

MOHI-UD-DIN ISLAMIC MEDICAL COLLEGE MIRPUR

DEPARTMENT OF MEDICAL EDUCATION



ENDOCRINOLOGY-I MODULE

2ND YEAR MBBS (BATCH-17)

BLOCK: F

DURATION: 3 WEEKS 4 DAYS

FROM: 8TH SEP TO 2ND OCT 2026

MODULE CODE: MB2-F-END-I-10



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Disclaimer:

The development of study guides and the associated curriculum is an iterative process of quality enhancement, informed by stakeholder feedback. All elements—including content, delivery modes, scheduled hours, and assessment—are subject to periodic review and potential revision. Students are advised that the provided topics and learning outcomes represent the essential foundation for approximately 70% of examinations. The remainder will be derived from lecture content and directives issued by course instructors.

1. Instructions:

1. Maintain a minimum attendance of 85% in all scheduled academic activities otherwise will not be allowed to sit in annual exam.
2. Adhere strictly to the prescribed college uniform and professional dress code at all times.
3. Demonstrate professionalism and respect toward peers, faculty, staff, and patients.
4. Uphold academic integrity and ethical conduct in all learning and assessment activities.
5. Comply with all institutional policies regarding conduct, use of facilities, and digital etiquette.

2. Module Committee:

s.no	Name	Department	Role
1.	Prof..Dr.Col Shafqat Ali	Anatomy	HOD
2.	Prof. Dr. M. Naqib	Biochemistry	HOD
3.	Prof. Dr. Ayyaz Ahmed	Physiology	HOD
4.	Dr. M Junaid Khan	DME	HOD

OUR VISION STATEMENT

To be a globally recognized center of excellence in medical education, research, innovation, and socially accountable healthcare, producing competent healthcare professionals committed to improving the health and well-being of the people of AJK, Pakistan and beyond.

OUR MISSION STATEMENT

Mohi-ud-Din Islamic Medical College is committed to providing quality competency-based medical education through excellence in teaching, research, innovation, and ethical professional practice to develop competent, compassionate, and socially accountable graduates who address the healthcare needs of AJK, and Pakistan through lifelong learning, leadership, interdisciplinary collaboration, and community engagement.

3. Module Mapping of MBBS Program

Module Mapping (MBBS Program)

Tentative

Year	Blocks	Modules			Horizontal Module	
1 st year	A	Foundation-I (5-weeks)	Blood & Immunology -I (5-weeks)		Quran Kareem	
	B	Locomotor/MSK-I (8-weeks)				
	C	CVS – I (4-weeks)	RES – I (4-weeks)			
2 nd year	D	Gastrointestinal, Hepatobiliary and Metabolism Module -I (9-weeks)	Renal-I (3-weeks)			Pak Study/Islamite
	E	Neurosciences 1A (6-weeks)	Neurosciences 1B (5-weeks)			
	F	Endocrine – I (4-weeks)	Repro – I (3-weeks)			
3 rd year	G	Foundation - II	Infection & Inflammation-II		English Expository Writing	
	H	Multisystem-I	Blood & Immunology-II	Locomotor/MSK-II		
	I	CVS - II	RES – II			
4 th year	J	Neurosciences-II			M1=ENT M2=EYE	Arts & Humanities
	K	GIT & Hepatobiliary - II				
	L	Renal-II	Endo & Repro- II			
PRIME Year	N	Foundation-III	Blood & Immunology-III	Locomotor/MSK-III	Clerkship, Electives, /Capstone/Observer ship	
	O	Cardiorespiratory-III				
	P	Renal-III	Endo & Repro-III			
	Q	Neurosciences-III	GIT & Hepatobiliary-III	Multisystem-III		

PRIME (Professionalism, Research, Identity formation, Management & leadership, Ethics)

- 1st Year MBBS: 3 blocks, 5 Modules-27 weeks (945 Hours/AY)
- 2nd Year MBBS: 3 blocks 6 Modules – 30 weeks (1050 Hours/AY)

Per week teaching hours=35

Total weeks/hours are tentative

PRIME Year: Year of Professionals Ready for Innovative Medical Excellence

PRIME: Professionalism, Research, Identity formation, Management & leadership, Ethics.



4. Recommended List Of Icons



Introduction To Case



For Objectives



Critical Questions



Assessment

5. What Is A Study Guide?

The Purpose and Structure of a Study Guide

A study guide serves as the central contract and roadmap between the educational program and the student. Its primary purpose is to demystify the learning process by clearly communicating how a module is organized, managed, and assessed. It empowers students to take ownership of their learning by providing all necessary information to plan their studies, identify appropriate resources and support, and understand precisely how their performance will be evaluated.

Core Components of an Effective Study Guide:

Module Administration & Overview

This section provides the essential framework for the module. It includes:

- **Module Identification:** Code, title, teaching hours, and placement within the curriculum.
- **Personnel & Coordination:** Clear points of contact (Module Coordinator, teaching faculty) with roles and responsibilities defined, enabling students to seek the right help efficiently.
- **Timetable & Schedule:** A structured overview of the teaching sequence, including dates, topics, and formats (e.g., lectures, practicals).
- **Learning Objectives & Instructional Strategy**
This is the academic core of the guide, aligning intent with action.
- **Module & Theme Objectives:** A precise list of what students are expected to know, understand, and be able to do by the module's end, directly mapped to program and PMDC competencies.
- **Teaching-Learning Methods:** A description of the instructional strategies employed (e.g., interactive lectures, small group discussions, lab sessions, case-based learning) and their role in achieving the objectives.
- **Learning Resources & Support**
This component directs students to the tools for successful learning.
- **Curated Resource List:** A categorized list of essential and recommended resources, including core textbooks, key journal articles, vetted online links, and specific software or simulation tools.
- **Assessment Strategy:** A detailed breakdown of all formative (continuous) and summative assessments, including their format, weighting, schedule, and how they contribute to the final grade.
- **Rules and Policies:** Clear statements on examination rules, grading criteria, policy on late submissions, academic integrity, and the appeals process.

In summary, a well-constructed study guide transforms a module from a series of disjointed events into a coherent, transparent, and manageable learning journey. It is a fundamental tool for achieving constructive alignment and enhancing the student learning experience.

6. Organization of Module

Introduction:

The Endocrinology-I (ENDO-I) Module is a 3-week integrated module for 2nd Year MBBS students. The module introduces the principles of endocrinology through the study of the pituitary, thyroid, parathyroid, pancreatic and adrenal glands, their structure, development, physiological functions, hormonal regulation, and related clinical disorders.

The module integrates Anatomy, Histology, Embryology, Physiology, Biochemistry, Pharmacology, General Medicine, Neurosurgery, Paediatrics, Community Medicine, and PRIME to provide a coordinated understanding of endocrine health and disease. Learning is delivered through LGIS, directed self-learning (DSL), dissection, practical demonstrations, and other scheduled learning activities.

a. Rationale:

The endocrine system plays a central role in maintaining growth, metabolism, reproduction, fluid and electrolyte balance, stress response, and homeostasis. Understanding normal endocrine structure and function provides the foundation for recognizing, investigating, and managing common endocrine disorders.

The ENDO-I Module therefore links foundational sciences with clinical medicine through progressive integration of normal physiology, hormonal regulation, disease mechanisms, clinical presentation, investigation, prevention, and treatment. Particular emphasis is placed on clinically important conditions including growth disorders, thyroid disease, diabetes mellitus, and adrenal disorders.

b. Organization of the Study guide:

The study guide is organized around four integrated themes, each structured around defined learning objectives and corresponding teaching and assessment activities:

Theme I – Abnormalities of Growth: Pituitary gland, pituitary hormones, growth hormone, ADH, and related disorders.

Theme II – Neck Swelling, Bulging Eyes and Muscle Twitching: Thyroid and parathyroid anatomy, physiology, disorders, and pharmacological management.

Theme III – Increased Thirst and Urination: Pancreatic hormones, insulin and glucagon, glucose metabolism, diabetes mellitus, its complications, prevention, and treatment.

Theme IV – Moon-like Face: Adrenal gland structure and development, adrenal cortical and medullary hormones, and related disorders.

Each theme integrates LGIS, DSL, dissection, practical/laboratory activities, and clinical correlation as appropriate. The learning objectives guide students regarding the expected knowledge, skills, and professional attitudes, while the assessment methods provide opportunities to demonstrate achievement of these objectives.

Students are expected to use the study guide together with the timetable and recommended learning resources to plan their learning, prepare for scheduled activities, and monitor their progress throughout the module. The guide also provides the relevant assessment framework, learning resources, feedback mechanism, and space for students' learning records.



7. Learning Objectives

a. General Learning Outcomes

By the end of this module the students would be able to;

KNOWLEDGE

1. Relate normal structure and function of endocrine glands with the maintenance of growth, metabolism, homeostasis and stress response
2. Relate the clinical presentation & principles of treatment of endocrine disorders with the underlying structural and functional derangements.
3. Relate the laboratory investigations provided with the normal and abnormal structure and function of endocrine glands
4. Relate the metabolism of glucose and its control with hormonal interactions and pharmacological interventions.

SKILLS

5. Determine the concentration of glucose in give samples of blood and urine
6. Identify the microscopic features of Pituitary, Thyroid, Parathyroid, Endocrine Pancreas and adrenal glands on slides.

ATTITUDE

7. Act as a useful team member
8. Recognize the socioeconomic impact of the emerging epidemic of DM in the world and in Pakistan
9. Demonstrate willingness towards taking responsibility.
10. Demonstrate ability to give & receive feedback respect for peers and yourself.
11. Be polite and use socially acceptable language during academic and social interactions with colleagues and teachers.

b. Specific Learning Outcomes

THEME-I: (Abnormalities of Growth)

This is one-week activity and comprises of development and histological features of Pituitary gland as well as functions of Pituitary hormones. Overview of Endocrinology and general mechanism of actions of hormones are also included. Hypothalamic Control of Pituitary Secretion is also part of this theme. Abnormalities of the Pituitary gland with Growth hormones disorders are also discussed.

THEME-1 (ABNORMALITIES OF GROWTH)					
S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY (GROSS & EMBRYOLOGY)					
1.	Gross Anatomy and development of the pituitary gland	1. Describe gross features of pituitary gland. 2. Describe the development of Anterior and posterior pituitary gland.	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
HISTOLOGY					
2.	Pituitary gland	1. Enlist the histological differences between anterior and posterior pituitary glands	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE
PHYSIOLOGY					
3.	Overview Endocrinology-I	1. Define Hormones & Classify according to modes of secretion & mechanism of action. 2. Describe mechanisms of Synthesis, Secretion, Transport and Clearance of hormones	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
4.	Overview of Endocrinology-II	1. Explain mechanisms of action of hormones including second messenger mechanisms for mediating intracellular hormonal functions	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE
5.	Anterior Pituitary Gland/ Hormones	1. Describe Physiological Anatomy & hypothalamic Control of Pituitary Secretion	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE
6.	Growth Hormone	1. Effect on growth and metabolism 2. Describe structure, mechanism of action and regulation	LGIS-4	1	MCQs/ SAQs/ VIVA/ OSPE

		3. Physiological effects of Insulin-Like Growth Factors			
7.	Posterior Pituitary Gland /hormones	1. Describe formation and physiological functions of: a. Oxytocin b. ADH	LGIS-5	1	MCQs/ SAQs/ VIVA/ OSPE
BIOCHEMISTRY					
8.	Hormones Introduction	1. Define hormones and differentiate between the terms- endocrine, paracrine & autocrine 2. Classify hormones on various basis 3. Discuss the mechanisms of action of hormones 4. Define 2nd messengers and their roles	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
GENERAL MEDICINE					
9.	Pituitary Dysfunction	1. Describe the Pathophysiology, Clinical features and Investigations of patient with Acromegaly and Gigantism 2. Describe the etiology, clinical features and investigations of a patient with Diabetes Insipidus	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
NEUROSURGERY					
10.	Pituitary gland	1. Explain the types, clinical features, CT and MRI findings and management of pituitary tumors	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
PAEDIATRICS					
11.	Growth Hormone	1. Describe the fundamentals of growth charts in paediatric practices	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE

DIRECTED SELF LEARNING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
PHYSIOLOGY					
1.	Hypothalamic hormones & Pituitary gland	1. Explain the functional relationship between the hypothalamus and pituitary gland in endocrine regulation 2. Describe the structure and	DSL	1	MCQs/ SAQs

		functional divisions of the pituitary gland - Describe the major hypothalamic releasing and inhibiting hormones and their effects on anterior pituitary secretion - Explain the release of ADH and oxytocin from the hypothalamus and posterior pituitary. - Describe the structure and functional divisions of the pituitary gland - Explain the major hormones secreted by anterior pituitary and their principal physiological functions - Explain the regulation of anterior pituitary hormones through hypothalamic-pituitary target-gland axis. - Describe the physiological actions of growth hormone (GH) and explain its regulation by hypothalamic factors - Explain the physiological roles of ADH in maintaining water balance and regulating plasma osmolality - Explain the physiological actions of oxytocin in uterine contraction and milk ejection - Explain the concept of negative feedback in hypothalamic-pituitary endocrine axis with suitable examples			
2.	Disorders of Growth hormone & ADH	- Explain the causes and pathophysiology of GH deficiency and its effect on growth and body composition - Explain the diabetogenic effects of growth hormone - Differentiate between pituitary dwarfism, gigantism, and acromegaly based on age of onset, clinical features, and effects on skeletal growth - Explain the pathophysiology and clinical manifestations of gigantism due to excessive GH secretion before epiphyseal closure - Explain the role of growth hormone deficiency in causing dwarfism	DSL	1	MCQs/SAQs

		6. Describe the physiological role of ADH in maintaining water balance through its effects on kidneys 7. Explain the causes and pathophysiology of diabetes insipidus resulting from inadequate ADH secretion or impaired renal response to ADH			
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BIOCHEMISTRY

3.	Hormones Introduction	1. Define hormones and differentiate between the terms- endocrine, paracrine & autocrine 2. Classify hormones on various basis	DSL	1	MCQs/SAQs
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DISSECTION

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
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ANATOMY

1.	Pituitary Gland	1. Describe the anatomy of the pituitary gland, including its location, size, shape, and relations. 2. Identify the parts of the pituitary gland: - Anterior pituitary (adenohypophysis) - Posterior pituitary 3. Describe the blood supply and hypophyseal portal system 4. Explain the clinical importance of pituitary gland	Dissection-1	1.5	OSPE/VIVA
2.	Pineal Gland	1. Describe the location and gross anatomy of the pineal gland. 2. Identify its anatomical relations, especially with the third ventricle, superior colliculi 3. Describe the attachment and position of the pineal gland in relation to the epithalamus. 4. Describe the arterial blood supply and venous drainage of the pineal gland. 5. Explain the nerve supply, particularly the sympathetic innervation. 6. Relate the anatomy of the pineal gland to clinical conditions, such as pineal tumors and their effects on nearby structures	Dissection-2	1.5	OSPE/VIVA

LAB WORK

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY/ HISTOLOGY					
1.	Pituitary Gland	1. Identify the structure of pituitary gland under microscope	Demonstration / Practical	1.5	OSPE
PHYSIOLOGY					
2.	GPE pertaining to Endocrine Disorders	1. To assess general appearance and body habitus for endocrine abnormalities. 2. To record vital signs and correlate with endocrine disorders 3. To examine skin, hair, and nails for endocrine diseases 4. To evaluate the neck for thyroid enlargement or deformities 5. To inspect hands and extremities for tremors, myxedema, or other signs 6. To assess ocular changes in thyroid and other endocrine disorders 7. To detect abdominal signs such as striae or central obesity	Demonstration / Practical	1.5	OSPE
BIOCHEMISTRY					
3.	Urinary Glucose	1. Detect glucose in urine	Demonstration / Practical	1.5	OSPE

Theme-2 (Neck swelling, Bulging eyes and Muscle Twitching)**Introduction:**

This is a 1-week activity and consists of development and histological features of Thyroid and Parathyroid glands.

Physiological functions of Thyroid and Parathyroid hormones with their disorders are included.

Mechanism of actions of these hormones and anti-thyroid drugs are also part of this theme.

THEME-2 (Neck swelling, Bulging eyes and Muscle Twitching)

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
GROSS ANATOMY/ HISTOLOGY/ EMBRYOLOGY					
1.	Gross And	1. Describe the gross structure,	LGIS-3	1	MCQs/

	Microscopic anatomy of the thyroid gland	lobes, relations, blood supply, venous drainage, nerve supply and lymphatic drainage of thyroid gland 2. Describe the microscopic structure of thyroid gland			SAQs/ VIVA/ OSPE
2.	Development of thyroid gland & its anomalies	1. Describe the developmental events and anomalies of thyroid gland	LGIS-4	1	MCQs/ SAQs/ VIVA/ OSPE
3.	Gross anatomy & development of parathyroid gland	1. Describe the developmental events of parathyroid gland and its anomalies	LGIS-5	1	MCQs/ SAQs/ VIVA/ OSPE
PHYSIOLOGY					
4.	Thyroid hormones -I	1. Describe formation, Secretion and transport of thyroid hormones 2. Explain mechanism of action of thyroid hormones 3. Explain the actions of thyroid hormones on cellular metabolism	LGIS-6	1	MCQs/ SAQs/ VIVA/ OSPE
5.	Thyroid hormones -II	1. Describe Physiological effects of Thyroid Hormone on Growth, metabolism and body systems 2. Describe Regulation of Thyroid 3. Hormone Secretion	LGIS-7	1	MCQs/ SAQs/ VIVA/ OSPE
6.	Parathyroid hormone (PTH)	1. Explain Mechanism of action PTH 2. Describe Effect of Parathyroid 3. Hormone on Calcium and Phosphate concentrations	LGIS-8	1	MCQs/ SAQs/ VIVA/ OSPE
7.	VIT D and Calcitonin Hormones	1. Explain Role of Vitamin D in Calcium and Phosphorus metabolism 2. Explain physiological functions of calcitonin	LGIS-9	1	MCQs/ SAQs/ VIVA/ OSPE
GENERAL MEDICINE					
8.	Thyroid Gland	Explain the clinical features of hyperthyroidism Explain the clinical features of hypothyroidism	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE
PHARMACOLOGY					
9.	Thyroid Gland	Describe classification and mechanism of action of Anti-thyroid drugs	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE

DIRECTED SELF LEARNING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
BIOCHEMISTRY					
1.	Thyroid gland & Parathyroid gland	1. Enumerate the hormones secreted from thyroid gland 2. Describe the chemistry, biosynthesis, secretion, mechanism of action, regulation and metabolic effects of thyroid hormone and calcitonin with its related clinical disorders 3. Enumerate the hormones secreted from parathyroid gland 4. Describe the chemistry, biosynthesis, secretion, mechanism of action, regulation and metabolic effects of parathyroid hormone with its related clinical disorders	DSL	1	MCQs/SAQs
PHYSIOLOGY					
2.	Disorders of Thyroid Gland	1. Explain the physiological effects of thyroid hormones on metabolism, cardiovascular, and nervous systems 2. Differentiate between genomic and non-genomic effects of thyroid hormones on target cells. 3. Explain the effects of thyroid hormones on carbohydrate metabolism 4. Discuss the negative feedback regulation of the hypothalamic-pituitary-thyroid axis. 5. Identify the clinical features and underlying mechanisms of hyperthyroidism 6. Describe the causes of primary and secondary hypothyroidism and their physiological basis 7. Explain how decreased thyroid hormone levels affect basal metabolic rate and various organ systems 8. Correlate clinical signs and symptoms of hypothyroidism with the underlying physiological	DSL	1	MCQs/SAQs

		mechanisms 9. Explain the pathophysiology of exophthalmos in hyperthyroidism 10. Interpret thyroid function tests and explain TSH changes in hypothyroidism			
3.	Bone Remodelling & Disorders of Parathyroid Gland	1. Explain the process of bone formation and calcification 2. Describe bone resorption and the role of osteoclasts 3. Explain the physiological actions of PTH on bone, kidneys and vitamin D metabolism 4. Describe the effects of hypoparathyroidism on calcium and phosphate metabolism 5. Explain the physiological basis of bone changes in parathyroid disorders	DSL	1	MCQs/SAQs

DISSECTION

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Thyroid Gland	1. Describe the anatomy of the thyroid gland, including its location, size, shape, and relations. 2. Identify its parts -right and left lobes, isthmus, and pyramidal lobe. 3. Describe the coverings and fascial relations of the thyroid gland. 4. Describe the arterial and venous blood supply of the thyroid gland. 5. Describe the lymphatic drainage of the thyroid gland. 6. Explain the nerve supply and its clinical importance, particularly the recurrent laryngeal nerve and external laryngeal nerve. 7. Discuss common clinical conditions, such as: a. Goiter b. Hyperthyroidism c. Hypothyroidism d. Thyroid nodules and carcinoma	Dissection-3	1.5	OSPE/VIVA
2.	Parathyroid Gland	1. Describe the location and gross anatomy of the parathyroid glands. 2. Describe the anatomical relations	Dissection-4	1.5	OSPE/VIVA

		of the parathyroid glands to the thyroid gland and surrounding structures.			
		3. Describe the arterial blood supply of the parathyroid glands.			
		4. Describe the venous and lymphatic drainage of the parathyroid glands.			
		5. Describe the nerve supply.			

LAB WORK

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY/HISTOLOGY					
1.	Thyroid Gland & Parathyroid Gland	1. Identify the structure of thyroid gland under microscope 2. Identify the structure of parathyroid gland under microscope	Demonstration / Practical	1.5	OSPE
PHYSIOLOGY					
2.	Thyroid Gland Examination	1. To inspect, palpate, percuss, and auscultate the thyroid gland systematically 2. To identify enlargement, nodules, tenderness, and retrosternal extension of the thyroid 3. To detect physical signs of hypo- or hyperthyroidism 4. To correlate thyroid findings with systemic clinical features.	Demonstration / Practical	1.5	OSPE
BIOCHEMISTRY					
3.	Blood Glucose	1. Detect glucose in blood	Demonstration / Practical	1.5	OSPE

Theme-3 (Increased thirst and urination)

Introduction:

This theme has one-week activity, comprising of histological feature of Pancreas. Physiological functions and mechanism of action of Insulin and Glucagon hormones are included. Physiological effects of Diabetes Mellitus with complications and treatment are also included.

THEME-3 (Increased thirst and urination)

S.No	Topic	Learning objectives	Teaching	Hours	Assessment
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			strategies		
PHYSIOLOGY					
1.	Insulin hormone-I	1. Explain mechanism of action of insulin 2. Describe the control of Insulin secretion	LGIS-10	1	MCQs/ SAQs/ VIVA/ OSPE
2.	Insulin hormone-II	1. Describe the physiological effects of insulin on carbohydrates, proteins and Fats metabolism	LGIS-11	1	MCQs/ SAQs/ VIVA/ OSPE
3.	Insulin hormone -III	1. Describe effects of hyperglycemia 2. /hypoglycemia on body functions	LGIS-12	1	MCQs/ SAQs/ VIVA/ OSPE
4.	Glucagon hormone	1. Describe the physiological effects/ regulation of glucagon 2. Describe the physiological actions of Somatostatins	LGIS-13	1	MCQs/ SAQs/ VIVA/ OSPE
BIOCHEMISTRY					
5.	Hormonal regulation of Insulin in Fed state	1. Enumerate the hormones secreted by pancreas 2. Describe chemistry, biosynthesis, secretion, regulation and metabolic effects of insulin with its related clinical disorders 3. Describe hormonal regulation in the fed state especially the role of insulin. 4. Explain glucose uptake by insulin sensitive tissue.	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE
6.	Hormonal regulation of glucagon in Fed state	1. Describe the chemistry, biosynthesis, secretion, regulation and metabolic effects of glucagon with its related clinical disorders 2. Describe hormonal regulation in the fed state, especially the role of decreased glucagon in fat metabolism. 3. Describe hormonal regulation in the fed state, especially the role of insulin & decreased glucagon in amino acid and lipid metabolism.	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE

7.	Hormonal regulation of Insulin & glucagon in Fasting state	1. Describe glycogenolysis in the liver to maintain blood glucose levels regulated by hormones 2. Explain gluconeogenesis from non-carbohydrate precursors 3. Explain hormonal regulation in fasting, particularly the roles of glucagon and decreased insulin	LGIS-4	1	MCQs/ SAQs/ VIVA/ OSPE
GENERAL MEDICINE					
8.	Insulin	1. Describe the pathophysiology, clinical features and treatment of Diabetes Mellitus 2. Explain the short-term and long-term complications of Diabetes Mellitus	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE
COMMUNITY MEDICINE					
9.	Insulin	1. Describe the epidemiology and prevention of Diabetes Mellitus	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
PHARMACOLOGY					
10.	Antidiabetic drugs	1. Explain the mechanism of action of oral antidiabetic drugs 2. Explain the mechanism of action and complications of Insulin therapy	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE

DIRECTED SELF LEARNING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
PHYSIOLOGY					
1.	Compare & contrast the types of DM	1. Define Diabetes Mellitus and classify its major types 2. Describe the physiological actions of insulin on carbohydrate, fats and proteins. 3. Explain the regulation of insulin secretion 4. Describe the pathophysiology of Type 1 DM 5. Describe the pathophysiology of type 2 DM 6. Explain the role of Insulin resistance in Type 2 DM 7. Describe the metabolic syndromes	DSL	1	MCQs/ SAQs

		occurring in DM			
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DISSECTION

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Pancreas	1. Describe the location and gross anatomy of the pancreas. 2. Identify the parts of the pancreas: head, neck, body, and tail. 3. Describe the uncinate process and its anatomical relations. 4. Describe the relations of the pancreas to surrounding organs and major blood vessels. 5. Explain the anatomical position of the pancreas and its retroperitoneal location. 6. Describe the pancreatic duct system, including the main and accessory pancreatic ducts. 7. Describe the arterial blood supply of the pancreas. 8. Describe the venous drainage and its relation to the portal venous system. 9. Describe the lymphatic drainage of the pancreas. 10. Describe the nerve supply 11. Relate pancreatic anatomy to clinical conditions, including pancreatitis, pancreatic tumors, and obstructive jaundice.	Dissection-5	1.5	OSPE/VIVA

LAB WORK

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Pancreas	1. Identify the structure of pancreas under microscope	Demonstration / Practical	0.5	OSPE
BIOCHEMISTRY					
2.	Glucose Tolerance Test	1. Perform and interpret Glucose tolerance test	Demonstration / Practical	1.5	OSPE

Theme-4 (Moon face)

Introduction:

This theme is, comprising of gross, histological pictures as well as development of Adrenal gland. Hormones of both Adrenal Cortex and Adrenal Medulla are included, including functions, mechanism of actions and their abnormalities.

THEME-4 (Moon face)

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
GROSS ANATOMY/ HISTOLOGY					
1.	Gross anatomy & histology of adrenal gland	- Describe the gross anatomy and relations of adrenal glands on both sides - Describe the microscopic picture of adrenal gland and differentiate between the various histological zones of adrenal gland	LGIS-6	1	MCQs/ SAQs/ VIVA/ OSPE
EMBRYOLOGY					
2.	Development of adrenal glands	Describe the development of adrenal gland	LGIS-7	1	MCQs/ SAQs/ VIVA/ OSPE
PHYSIOLOGY					
3.	Mineralocorticoids	- Describe Types, Mechanisms and regulation of Mineralocorticoids - Describe the physiological Effects of Aldosterone (Renal, Circulatory and others)	LGIS-14	1	MCQs/ SAQs/ VIVA/ OSPE
4.	Glucocorticoids	- Describe Types and Mechanisms of Glucocorticoids actions - Describe Effects of Cortisol on Carbohydrate, Proteins and Fat Metabolism - Describe role of Cortisol in Stress, Inflammation and Allergy	LGIS-15	1	MCQs/ SAQs/ VIVA/ OSPE
5.	Adrenocorticotrophic Hormone (ACTH)	Describe Secretion, Mechanism of action & effects of ACTH on Adrenocortical Gland	LGIS-16	1	MCQs/ SAQs/ VIVA/ OSPE
BIOCHEMISTRY					

6.	Adrenal cortical & medullary hormones	1. Enumerate the hormones secreted from adrenal cortex & medulla 2. Describe biosynthesis, secretion, regulation and metabolic effects of adrenal cortical & medullary hormones with its related clinical disorders 3. Effect of cortisol, epinephrine & glucagon in degradation of proteins triacylglycerol & glycogen during fasting state	LGIS-5	1	MCQs/ SAQs/ VIVA/ OSPE
GENERAL MEDICINE					
7.	Adrenal Disorders	1. Describe the clinical features and complications of adrenal disorders	LGIS-4	1	MCQs/ SAQs/ VIVA/ OSPE

DIRECTED SELF LEARNING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
PHYSIOLOGY					
1.	Disorders of Adrenal gland	1. Explain the physiological actions of mineralocorticoids and cortisol, including their effects on carbohydrates, fats and proteins 2. Describe the clinical features and physiological consequences of adrenal cortical hormone excess including Cushing's syndrome and hyperaldosteronism 3. Explain the causes and effects of adrenal cortical hormone deficiency. 4. Explain the pathophysiology of congenital adrenal hyperplasia 5. Describe the physiological effects and clinical manifestations of adrenal medullary disorders, particularly pheochromocytoma and excessive catecholamine secretion.	DSL	1	MCQs/ SAQs

DISSECTION

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					

1.	Adrenal gland	1. Describe the location and gross anatomy of the adrenal glands. 2. Describe the relations of the adrenal glands to surrounding organs and structures. 3. Describe the coverings of the adrenal glands, including the renal fascia and perirenal fa 4. Describe the arterial blood supply of the adrenal glands. 5. Describe the venous drainage, including the right and left suprarenal veins. 6. Describe the lymphatic drainage of the adrenal glands. 7. Describe the nerve supply 8. Relate adrenal gland anatomy to clinical conditions	Dissection-6	1.5	OSPE/VIVA
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LAB WORK

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Adrenal gland	1. Identify the structure of adrenal gland under microscope	Demonstration / Practical	1	OSPE

Subject	LGIS	Practical/Demo	SGD	DSL	Dissection	Total Hours
ANATOMY (Histology, Embryology)	7	4.5	-	-	9	20.5
PHYSIOLOGY	16	3	-	6	-	25
BIOCHEMISTRY	5	4.5	-	2	-	11.5
PHARMACOLOGY	2	-	-	-	-	2
GENERAL MEDICINE	4	-	-	-	-	4
NEUROSURGERY	1	-	-	-	-	1
COMMUNITY MEDIUCINE	1	-	-	-	-	1
PRIME (Communication Skills)	1	-	-	-	-	1
PRIME (Professionalism)	1	-	-	-	-	1
PRIME (Leadership)	2	-	-	-	-	2
PRIME (Research/JC)	2	-	-	-	-	2
Islamiat	6	-	-	-	-	6
TOTAL	48	12	-	8	9	77



8. Learning Opportunities and Resources

a. Instruction (if any)

- Try to be regular in class as teacher is the best guide & facilitator.
- Make your studies a primary goal.
- Study your textbooks covering the learning objectives relevant to the topic of study, read reference books when needed and do use other learning resources such as videos, text relevant to the topic on website and research articles.

b. Books:

S.No	Subject	Learning Resources/ Recommended Books
1.	Gross Anatomy	Clinical Anatomy by Regions by Richard S. Snell (Latest Edition)
		Gray's Anatomy for Students (Latest Edition)
		K.L. Moore, Clinically Oriented Anatomy (Latest Edition)
		Netter's "Atlas of Human Anatomy (Latest Edition)
		Last's Anatomy (Latest Edition)
2.	Histology	Textbook of Histology by Junqueira (Latest Edition)
		diFiore's ATLAS of Histology with Functional Correlations (Latest Edition)
		Atlas of Human Histology by Wheaters. (Latest Edition)
		Textbook of Histology by LaiqHussain (Latest Edition)
3.	Embryology	Langman's Medical Embryology (Latest Edition)
		The Developing Human "by Keith L Moore" (Latest Edition)
4.	Physiology	Textbook of Medical Physiology by Guyton and Hall (Latest Edition)
		Ganong's "Review of Medical Physiology" (Latest Edition)
5.	Biochemistry	Harper's Illustrated Biochemistry (Latest Edition)
		Lippincott's Illustrated Review: Biochemistry (Latest Edition)
6.	Pharmacology	Katzung's Basic and Clinical Pharmacology (Latest Edition)
7.	Pathology	Robbin's Basic Pathology (Latest Edition)
8.	Community Medicine	Essential Community Medicine (Latest Edition)
		K Park Textbook of Preventive and Social Medicine (Latest Edition)
9.	General Medicine	Davidson's Principles and Practice of Medicine (Latest Edition)
10.	Radiology	David Sutton's Textbook of Radiology and Imaging (Latest Edition)
11.	Neurosurgery	Greenberg's Textbook of Neurosurgery
		ngacharya's Principles of Neurosurgery

9. Examination and Methods of Assessment:

Assessments within the MBBS program at the MIMC consist of both formative and summative evaluations. These assessments are crucial for monitoring student progress and academic performance.

Formative Assessment:

Formative assessments, accounting for 20% of the total marks assigned to each block, serve as ongoing evaluations designed to provide feedback and promote learning. Formative assessments are conducted after the completion of each module, ensuring students receive timely feedback to enhance their understanding and performance.

Summative Assessment:

Summative assessments, comprising 80% of the total assessment weighting, are conducted and overseen by constituent university as part of the annual examination process. This summative assessment evaluates students' comprehensive understanding of the curriculum and constitutes a significant portion of their final scores.

Assessment Tools:

Various assessment tools are employed to measure students' knowledge and competencies. These tools include:

1. **Written Examinations:** These include Multiple Choice Questions (MCQs) and Short Answer Questions (SAQs) that assess students' theoretical knowledge.
2. **Performance Assessments:** Objective Structured Practical Examinations (OSPE) and Objective Structured Clinical Examinations (OSCE) are used to evaluate practical skills and clinical competence.



10. Learning Opportunities and Resources

1. Anatomy

Books:

- *Clinical Anatomy by Regions* by Richard S. Snell (Latest Edition)
- *Gray's Anatomy for Students* (Latest Edition)
- *Clinically Oriented Anatomy* by K.L. Moore (Latest Edition)
- *Netter's Atlas of Human Anatomy* (Latest Edition)
- *Last's Anatomy* (Latest Edition)

Online Resources:

- [TeachMeAnatomy](#) – Comprehensive anatomy resource with diagrams and explanations.
- [AnatomyZone YouTube Channel](#) – 3D anatomy tutorials.

2. Histology

Books:

- *Textbook of Histology* by Junqueira (Latest Edition)
- *diFiore's Atlas of Histology with Functional Correlations* (Latest Edition)
- *Atlas of Human Histology* by Wheater's (Latest Edition)
- *Textbook of Histology* by Laiq Hussain (Latest Edition)

Online Resources:

- [Histology Guide](#) – A virtual histology lab with slides and explanations.
- [Armando Hasudungan YouTube Channel](#) – Educational videos on histology and related topics.

3. Embryology

Books:

- *Langman's Medical Embryology* (Latest Edition)
- *The Developing Human* by Keith L. Moore (Latest Edition)

Online Resources:

- Embryology at UNSW – Detailed embryology resource from the University of New South Wales.
- [Dr. Najeeb Lectures YouTube Channel](#) – In-depth video lectures on embryology and other basic medical sciences.

4. Physiology

Books:

- *Textbook of Medical Physiology* by Guyton and Hall (Latest Edition)
- *Ganong's Review of Medical Physiology* (Latest Edition)

Online Resources:

- Vivo Interactive Physiology – Interactive tutorials on physiology topics.
- [PhysioPathoPharmaco YouTube Channel](#) – Physiology explanations and tutorials.

5. Biochemistry

Books:

- *Harper's Illustrated Biochemistry* (Latest Edition)
- *Lippincott's Illustrated Review: Biochemistry* (Latest Edition)

Online Resources:

- MedlinePlus Biochemistry – Basic biochemistry concepts with clinical correlations.
- [Osmosis YouTube Channel](#) – Visual and concise videos on biochemistry and other medical topics.

6. Pharmacology

Books:

- *Katzung's Basic and Clinical Pharmacology* (Latest Edition)

Online Resources:

- [Pharmacology YouTube Channel by Ninja Nerd](#) – Detailed pharmacology lectures and notes.
- [GoodRx Pharmacology Resources](#) – Practical applications of pharmacology in medicine.

7. Pathology

Books:

- *Robbins Basic Pathology* (Latest Edition)

Online Resources:

- [PathologyOutlines.com](#) – An online pathology resource with a focus on differential diagnosis.
- [Dr. John Minarcik YouTube Channel](#) – Free pathology lectures and tutorials.

8. Community Medicine

Books:

- *Essential Community Medicine* (Latest Edition)
- *K. Park's Textbook of Preventive and Social Medicine* (Latest Edition)

Online Resources:

- [CDC Public Health](#) – Extensive resources on public health and community medicine.
- [Public Health England YouTube Channel](#) – Videos on various community health topics.

9. Forensic Medicine

Books:

- *Parikh's Textbook of Medical Jurisprudence, Forensic Medicine, and Toxicology* (Latest Edition)

Online Resources:

- [Forensic Medicine Online](#) – Detailed forensic medicine resources for students.
- [Forensic Pathology Lectures YouTube Channel](#) – Educational videos on forensic pathology.

10. General Medicine

Books:

- *Davidson's Principles and Practice of Medicine* (Latest Edition)

Online Resources:

- [Medscape](#) – Comprehensive resource for clinical medicine and continuing medical education.
- [Geeky Medics YouTube Channel](#) – Clinical skills and general medicine tutorials.

11. For inquiry and troubleshooting



Please contact
D.M.E

12.Course Feedback Form

Course Title: _____

Semester/Module _____

Dates:_____

Please fill the short questionnaire to make the course better.

Please respond below with 1, 2, 3, 4 or 5, where 1 and 5 are explained.

THE DESIGN OF THE MODLUE

- | | | | |
|--|----------------------------|----------------------------|--------------------------|
| A. Were objectives of the course clear to you? | Y ☐ | N ☐ | |
| B. The course contents met with your expectations | | | ☐ |
| 1. Strongly disagree | | | 5. Strongly agree |
| C. The lecture sequence was well-planned | | | ☐ |
| 1. Strongly disagree | | | 5. Strongly agree |
| D. The contents were illustrated with | | | ☐ |
| 1. Too few examples | | | 5. Adequate examples |
| E. The level of the course was | | | ☐ |
| 1. Too low | | | 5. Too high |
| F. The course contents compared with your expectations | | | ☐ |
| 1. Too theoretical | | | 5. Too empirical |
| G. The course exposed you to new knowledge and practices | | | ☐ |
| 1. Strongly disagree | | | 5. Strongly agree |
| H. Will you recommend this course to your colleagues? | | | ☐ |
| 1. Not at all | | | 5. Very strongly |

THE CONDUCT OF THE MODLUE

- | | | | |
|--|----------------------------|----------------------------|--------------------------|
| A. The lectures were clear and easy to understand | | | ☐ |
| 1. Strongly disagree | | | 5. Strongly agree |
| B. The teaching aids were effectively used | | | ☐ |
| 1. Strongly disagree | | | 5. Strongly agree |
| C. The course material handed out was adequate | | | ☐ |
| 1. Strongly disagree | | | 5. Strongly agree |
| D. The instructors encouraged interaction and were helpful | | | ☐ |
| 1. Strongly disagree | | | 5. Strongly agree |
| E. Were objectives of the course realized? | Y ☐ | N ☐ | |

F. Please give overall rating of the course

90% - 100%	() 60% - 70%	()
80% - 90%	() 50% - 60%	()
70% - 80%	() below 50%	()

Please comment on the strengths of the course and the way it was conducted.

Please comment on the weaknesses of the course and the way it was conducted.

Please give suggestions for the improvement of the course.

Optional - Your name and contact address:

Thank you!!

13. Students Diary/Notes

[illegible]

PROGRESS: _____

ACHIEVMENT: _____