

Dow University of Health Sciences



GASTROINTESTINAL TRACT & LIVER MODULE

8 weeks, 9 credit hours

Second Year MBBS

5 YEAR CURRICULAR ORGANIZATION

Spiral	year	Modules			
First Spiral	I	FND1- Foundation Cell, Genetics & Cell Death (Basics of Anatomy, Physiology, Biochemistry, Gen. Pathology, Gen. Pharmacology, Community Medicine & Behavioral Sciences, 9 Weeks		HEM1- Blood Module Immunity, Inflammation, Tissue repair, Antimicrobials & Neoplasia 9Week	
		LCM1- Locomotion Bones, Joints, Nerves & Muscles, 9weeks		RSP1- Respiratory System 6 weeks	CVS1- Cardiovascular System 4 weeks
		NEU1- Nervous System 8 weeks		HNN1- Head & Neck & Special 6 weeks	END1- Endocrinology 5weeks
		GIL 1-GIT and Liver 8 weeks		EXC1- Renal and Excretory System 5 weeks	REP1- Reproductive System 5 weeks
Second Spiral	II	IDD 1- Infectious diseases 5 weeks	HEM2- Hematology 5 weeks	RSP2- Respiratory System 5 weeks	CVS2- Cardiovascular System 5 weeks
		GIL 2-GIT and Liver (including Nutritional Disorders) 8weeks		EXC2- Renal & Excretory System 5 weeks	END2- Endocrinology 5 weeks
		ORT2- Orthopedics, Rheumatology, Trauma 7 weeks	REP2- Reproductive System 8 Weeks	PMR-Physical Medicine & Rehabilitation DPS-Dermatology Plastic Surgery / Burns GEN-Genetics 6 weeks	
		NEU2- Neurosciences and Psychiatry 8 weeks		OPH / ENT* 4 weeks	ENT/OPH * 4 weeks
Third Spiral	III	Clinical Rotation 9:30 to 3:00 (with Ambulatory, Emergency, Intensive care) In Medicine, Pediatrics, Cardiology and Neurology units <ul style="list-style-type: none"> ▪ Lecture on problem based approach, twice a week ▪ Ward tutorial twice a week ▪ Student research presentation once a week 		Clinical Rotation 9:30 to 3:00 (Inpatient, Ambulatory, Emergency, Intensive care and Operation Theatres) In Surgery, Gynecology & Obstetrics, Orthopedics and Neurosurgery. <ul style="list-style-type: none"> ▪ Lecture on problem based approach, twice a week ▪ Ward tutorial twice a week ▪ Student research presentation once a week 	

RATIONALE:

Gastrointestinal tract and liver play a vital role in the life of a human beings .The processes of ingestion, digestion, absorption, assimilation and metabolism of the food for its ultimate utilization as a source of energy and biostructural molecules are performed in these organs. Liver is the organ where major metabolic functions take place. It is important for undergraduate students of medicine to have basic knowledge about the functions & diseases of gastrointestinal tract and liver and their management and for that a sound understanding of the structure, function, biochemical processes and their relationship to the disease processes is essential. All of these are taught in this module in an integrated fashion.

TERMINAL OBJECTIVE:

By the end of this module student will be able to:

- Review anatomy of gastro-intestinal tract.
- Describe embryological development
- Highlight common developmental anomalies of gastro-intestinal tract.
- Enlist various enzymes and describe their composition and synthesis.
- Explain gastrointestinal tract on the basis of its physiology.
- Identify common pathologies in relation to digestion, absorption and storage.
- Recognize importance of liver in the process of digestion, absorption and storage.
- Explain pathological findings of hepatic diseases.
- Interpret common investigations done to diagnose gastro-intestinal tract related pathologies.

MODULE OBJECTIVES:

1. Identify the boundaries and divisions Gastrointestinal tract
2. Describe the Structure of smooth muscle and their electrical properties, to recognize the major organs of the digestive system and cross-section of wall of the digestive tract. The nervous and hormonal control of GIT and ingestion of food.
3. Identify the abdominal regions in location of different viscera in abdominal regions and planes
4. Recognize the details of peritoneum and peritoneal reflections on the different contents of abdominal & peritoneal cavity.
5. Identify the structures forming the posterior abdominal wall and viscera related to them
6. Describe the location, development, gross anatomy, microscopic anatomy and clinical anatomy of different viscera present in abdominal cavity
7. Identify the components of large intestine, and emphasis the importance of rectum and anal canal for normal functioning of the body
8. Describe the major vessels of GIT and Liver
9. Describe the details of hepato-biliary system(Extra-hepatic and intra hepatic)
10. Describe role of liver in the metabolism of carbohydrates, lipids and proteins
11. Explain the process of synthesis and degradation of glycogen
12. Relate metabolism of glycogen with malnutrition and storage disease
13. Explain the process of digestion of dietary carbohydrate, lipid & protein
14. Describe the biochemical structure and function of lipoproteins
15. Relate the normal process of digestion & absorption of carbohydrates, lipids & proteins with absorption syndromes
16. Explain the process of oxidation of glucose
17. Justify the significance of HMP with respect to reducing equivalents & other sugars
18. Describe the synthesis of glucose from non-carbohydrate sources
19. Relate the glucose oxidation with energy production through TCA, cycle electron transport chain & oxidative phosphorylation
20. Describe the process of ammonia transport and formation of urea
21. Relate carbohydrate, protein & lipid metabolic processes in well-fed states, obesity, starvation and diabetes mellitus

22. Discuss the fate of amino acids after absorption
23. Relate the role of water soluble vitamins in metabolism as coenzymes
24. Explain how hyperammonemia results from chronic liver disease
25. Discuss fatty acid synthesis its oxidation, ketogenesis and cholesterol synthesis
26. Describe the differences in the nature of gastrointestinal motility as a function of position and time
27. Recognize Factors that control the rate of emptying of the stomach and mechanism of the control
28. Discuss the composition, mechanism of secretion, functions, nervous and hormonal regulation of gastro-intestinal juices. And juices of accessory organs such as salivary gland, pancreas and liver
29. To enlist and describe the aetiology, morphology and pathogenesis of salivary gland disorders.
30. To enlist and describe the etiology, morphology and pathogenesis of motor disorders of esophagus, esophageal varices and Barretts esophagus.
31. To explain the etiologies, clinical presentation, pathogenesis, gross and microscopic changes seen in gastritis.
32. To explain the clinical presentation of peptic ulcer disease and its association with H.pylori infection.
33. To describe the aetiology, morphology and pathogenesis of pancreatitis
34. To describe the general features of hepatic diseases, patterns of hepatic injury, hepatic failure, jaundice and cholestasis
35. To explain the etiology, pathogenesis, mode of transmission, clinical diagnosis of Acute Hepatitis
36. To describe the aetiology, pathogenesis and morphology of alcoholic and non- alcoholic steato-hepatitis
37. To explain the etiology, morphology, pathogenesis, gross and histopathologic changes in chronic hepatitis and cirrhosis.
38. To describe the pathogenesis, clinical presentations, gross and microscopic pathologic features of diseases caused by circulatory disorders of liver

MODULE CONTENTS:

ANATOMY

Gross Anatomy:

1. [GIL1 ANG 1](#) Introduction & divisions of GIT + abdominal quadrants
2. [GIL1 ANG 2](#) Anterior abdominal wall
3. [GIL1 ANG 3](#) Overview of peritoneal Cavity & peritoneal reflections + horizontal disposition
4. [GIL1 ANG 4](#) Division of abdomen into regions and quadrants and their contents
5. [GIL1 ANG 5](#) Inguinal canal
6. [GIL1 ANG 6](#) Overview of peritoneal Cavity & peritoneal reflections + vertical disposition
7. [GIL1 ANG 7](#) Esophagus (Abdominal part), Stomach
8. [GIL1 ANG 8](#) Duodenum and pancreas
9. [GIL1 ANG 9](#) Abdominal Aorta + blood supply of abdomen
10. [GIL1 ANG 10](#) Small Intestine & large intestine+(comparison of two)
11. [GIL1 ANG 11](#) Liver
12. [GIL1 ANG 12](#) Hepatic portal system
13. [GIL1 ANG 13](#) Gall bladder and biliary tract
14. [GIL1 ANG 14](#) Spleen
15. [GIL1 ANG 15](#) Posterior abdominal wall (boundaries, Muscles, fascia)
16. [GIL1 ANG 16](#) Lumbar Vertebrae
17. [GIL1 ANG 17](#) Inferior vena cava+ venous drainage of abdomen
18. [GIL1 ANG 18](#) Nerves of abdomen
19. [GIL1 ANG 19](#) Rectum
20. [GIL1 ANG 20](#) Surface anatomy of abdomen
21. [GIL1 ANG 21](#) Anal canal

General Histology:

1. [GIL1 ANH 1](#) Esophagus +stomach (Practical)
2. [GIL1 ANH 2](#) General plan of G.I.T + Oesophagus
3. [GIL1 ANH 3](#) Stomach
4. [GIL1 ANH 4](#) Small intestine
5. [GIL1 ANH 5](#) Large intestine
6. [GIL1 ANH 6](#) Duodenum and pancreas (practical)

7. [GIL1 ANH 7](#) Pancrease
8. [GIL1 ANH 8](#) Small and large intestine (practical)
9. [GIL1 ANH 9](#) Liver and gall bladder
10. [GIL1 ANH 10](#) Histology of Liver and gall bladder (practical)
11. [GIL1 ANH 11](#) ANAL CANAL
12. [GIL1 ANH 12](#) Rectum and anal canal

General Embryology:

1. [GLI1 ANE 1](#) Development of GIT (derivatives of fore gut)
2. [GLI1 ANE 2](#) Development Anatomy of GIT (2) (derivatives of mid and hind gut)
3. [GIL1 ANE 3](#) Development of liver, Gall bladder and pancreas

PHYSIOLOGY

1. [GIL1 PHY 1](#) Introduction to the digestive system
2. [GIL1 PHY 2](#) Functions of the smooth muscle and their electrical properties
3. [GIL1 PHY 3](#) Secretions of saliva (composition, function and regulation)
4. [GIL1 PHY 4](#) Scretion of saliva (Practical)
5. [GIL1 PHY 5](#) Motor function of esophagus and stomach
6. [GIL1 PHY 6](#) Mechanism of swallowing
7. [GIL1 PHY 7](#) Gastric secretion (composition, function and regulation)
8. [GIL1 PHY 8](#) Gastric secretion (practical)
9. [GIL1 PHY 9](#) Secretions of small and large intestine
10. [GIL1 PHY 10](#) Movements of small intestine & large intestine
11. [GIL1 PHY 11](#) Pancreatic secretion (composition, function and regulation)
12. [GIL1 PHY 12](#) Bile secretion (composition, function and regulation)

BIOCHEMISTRY

1. [GIL1 BIO 1](#) Over view of Digestion and Absorption of carbohydrates, lipids and proteins
2. [GIL1 BIO 3](#) Coenzymes derived from vitamins and their role in metabolic actions (Vit: B3,4,5,6.)
3. [GIL1 BIO 4](#) Biochemical function of liver and pancreas
4. [GIL1 BIO 5](#) Glycolysis
5. [GIL1 BIO 6](#) Liver function test (tutorial)
6. [GIL1 BIO 7](#) TCA cycle
7. [GIL1 BIO 8](#) Gluconeogenesis
8. [GIL1 BIO 9](#) HMP SHUNT
9. [GIL1 BIO 10](#) Glycogen Metabolism
10. [GIL1 BIO 11](#) Body Energy Gradient Maintenance (Electron Transport Chain & Oxidative Phosphorylation)
11. [GIL1 BIO 12](#) Regulation of blood glucose
12. [GIL1 BIO 13](#) Ketone body's metabolism
13. [GIL1 BIO 14](#) Hyperammonemia and encephalopathy (tutorial)
14. [GIL1 BIO 15](#) Obesity
15. [GIL1 BIO 16](#) Biochemical Function of liver & Pancreas

BEHAVIORAL SCIENCES

1. [GIL1 BHE 1](#) Social support treatment stigma
2. [GIL1 BHE 4](#) Health belief model

MEDICINE

1. [GIL1 MED 1](#) Liver function tests
2. [GIL1 MED 2](#) Fatty liver disease

RADIOLOGY

1. [GIL1 RAD 1](#) Assessment of GIT(PLAIN X RAY & BA STUDIES)
2. [GIL1 RAD 3](#) ASSESMENT OF GIT(CT SCAN)
3. [GIL1 RAD 4](#) Assessment of GIT by ultrasound

SURGERY

1. [GIL1 SUR 1](#) Hernia

COMMUNITY MEDICINE

1. [GIL1 COM 1](#) Dynamics of disease transmission
2. [GIL1 COM2](#) How to conduct research
3. [GIL1 COM3](#) Study design 1
4. [GIL1 COM4](#) Study design 2

PHARMACOLOGY

1. [GIL1 PHA 1](#) Antacids
2. [GIL1 PHA2](#) Antisecretory drugs: H2-antagonists
3. [GIL1 PHA3](#) Antisecretory PPI & miscellaneous
4. [GIL1 PHA4](#) Anti-diarrheal

Pathology

1. [GIL1 PTH 1](#) Diseases of salivary gland (non-tumors & tumors)
2. [GIL1 PTH 2](#) Esophagus Motor disorders, varices, esophagitis & Baretts
3. [GIL1 PTH 3](#) Acute and chronic gastritis
4. [GIL1 PTH 4](#) Peptic ulcer and H. pylori association
5. [GIL1 PTH 5](#) Pancreatitis
6. [GIL1 PTH 6](#) General features of hepatic diseases(patterns of hepatic injury, hepatic failure, jaundice and cholestasis)
7. [GIL1 PTH 7](#) Acute hepatitis

8. [GIL1 PTH 8](#) Alcoholic and non alcoholic steatohepatitis
9. [GIL1 PTH 9](#) Chronic hepatitis & Cirrhosis
10. [GIL1 PTH 10](#) Circulatory disorders of liver
11. [GIL1 PTH 11](#) Histopathologic features of acute and chronic gastritis
12. [GIL1 PTH 12](#) Histopathologic features of Barretts esophagus
13. [GIL1 PTH 13](#) Histopathologic features of Alcoholic and steatohepatitis

The contents are subjected to be altered according to requirement of academic calendar

TEACHING STRATEGIES

LARGE CLASS FORMATS

- Lectures

SMALL GROUP DISCUSSION

- Demonstrations
- Tutorial
- Practical
- Skill labs
- Case based learning sessions

CASE BASED LEARNING

GIL1 Cbl1

- Describe the anatomy of the GI tract
- Understand the blood supply of the GI tract
- Define is the reason of generalized abdominal tenderness
- the risk factors for the disease
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GIL1 Cbl2

- Explain the gross and microscopic anatomy of liver
- Give the arterial supply of organ involved
- Give the hepatic causes of abdominal distension.
- Explain the mechanism of development of abdominal distension.
- Explain portal hypertension.
- Enumerate the clinical consequences of portal hypertension

GIL1 Cbl3

- Students should be able to describe malabsorption.

- Enlist the common and rare causes of malabsorption.
- Enlist the series of investigations done to diagnose it.
- Explain the management plan.

GIL1 Cbl4

- Define pathophysiology of coeliac disease.
- Describe the management outline of the given pathology.
- Understand different anatomical structure involved in the process of Digestion and Absorption of food.
- Elaborate different causes of intestinal Malabsorption

LEARNING OBJECTIVES OF SKILL LAB

❖ GIT & Liver Module:

I. Introduction To Abdominal Examination

INTRODUCTION/RATIONALE:

Diseases of gastrointestinal system are one of the common causes of morbidity and mortality both in adults and children **Abdominal examination** is performed as an integral part of [physical examination](#), or when a patient presents with gastro intestinal problems (for example: Abdominal pain, nausea, vomiting, diarrhea and GI bleeding).

LEARNING OBJECTIVES:

At the end of the session students should be able to:-

- Enumerate the steps of examination of Abdomen.
- To demonstrate correct technique of auscultation of Gut sounds.

II. NASOGASTRIC INTUBATION

INTRODUCTION/RATIONALE:

Nasogastric intubation refers to the process of placing a soft plastic nasogastric (NG) tube through a patient's nostril, past the pharynx and down the esophagus into a patient's stomach.

LEARNING OBJECTIVES:

After the session students should be able to:

- List the equipment/material required for NG intubation.
1. Demonstrate the appropriate technique for insertion n of nasogastric tube.

ASSESSMENT PLAN

GASTROINTESTINAL AND LIVER – 1 MODULE

	WEIGHTAGE
ANNUAL EXAM	80%
MODULE EXAM (Internal Evaluation)	
Theory	10%
Practical	10%

CREDIT HOURS	
GIT MODULE	9

Contact HOURS (DISCIPLINE WISE)

Discipline	Contact Hours
Gross Anatomy	21
Histology	14
Embryology	03
Biochemistry	15
Physiology	12
Medicine	2
Behavioral Sciences	2
Community Medicine	4
Pathology	13
CBL	6
Skill Lab	2
Surgery	1
Pharmacology	4
Radiology	3

BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**
KEITH.L.MOORE, Arthur F. Dalley, Anne M.R. Agur
7th or Latest EDITION
- **GRAY'S ANATOMY FOR STUDENTS**
Drake & Vogl & Mitchell
3rd or Latest EDITION
- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**
Richard S. SNELL
9th EDITION
- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**
Chummy S. Sinnatamby
12th or Latest EDITION
- **ATLAS OF HUMAN ANATOMY**
FRANK H.NETTER
6th EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**
T.W.SADLER
13th EDITION
- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**
MOORE & PERSAUD & TORCHIA
10th EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY**
LAIQ HUSSAIN SIDDIQUI
5TH or Latest EDITION
- **WHEATERS FUNCTIONAL HISTOLOGY**
BARBARA YOUNG
5th EDITION
- **BASIC HISTOLOGY(TEXT AND ATLAS) (REFERENCE BOOK)**
LUIZ JUNQUEIRA, JOSE CARNEIRO
11th or Latest EDITION

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**
GUYTON AND HALL
13th EDITION

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**
DENISE R. FERRIER
6th EDITION
- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**
VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY,
P. ANTHONY WEIL
28th EDITION

PATHOLOGY

- **Pathological Basis of Disease**
Robbins and Cotran
9th edition, Chapter17

For Query

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