the infectious causative agents of diarrhea ☐ Discuss the characteristics of inflammatory and non-inflammatory diarrhea. ☐ Discuss important properties, pathogenesis and clinical findings, laboratory diagnosis, treatment and prevention of diarrhea caused by Escherichia coli ☐ Briefly discuss the role of Mycobacterium tuberculosis in causing diarrhea **(K)**	**Infectious enterocolitis due to Escherichia coli and Mycobacterium tuberculosis**	LGIS 50min	MCQs
14.	☐ Describe the important properties of Salmonella and Shigella ☐ List the different species of Salmonella ☐ Discuss diarrhea caused by Salmonella and Shigella ☐ Discuss the pathogenesis, clinical findings, laboratory diagnosis, treatment and prevention of typhoid fever and Shigella **(K)**	**Infectious enterocolitis due to Salmonella species and Shigella**	LGIS 50min	MCQs
15.	☐ Discuss the important properties, pathogenesis, clinical findings, laboratory diagnosis, treatment and prevention of vibrio cholera, Campylobacter jejuni and Yersinia enterocolitica **(K)**	**Infectious enterocolitis due to Vibrio cholera, Campylobacter jejuni, Yersenia enterocolitica**	LGIS 50min	MCQs
16.	☐ List the important viruses that cause gastrointestinal tract infections ☐ Discuss the important properties, replicative cycle, transmission, epidemiology, pathogenesis, clinical findings, laboratory diagnosis, treatment and prevention of Polio and Rota viruses **(K)**	**Role of viruses in infecting gastrointestinal tract**	LGIS 50min	MCQs
17.	☐ Classify major protozoan pathogens ☐ Discuss the diseases, important properties, pathogenesis, epidemiology, clinical findings, laboratory diagnosis, treatment and prevention of Entamoeba histolytica and Giardia lambdia ☐ Briefly discuss the minor intestinal protozoa **(K)**	**Intestinal protozoa**	LGIS 50min	MCQs
18.	☐ Discuss the diseases, important properties, pathogenesis, epidemiology, clinical findings, laboratory diagnosis, treatment and prevention of: i. Taenia solium ii. Taenia saginata iii. Diphyllobothrium latum iv. Hymenolepis nana v. Dipylidium caninum **(K)**	**Intestinal Cestodes**	LGIS 50min	MCQs
19.	☐ Discuss the diseases, important properties, pathogenesis, epidemiology, clinical findings, laboratory diagnosis, treatment and prevention of: i. Schistosoma ii. Clornorchis iii. Paragonimus iv. Faschiola Fasciolopsis	**Trematodes**	LGIS 50min	MCQs

	v. Heterophyes **(K)**			
20.	☐ Discuss the diseases, important properties, pathogenesis, epidemiology, clinical findings, laboratory diagnosis, treatment and prevention of: i. Enterobius vermicularis ii. Ascaris lumbricoides iii. Strongyloides **(K)**	**Intestinal Nematodes-I**	LGIS 50min	MCQs
21.	☐ Discuss the diseases, important properties, pathogenesis, epidemiology, clinical findings, laboratory diagnosis, treatment and prevention of: i. Ancylostoma and Necator ii. Trichuris trichura iii. Trichinella **(K)**	**Intestinal Nematodes-II**	LGIS 50min	MCQs
22.	☐ Define irritable bowel syndrome and inflammatory bowel disease ☐ Explain its pathogenesis & clinical features ☐ Describe its types (Crohn & ulcerative colitis) and their pathogenesis ☐ Explain the morphology and clinical features of both types of IBD ☐ Differentiate between Crohn & ulcerative colitis ☐ Define intermediate colitis ☐ Describe long term complications of ulcerative colitis & Crohn disease ☐ Define diversion colitis, microscopic colitis, sigmoid diverticulosis & graft versus host disease **(K)**	**Irritable bowel syndrome (IBS), Inflammatory bowel disease (IBD), Indeterminate colitis & Colitis associated neoplasia**	LGIS 50min	MCQs
23.	☐ Classify non-neoplastic & neoplastic polyps of intestine ☐ Describe its morphology & clinical features ☐ Briefly discuss gastrointestinal polyposis Syndromes **(K)**	**Polyps of small & large intestine (Familial adenomatous polyposis FAP)**	LGIS 50min	MCQs
24. 25.	☐ Classify tumors of intestines ☐ Discuss the risk factors and pathogenesis of adenoma-adenocarcinoma sequence ☐ Describe the gross and microscopic features of intestinal tumors ☐ Discuss the clinical features, grading and staging of intestinal tumors ☐ Briefly discuss tumors of anal canal, hemorrhoids, acute appendicitis, tumors of appendix, peritonitis & peritoneal mesothelioma **(K)**	**Tumors of small & large intestines, Hemorrhoids, appendicitis, Peritonitis, tumors of anal canal & peritoneum**	LGIS 50min	MCQs
	☐ List the microorganisms causing peritonitis and appendicitis ☐ Briefly discuss acute appendicitis and peritonitis ☐ Discuss in detail the important properties, pathogenesis, epidemiology, clinical findings, laboratory diagnosis, treatment and prevention of Bacteriodes and Prevotella **(K)**	**Anaerobic infections of the Gastrointestinal tract (peritonitis and appendicitis)**	LGIS 50min	MCQs

26.	☐ Describe the mechanism of injury & repair ☐ Elaborate the laboratory diagnosis of hepatic diseases ☐ Describe acute & chronic liver failure ☐ Explain morphology & clinical features of liver failure ☐ Define acute-on-chronic liver failure **(K)**	**General features of liver diseases**	LGIS 50min	MCQs
27.	☐ Discuss the important properties, summary of replicative cycle, transmission, epidemiology pathogenesis, clinical finding, laboratory diagnosis, treatment and prevention of Hepatitis B, C and D **(K)**	**Hepatotropic Viruses-I**	LGIS 50min	MCQs
28.	☐ Discuss the important properties, summary of replicative cycle, transmission, epidemiology pathogenesis, clinical finding, laboratory diagnosis, treatment and prevention of Hepatitis A, E and G **(K)**	**Hepatotropic viruses -II**	LGIS 50min	MCQs
29.	☐ List the important protozoa, Cestodes and trematodes infecting the liver ☐ Discuss in detail the important properties, pathogenesis, epidemiology, clinical finding, laboratory diagnosis, treatment and prevention of Leptospira, Echinococcosis granulosus, Echinococcosis multilocularis **(K)**	**Bacterial and Parasitic infections relating to the liver**	LGIS 50min	MCQs
30.	☐ Discuss the morphological features of viral hepatitis ☐ Define autoimmune & drug induced hepatitis ☐ Describe clinicopathlogic features, morphology & diagnostic criteria of autoimmune hepatitis ☐ Describe patterns of drug & toxin induced hepatic injury ☐ Define clinicopathologic syndromes of viral hepatitis, chronic hepatitis & carrier state **(K)**	**Hepatitis; Viral, Autoimmune & Drug Induced**	LGIS 50min	MCQs
31.	☐ Explain the pathogenesis, morphology & clinical features of Alcoholic Liver Disease ☐ Define non-alcoholic liver disease & World Health Organization criteria for the metabolic syndrome ☐ Discuss the pathogenesis, morphology & clinical features of NAFLD **(K)**	**Alcoholic & Non-Alcoholic Liver Disease (NAFLD)**	LGIS 50min	MCQs
32.	☐ List the types of storage & metabolic disorders of liver ☐ Discuss the genetic alterations, pathogenesis, morphology & clinical presentation of Hemochromatosis, Wilson disease and α1 anti trypsin deficiency **(K)**	**Storage and metabolic disorders of liver**	LGIS 50min	MCQs

33.	☐ Explain bilirubin & bile formation ☐ Describe pathophysiology & causes of jaundice ☐ Discuss pathogenesis & morphology of cholestasis, large bile duct obstruction, cholestasis of sepsis, primary hepatolithiasis, neonatal cholelithiasis & biliary atresia ☐ Describe the pathogenesis, morphology & clinical features of primary biliary cirrhosis, primary sclerosing cholangitis ☐ Define choledochal cyst & fibro polycystic Disease **(K)**	**Cholestatic Diseases, Autoimmune Cholangiopathies. & structural anomalies of the biliary tree**	LGIS 50min	MCQs
34.	☐ Describe the clinical manifestation & morphology of various circulatory disorders of Liver ☐ Describe morphology of graft-versus host disease & liver graft rejection, preeclampsia & eclampsia, acute fatty liver of pregnancy & intrahepatic cholestasis of pregnancy **(K)**	**Circulatory Disorders, Hepatic complications of organ or Hematopoietic stem cell transplantation, Hepatic diseases associated with pregnancy**	LGIS 50min	MCQs
35.	☐ Classify liver tumours ☐ Discuss the molecular profile, pathogenesis and morphology of benign liver tumours ☐ Discuss the risk factors, pathogenesis, morphology, clinical features and diagnosis of malignant tumours of liver **(K)**	**Tumours of liver**	LGIS 50min	MCQs
36.	☐ Discuss the aetiology, pathogenesis, gross morphological & histological features of different types of cholecystitis, cholelithiasis ☐ Discuss risk factors, pathogenesis, morphology and diagnosis of carcinoma of gall Bladder **(K)**	**Pathological diseases, and tumours of gall bladder**	LGIS 50min	MCQs
37.	☐ Describe non-tumorous conditions of Pancreas including congenital anomalies, acute and chronic pancreatitis **(K)**	**Non neoplastic diseases of pancreas**	LGIS 50min	MCQs
38.	☐ Discuss Congenital cysts & Pseudocysts ☐ Discuss cystic neoplasm of Pancreas ☐ Describe precursors to pancreatic cancers, and the pathogenesis, morphology & clinical features of pancreatic carcinoma ☐ Define Acinar cell carcinoma & Pancreato blastoma **(K)**	**Neoplastic cysts, Neoplasms of Pancreas**	LGIS 50min	MCQs

Pathology Tutorials

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	☐ Discuss the important tests in diagnosing Typhoid ☐ Discuss the liver function tests **(K)**	**Laboratory diagnosis of Typhoid and liver disease**	SGDs 1hour (Tutorials)	MCQs

Pathology Practical's

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	Describe the morphology of: i. Leucoplakia & eythroplakia ii. ii. Most common salivary gland tumors iii. iii. Barrett esophagus iv. iv. Squamous cell carcinoma & adenocarcinoma of esophagus **(S)**	**Histopathology of oral cavity, salivary glands, pre-malignant & malignant lesions of oesophagus**	Demonstration 90 mins	OSPE
2.	☐ Describe the morphological features of gastritis, and peptic ulcer disease ☐ Discuss morphological features of gastric polyps, adenoma & adenocarcinoma **(S)**	**Histopathology of gastric diseases and gastric tumours**	Demonstration 90 mins	OSPE
3.	☐ Classify intestinal polyps ☐ Discuss intestinal polyps ☐ Discuss the morphological features of intestinal Tumours **(S)**	**Histopathology of polyps & intestinal tumours**	Demonstration 90 mins	OSPE
4.	☐ List the clinical indications of stool detailed report ☐ Describe the methods of doing stool DR ☐ Discuss the physical, chemical and microscopic features of stool DR with regards to infectious and non-infectious causes ☐ Identify the eggs of important worms **(S)**	Stool Detailed Report	Demonstration 90 mins	OSPE
5.	☐ Identify lactose and non-lactose fermenting colonies on Mac Conkeys agar ☐ Discuss the importance of: i. Triple sugar iron agar test ii. Sulphur Indole Motility agar test iii. Citrate utilization test iv. Urease test **(S)**	Biochemical tests to identify microorganisms especially of the GIT	Demonstration 90 mins	OSPE

Pharmacology Lectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	☐ Classify prokinetic and anti-emetic agents ☐ Discuss the basic & clinical pharmacology of those agents **(K)**	**Prokinetics and Anti-Emetics**	LGIS 50mins	MCQs
2.	☐ Explain the mechanism of action of Laxative agents. **(K)**	**Mechanism of action of Laxative agents**		
3.	☐ Explain the mechanism(s) of action, therapeutic uses, adverse effects, and contraindications of serotonin agonists and antagonists ☐ Explain the role of serotonin, its agonists and antagonists in different clinical conditions **(K)**	**Serotonin Agonists & Antagonists (as potent anti-emetics)**	LGIS 50mins	MCQs
4.	☐ Classify drugs used in the treatment of acid peptic disorder including H. Pylori ☐ Discuss the basic & clinical pharmacology of drugs used in acid peptic disease **(K)**	**Drugs used in Acid Peptic Disorder including H. Pylori-I & II**	LGIS 50mins	MCQs
5.	☐ Explain different treatment strategies for viral hepatitis ☐ Discuss the basic & clinical pharmacology of drug groups used in viral hepatitis including role of Interferons **(K)**	**Drug Management of Viral Hepatitis (Anti-Viral Drugs-II)**	LGIS 50mins	MCQs
6.	☐ Classify laxatives/purgatives ☐ Explain the pharmacokinetics and dynamics and adverse effects of laxatives/ purgatives **(K)**	**Laxatives (drugs used in constipation)**	LGIS 50mins	MCQs
7.	☐ Classify drugs used in the treatment of Amebiasis ☐ Explain the basic & clinical Pharmacology of drugs used in the treatment of Amebiasis **(K)**	**Treatment of Amebiasis (Anti-Protozoal Drugs-II)**	LGIS 50mins	MCQs

8.	☐ Classify anti-diarrheal drugs ☐ Discuss drug treatment of infectious diarrhea ☐ Explain the basic & clinical pharmacology of anti-diarrheal drugs ☐ Discuss the drug treatment of IBS **(K)**	**Anti-Diarrheal Drugs & Treatment of Irritable Bowel Syndrome (IBS)**	LGIS 50mins	MCQs
9.	☐ Classify drugs used in the treatment of helminthic infections ☐ Describe basic and clinical pharmacology of anti-helminthic drugs **(K)**	**Anti-Helminthic Drugs**	LGIS 50mins	MCQs

Pharmacology Tutorials

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	☐ Discuss the basic and clinical pharmacology of serotonin agonists and antagonists **(K)**	**Serotonin Agonists & Antagonists (as potent anti-emetics)**	SGDs 1hour (Tutorials)	MCQs
2.	☐ Discuss drug regimens used in the treatment of acid peptic diseases including treatment of H. Pylori associated ulcers ☐ Discuss the clinical uses, adverse effects, pharmacokinetics and pharmacodynamics of notable drugs **(K)**	**Drugs used in Acid Peptic Disorder including H. Pylori-I & II**	SGDs 1hour (Tutorials)	MCQs
3.	☐ Discuss the basic and clinical pharmacology of various drug regimens used in viral hepatitis **(K)**	**Drug Treatment of Viral Hepatitis (Anti-Viral Drugs-II)**	SGDs 1hour (Tutorials)	MCQs
4.	☐ Discuss various drug regimens used in the treatment of amebiasis, diarrhea and IBS **(K)**	**Treatment of Amebiasis, Diarrhea & Irritable Bowel Syndrome (IBS)**	SGDs 1hour (Tutorials)	MCQs
5.	☐ Discuss the drug regimens used in typhoid infection along with their basic and clinical pharmacology **(K)**	**Treatment of Typhoid Infection**	SGDs 1hour (Tutorials)	MCQs

Pharmacology Practical's

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	☐ Demonstrate the preparation of Tyrode solution for practical setup ☐ State its contents and their quantities for solution preparation ☐ List its experimental uses ☐ Explain the method of calculation for preparation of various strength of solution used experimentally **(S)**	**Preparation of Tyrode solution**		
2.	☐ Demonstrate the effect of different drugs on the isolated piece of Rabbit's intestine by using Power Lab System **(S)**	**Evaluate the effects of given drug on the intestine of Rabbit**		

Week 5

End of Module

Gastrointestinal Tract Module 2 Test Theory

Gastrointestinal Tract Module 2 Test OSCE

Medical Education Lectures/Workshop

S.NO	Learning Objectives (domain) At the end of session, student will be able to:	Content Areas	Teaching Activity (Duration)	Assessment
1.	**Introduction to Medical Education** • Appreciate the journey of medical education from learning biomedical to clinical science. **(K)**	• Plan of medical education in college • Organization of undergraduate medical curriculum • Integrated Curriculum	LGIS 50 mins	–
2.	**Skills of Succeeding in a Medical College – 1** • Describe the methods of learning knowledge in a medical college. **(K)**	• Difference in teaching and learning in school / college and a medical institution • Learning knowledge • Learning skills	LGIS 50 mins	–
3.	**Problem – based Learning** • Describe the basis of problem – based learning. **(K)** • Follow the process / steps of problem – based learning session. **(S)**	• Basics of problem-based learning • Process / steps of problem – based learning • Practical demonstration of PBL session	Workshop (2 hours)	–
4.	**Medical Professionalism** • Describe the basics of medical professionalism	• History of medical professionalism • Principals of medial professionalism	LGIS 50 mins	–

	and outline the behavioral descriptors of students. **(K)**	• Behaviors required from medical students		

Learning resource: How to succeed at medical school, Dason Evans & Jo Brown, 2009

TIME TABLES

Jinnah Medical & Dental College
MBBS 2 - Batch 24 (2022)
GIT & HEPATOBILIARY MODULE - WEEK 1

Lecture Venue: LH102

	8:30-9:20	9:25-10:15		10:45-11:35	11:40-12:30	12:30	1:00-5	1:45-3:15
MON Feb 28	ANATOMY GIT Introduction	PHYSIOLOGY Digestive System Introduction	TEA BREAK	RESEARCH MODULE Introduction	MEDICAL EDUCATION PBL Process & Group Dynamics Dr. Sadaf	LUNCH BREAK	SELF SSTUDY / EXTRCURRICULAR ACTIVITIES	PBL 1 Session I A: SR 104 B: SR 105 C: SR 106 D: SR304 E: SR306 F: SR307
TUES March 1	BIOCHEMISTRY Digestion & rption of Proteins	ANATOMY Peritoneum: Features & Divisions		JOURNAL CLUB Dr. Muslim Abbas	PHYSIOLOGY Function of Smooth e & Electrical Properties			ANATOMY DEMONSTRATION Anterior Abdominal Wall ABC – Dissection Hall DEF-LH102
WED March 2	ANATOMY Peritoneum: Tracing & Clinical	BIOCHEMISTRY Digestion & sorption of Lipids		BEHAVIORAL SCIENCES Cognitive Development I	PHYSIOLOGY GIT Nervous & Hormonal Control			ANATOMY DEMONSTRATION Inguinal Canal DEF – Dissection Hall ABC – LH102
THUR March 3	ANATOMY Gross Esophagus & Stomach	BIOCHEMISTRY Digestion & tion of Carbohydrates		BEHAVIORAL SCIENCES Cognitive evelopment II	ANATOMY GIT General Histology			ANATOMY DEMONSTRATION Posterior Abdominal Wall ABC – Dissection Hall DEF – LH102
FRI March 4	BIOCHEMISTRY Aerobic Glycolysis	ANATOMY Stomach Histology		PHYSIOLOGY Salivary Secretion osition, Function & Regulation	BIOCHEMISTRY Anaerobic & RBC Glycolysis			BIOCHEMISTRY PRACTICAL ABC – Serum Glucose Estimation-WET LAB DEF-Journal Club-Computer Lab

Jinnah Medical & Dental College
MBBS 3 - Batch 23
GIT & HEPATOBILIARY MODULE–Week 1

Lecture Venue: JMDC LH 103 (Wednesday-Friday); JMCH Auditorium (Monday, Tuesday, Saturday)

MON Sept 26	CLINICS (Rotation 14; Week 1) (9:00 – 12:00)			12:00-12:30 LUNCH BREAK	12:30-1:20 FORENSIC MEDICINE Forensic Sexology VII: Sexual Perversions Dr. Imran Afzal	1:25-3:00 FORENSIC MEDICINE TUTORIAL Toxicology: Cardiac Poisons Dr. Imran Afzal		SELF STUDY
TUES Sept 27	CLINICS (Rotation 14; Week 1) (9:00 – 12:00)				12:30-1:20 FORENSIC MEDICINE Aspirin & Paracetamol Poisoning Dr. Ibtisam	1:25-3:00 FORENSIC MEDICINE TUTORIAL Cannabis & Cocaine Poisoning Dr. Ibtisam		SELF STUDY
WED Sept 28	8:30-9:20	9:25-10:15		10:45-11:35		12:00-1:30		1:45-3:15
	CARDIOVASCULAR MODULE TEST							
THURS Sept 29	CARDIOVASCULAR MODULE TEST							
FRI Sept 30	8:30-9:20 PATHOLOGY Oral Cavity Lesions	9:25-10:15 COMMUNITY MEDICINE Introduction to Nutrition Dr. Shagufta		10:45-11:35 COMMUNITY MEDICINE Balanced Diet & Nutrient Bioavailability Dr. Shagufta	11:40-12:30 PATHOLOGY Salivary Gland Inflammation & Neoplasms	12:35-1:15 MEDICAL EDUCATION CVS Test Review Dr. Muhammad Ali	PRAYER	
SAT Oct 1	CLINICS (Rotation 14; Week 1) (9:00 – 12:00)				12:10-1:00 SELF STUDY	SELF STUDY		

TRANSPORT WILL LEAVE JMDC FOR KORANGI AT 8:15 AM MONDAY, TUESDAY, SATURDAY