Study Guide 2nd Year MBBS

Vision:

Our vision is to be a global leader in transformative medical education and healthcare delivery.

Mission:

To advance the art and science of medicine through innovative medical education, research, and compassionate healthcare delivery, within available resources, in an environment that advocates critical thinking, creativity, integrity, and professionalism

We , The Faculty and staff of QAMC are determined:

To impart core knowledge of basic sciences in interesting, compact and practical way to undergraduate students so that they can differentiate between normal and abnormal structure at gross, microscopic and embryological level. And co relate at the same time. For this we are horizontally integrating our basic subjects and from next year will be adding vertical integration to for this class .

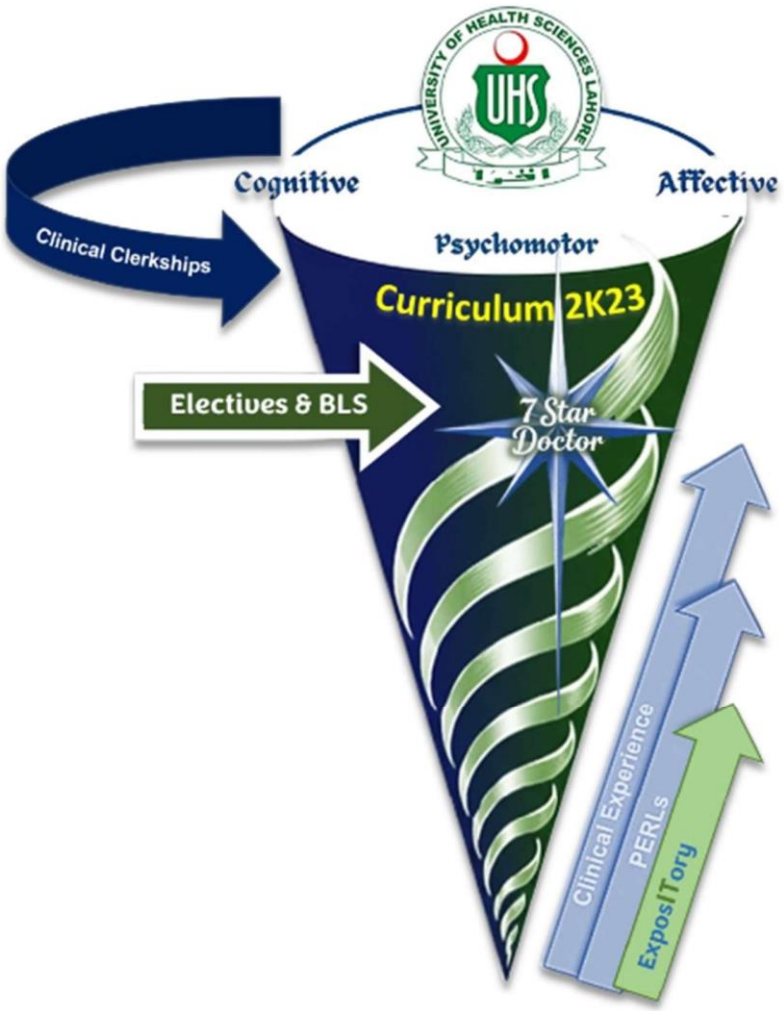
Objectives :

To impart: Knowledge - On the principles of pedagogy

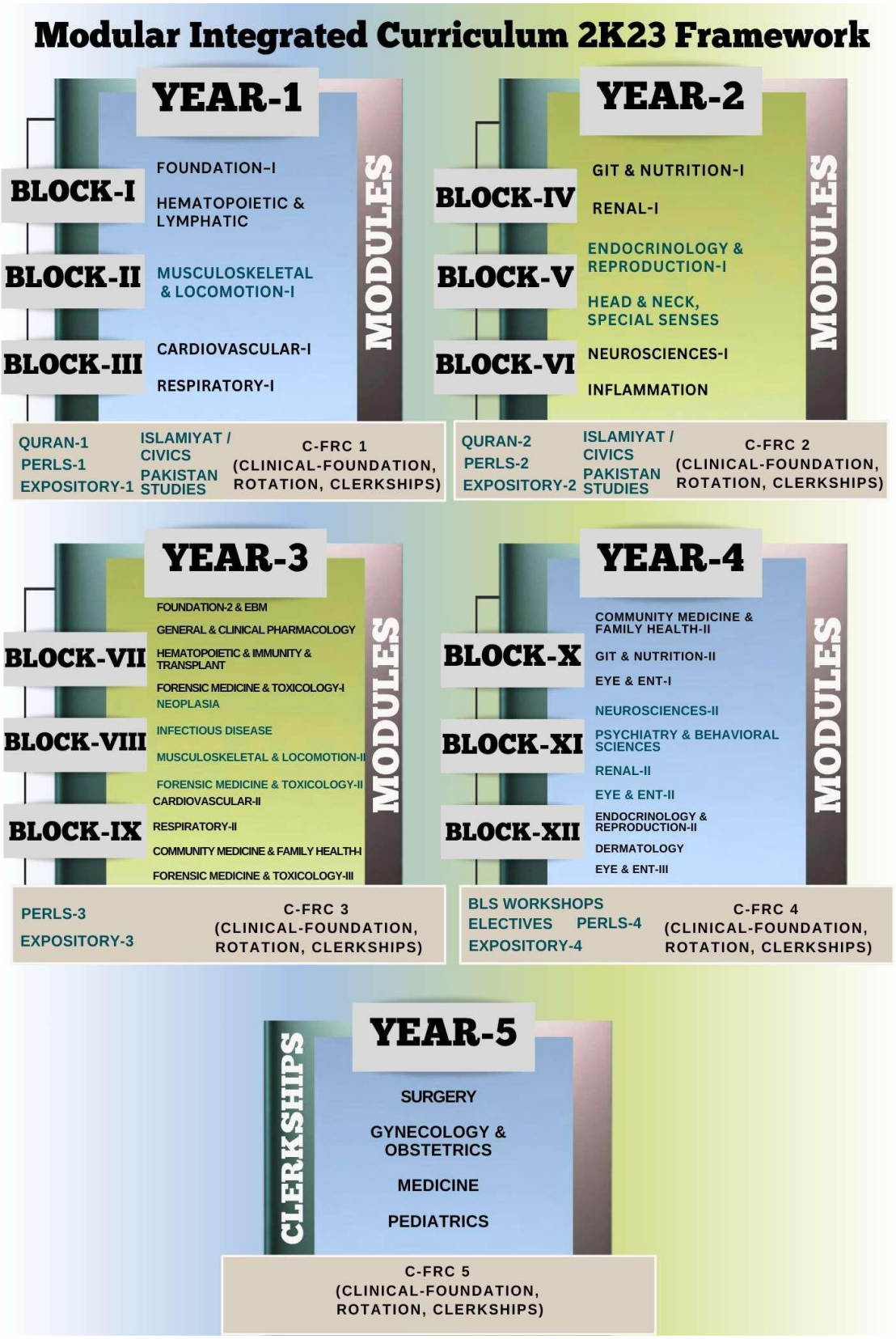
Skills	Dissection & Prosection Surface Anatomy Models Histological techniques Research skills Communication skills Self directed learning Competency bases learning
Attitude-	Integrated Journal E-Learning Research Professionalism Empathy Inter Personal Skills Team building skills Extra-Curricular activities


بسم الله الرحمن الرحيم

Volume-02 / Year-02




01
Section


Modular Integrated Curriculum 2K23 Framework
YEAR-1
BLOCK-I
FOUNDATION-I
HEMATOPOIETIC & LYMPHATIC
BLOCK-II
MUSCULOSKELETAL & LOCOMOTION-I
BLOCK-III
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PAKISTAN STUDIES
C-FRC 1 (CLINICAL-FOUNDATION, ROTATION, CLERKSHIPS)
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QURAN-2
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HEMATOPOIETIC & IMMUNITY & TRANSPLANT
FORENSIC MEDICINE & TOXICOLOGY-I
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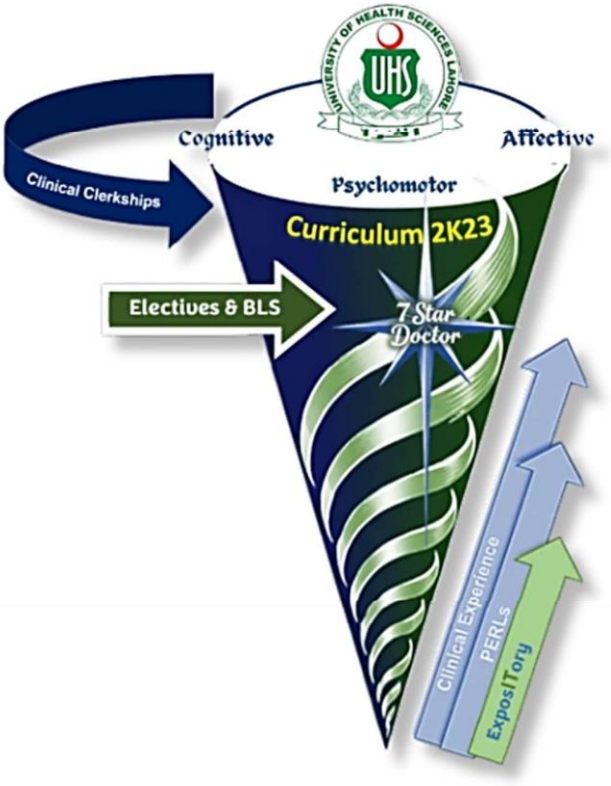
MEDICINE
PEDIATRICS
C-FRC 5 (CLINICAL-FOUNDATION, ROTATION, CLERKSHIPS)


02
Section

Modular Integrated Curriculum 2K23

MBBS Year-02

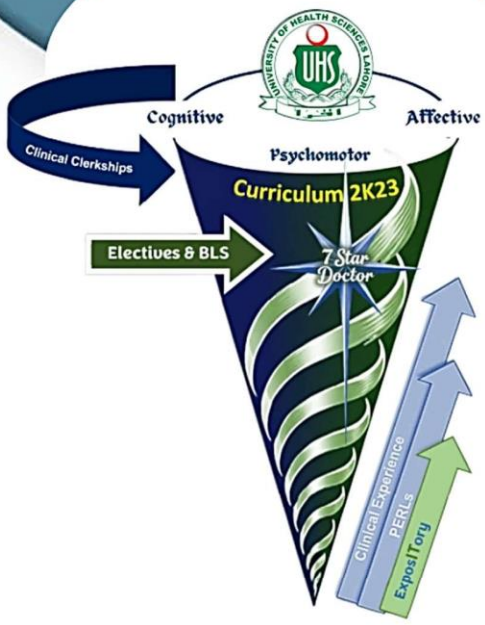
YEAR-2

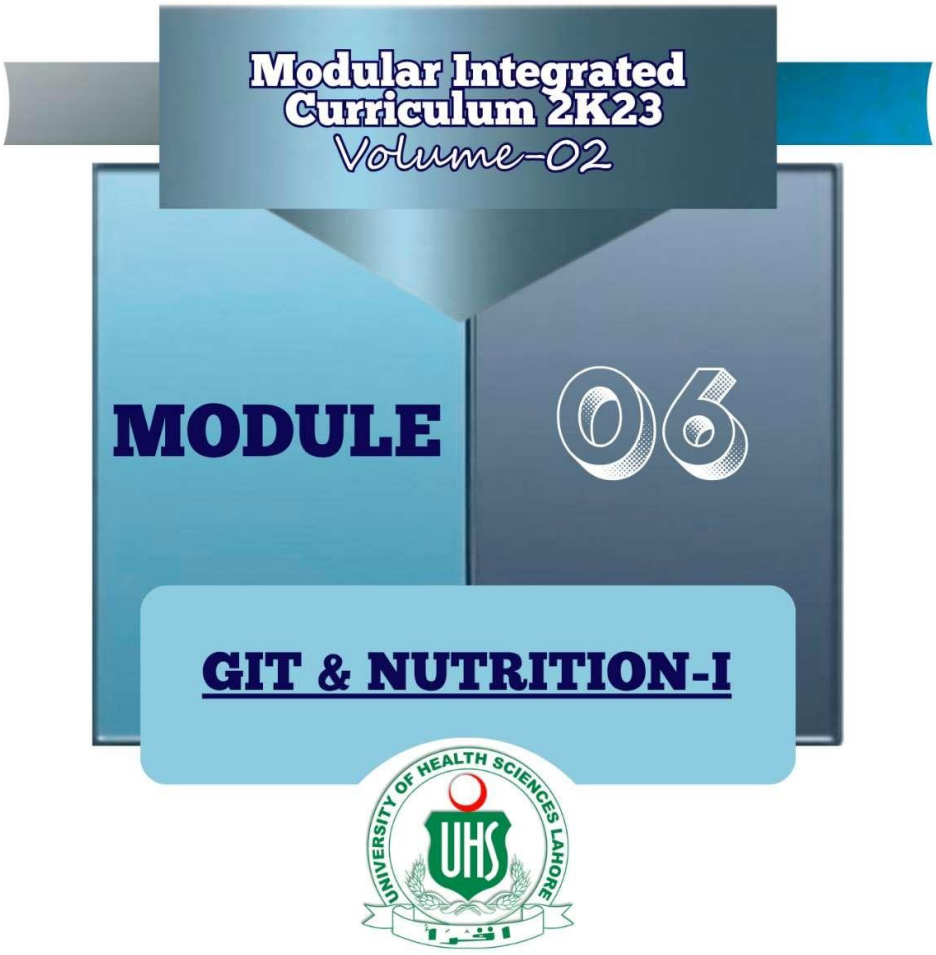


Modular Integrated Curriculum 2K23

MBBS Year-02

BLOCK-4




Modular Integrated Curriculum 2K23
Volume-02
MODULE
06
GIT & NUTRITION-I
UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS

MODULE RATIONALE

Gastrointestinal system is an integral part of human body which is primarily related to consumption, digestion and assimilation of food to provide nutrition and calories on regular basis to human body which are essential for basic functioning of each organ of human beings.

We will study in detail regarding different parts of gastrointestinal system, their functional, embryological and histological anatomy, physiological and biochemical aspects of its functioning. Students will also be briefly introduced to clinical and pathological aspects, pharmacological interventions and preventive measures of common diseases related to the system.

We have assigned six (6) weeks in academic calendar of 2nd year curriculum of MBBS to Gastrointestinal Module. We have divided our module into eight (8) themes. For every theme, anatomy, physiology, biochemistry, pathology, pharmacology, community medicine, behavioral sciences, general medicine and surgery will need to plan for integrated teaching of students for better comprehension and understanding of subject. We have outlined learning outcomes for each discipline along with allocated time to be taught.

MODULE OUTCOMES

- To describe gross and microscopic anatomy of different parts of gastrointestinal system and associated organs
- To describe the embryological development of different parts of gastrointestinal system and associated organs
- To describe the functional anatomy and physiology of different parts of gastrointestinal system and associated organs
- To describe the motility, secretary and digestive function of gastrointestinal system
- To describe the biochemical aspects of carbohydrate metabolism
- To discuss pathological aspect and management of gastrointestinal related diseases
- To discuss the pharmacological treatment of diarrhea
- To discuss the psychosocial impact of gastrointestinal diseases in society
- To discuss the preventive measures related to gastrointestinal diseases
- To comprehend concept of balanced diet and malnutrition

THEMES

- Oral cavity & Esophagus (O &E)
- Walls of Abdomen & Peritoneum

- Stomach
- Small intestine
- Large intestine (Cecum, Appendix, Colon, Rectum & Anal Canal)
- Liver & Biliary tree
- Pancreas & Spleen
- Nutrition

CLINICAL RELEVANCE

- Diseases of oral cavity, esophagus and stomach
- Diseases of small and large intestine
- Diseases of hepatobiliary system
- Diseases related to malnutrition

IMPLEMENTATION TORs

- The time calculation for completion of modules and blocks is based on 35 hours per week. Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

BLOCK AT A GLANCE

Item	Details
Programme	MBBS
Academic Year	Second Professional MBBS
Block	Block 4
Module	GIT & Nutrition-I (Module 06)
Curriculum	UHS Integrated MBBS Curriculum 2K23
Educational Model	Integrated Competency-Based Curriculum
Duration	6 Weeks
Major Themes	Oral Cavity & Esophagus, Walls of Abdomen & Peritoneum, Stomach, Small Intestine, Large Intestine, Liver & Biliary Tree, Pancreas & Spleen, Nutrition
Integrated Disciplines	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, General Medicine, Surgery
Learning Domains	Cognitive, Psychomotor, Affective
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning (CBL), Self-Directed Learning (SDL), Clinical Correlation
Assessment	Formative Assessment, MCQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Clinical Correlation	Oral diseases, GERD, Peptic ulcer disease, Intestinal disorders, Hepatobiliary diseases, Malnutrition and nutritional disorders
PMDC Competencies Addressed	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate

CURRICULUM DASHBOARD

Curriculum Indicator	Block 4 – GIT & Nutrition-I
Programme	MBBS
Academic Year	Second Professional
Module	GIT & Nutrition-I
Curriculum	UHS Integrated Curriculum 2K23
Duration	6 Weeks
Major Themes	8
Module Outcomes	Understand the normal structure, development, physiology, biochemistry and pathology of the gastrointestinal system, nutrition and common gastrointestinal diseases with preventive and therapeutic approaches.
Integrated Disciplines	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, General Medicine, Surgery
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning, Self-Directed Learning

Curriculum Indicator	Block 4 – GIT & Nutrition-I
Assessment Methods	MCQs, SEQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Learning Domains	Cognitive, Psychomotor, Affective
PMDC Competencies	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate
Horizontal Integration	Integration across Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Medicine and Surgery
Vertical Integration	Gastroenterology, General Surgery, Hepatology, Nutrition, Pediatrics
Clinical Correlation	GERD, Peptic ulcer disease, Hepatitis, Cirrhosis, Gallstones, Pancreatitis, Malnutrition, Diarrheal diseases
Quality Assurance	Continuous assessment, structured feedback, curriculum review, DME monitoring, PMDC and UHS guidelines

Theme-Wise Curriculum Mapping Matrix

the theme-wise curriculum mapping matrix demonstrates the integration of basic and clinical sciences within the GIT & Nutrition-I module. Each theme aligns the intended learning outcomes with integrated disciplines, teaching–learning strategies,

assessment methods, PMDC competencies, and horizontal and vertical integration to ensure constructive alignment throughout the module.

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
Oral Cavity & Esophagus	Describe the anatomy, embryology, histology and physiology of the oral cavity and esophagus with clinical correlation of common disorders.	Anatomy, Embryology, Histology, Physiology, Pathology	Interactive lectures, practical sessions, demonstrations, CBL, SDL	MCQs, SEQs, Practical, OSPE	Medical Expert, Scholar	Anatomy + Histology + Physiology	Dentistry, ENT, General Surgery
Walls of Abdomen & Peritoneum	Explain the anatomy of the abdominal wall, inguinal region and peritoneum with application to abdominal hernias and surgical procedures.	Anatomy, Embryology, Surgery	Interactive lectures, cadaveric demonstrations, practicals	MCQs, Practical, Viva	Medical Expert	Anatomy + Surgery	General Surgery
Stomach	Describe the structure, development, physiology and pathology of the stomach with clinical relevance to acid-peptic disorders.	Anatomy, Histology, Physiology, Biochemistry, Pathology	Lectures, practicals, CBL, SDL	MCQs, SEQs, Practical	Medical Expert, Scholar	Anatomy + Physiology + Biochemistry	Gastroenterology
Small Intestine	Explain digestion, absorption and physiological functions of the small intestine and correlate them with intestinal diseases.	Anatomy, Histology, Physiology, Biochemistry, Pathology	Interactive lectures, practicals, CBL	MCQs, Practical, OSPE	Medical Expert, Scholar	Anatomy + Physiology + Biochemistry	Gastroenterology
Large Intestine	Describe the anatomy and physiology of the large intestine and discuss common colorectal disorders.	Anatomy, Histology, Physiology, Pathology	Lectures, demonstrations, case discussions	MCQs, Practical	Medical Expert	Anatomy + Pathology	General Surgery
Liver & Biliary Tree	Describe the anatomy, physiology and biochemical functions of the liver and biliary system with correlation to hepatobiliary diseases.	Anatomy, Physiology, Biochemistry, Pathology, Pharmacology	Interactive lectures, CBL, SDL	MCQs, SEQs, Practical, Viva	Medical Expert, Scholar	Anatomy + Biochemistry + Pathology	Hepatology, Gastroenterology
Pancreas & Spleen	Explain the structure and function of the pancreas and spleen with correlation to pancreatitis and splenic disorders.	Anatomy, Histology, Physiology, Pathology	Lectures, demonstrations, practicals	MCQs, Practical, OSPE	Medical Expert	Anatomy + Physiology + Pathology	Gastroenterology, Surgery
Nutrition	Discuss balanced diet, nutritional requirements, malnutrition and preventive nutrition strategies.	Biochemistry, Community Medicine, Behavioral Sciences	Lectures, seminars, SGD, SDL	MCQs, Assignments, Viva	Medical Expert, Health Advocate, Scholar	Biochemistry + Community Medicine	Community Medicine, Pediatrics

Theme Integration

The **GIT & Nutrition-I** module integrates Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, General Medicine and Surgery to provide students with a comprehensive understanding of the gastrointestinal system. The module emphasizes the relationship between normal structure and function, nutritional sciences and common gastrointestinal disorders, while promoting clinical reasoning, preventive healthcare and competency-based learning.

Weekly Curriculum Map

The Weekly Curriculum Map outlines the logical sequence of learning activities throughout the GIT & Nutrition-I module. It demonstrates the progressive integration of basic medical sciences with clinical relevance, ensuring the achievement of the intended module learning outcomes through competency-based medical education.

Week	Major Theme	Integrated Disciplines	Teaching–Learning Methods	Assessment
Week 1	Oral Cavity & Esophagus	Anatomy, Embryology, Histology, Physiology	Interactive lectures, demonstrations, practical sessions, SDL	Formative MCQs, Practical
Week 2	Walls of Abdomen & Peritoneum	Anatomy, Embryology, Surgery	Interactive lectures, cadaveric demonstrations, practical sessions	MCQs, Practical Assessment
Week 3	Stomach	Anatomy, Histology, Physiology, Biochemistry	Interactive lectures, CBL, practical sessions, SDL	MCQs,
Week 4	Small Intestine & Large Intestine	Anatomy, Histology, Physiology, Pathology	Interactive lectures, practical sessions, case-based learning	MCQs, OSPE
Week 5	Liver & Biliary Tree	Anatomy, Physiology, Biochemistry, Pathology, Pharmacology	Interactive lectures, demonstrations, CBL, SDL	Practical Assessment, Viva
Week 6	Pancreas & Spleen, Nutrition, Integrated Revision & Block Assessment	Anatomy, Physiology, Biochemistry, Community Medicine, Behavioral Sciences, All Integrated Disciplines	Interactive lectures, seminars, SGD, revision sessions, practical revision, feedback	Block Examination (Theory & Practical)

Weekly Progression

The GIT & Nutrition-I module follows a system-based integrated approach, beginning with the anatomy and physiology of the oral cavity and esophagus, progressing through the abdominal wall and gastrointestinal tract, and culminating in the hepatobiliary system, pancreas, spleen and principles of nutrition. Clinical correlation, case-based learning and practical sessions are integrated throughout the module to enhance understanding of common gastrointestinal diseases, nutritional disorders and their prevention, preparing students for clinical practice.

PMDC Competency Mapping

The PMDC Competency Mapping Matrix demonstrates the alignment of the GIT & Nutrition-I module with the PMDC Undergraduate Medical Education Competency Framework. Through an integrated systems-based approach, the module develops students' understanding of the gastrointestinal system, hepatobiliary system, nutrition and related clinical conditions while fostering professionalism, communication, teamwork, leadership and lifelong learning in accordance with competency-based medical education.

Theme	Medical Expert	Communicator	Collaborator	Leader	Professional	Scholar	Health Advocate
Oral Cavity & Esophagus	✓	✓	✓		✓	✓	
Walls of Abdomen & Peritoneum	✓		✓		✓	✓	
Stomach	✓	✓	✓		✓	✓	
Small Intestine	✓	✓	✓		✓	✓	✓
Large Intestine	✓	✓	✓		✓	✓	✓
Liver & Biliary Tree	✓	✓	✓	✓	✓	✓	✓
Pancreas & Spleen	✓	✓	✓		✓	✓	
Nutrition	✓	✓	✓	✓	✓	✓	✓

Competency Alignment

The GIT & Nutrition-I module primarily develops the Medical Expert competency by providing students with an integrated understanding of the normal structure, development and function of the gastrointestinal system and nutritional sciences. Through integration with Community Medicine, Behavioural Sciences, Pharmacology and clinical disciplines, the module further strengthens competencies in communication, collaboration, professionalism, scholarship, leadership and health advocacy, particularly in the prevention, early detection and management of gastrointestinal and nutritional disorders.

Teaching–Learning Matrix

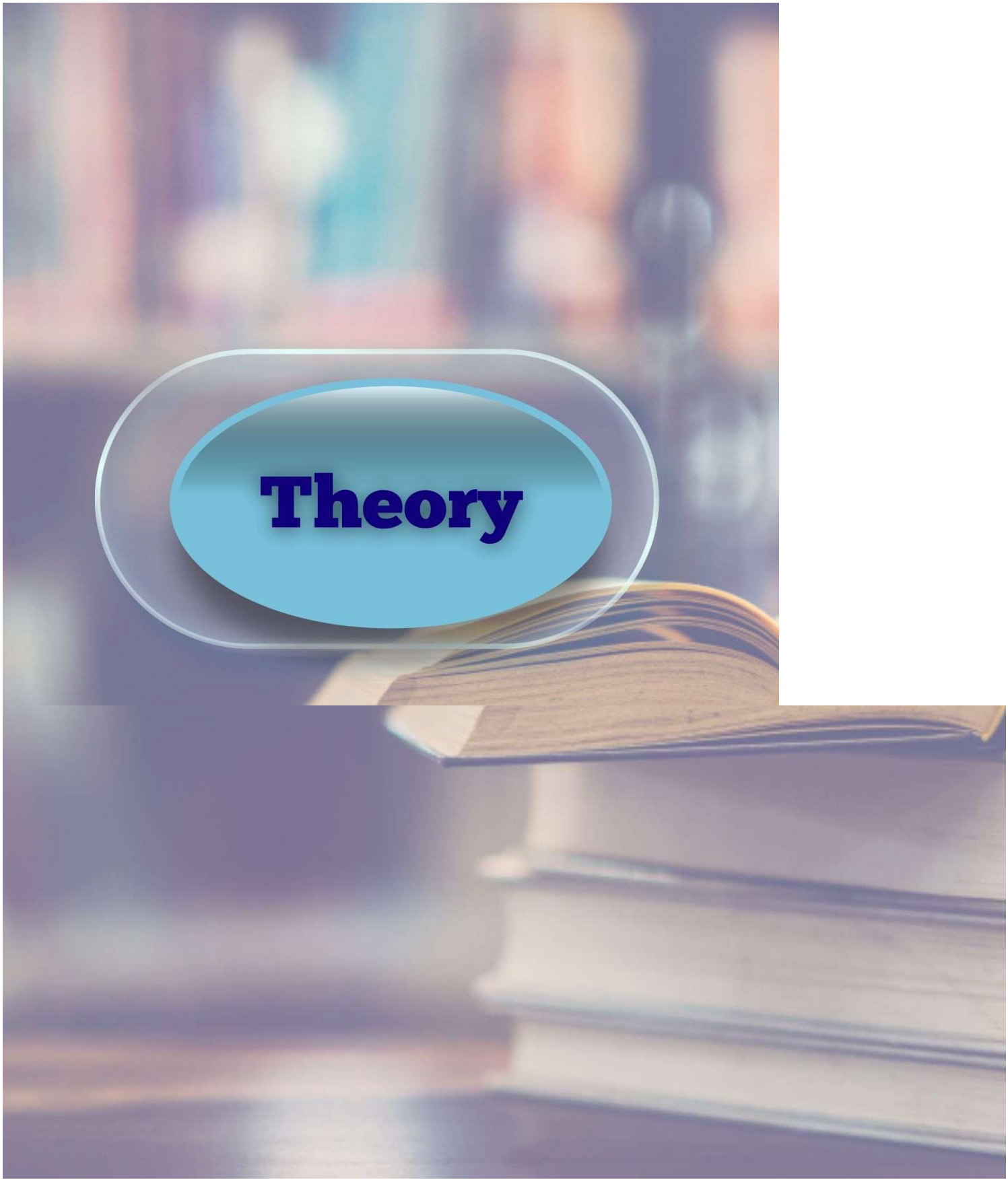
The Teaching–Learning Matrix outlines the instructional strategies employed throughout the GIT & Nutrition-I module to facilitate achievement of the intended learning outcomes. The module utilizes an integrated, learner-centred approach that combines basic medical sciences with clinical application through a variety of active learning strategies, in accordance with the principles of competency-based medical education.

Theme	Interactive Lectures	Practical / Laboratory	Demonstration	Small Group Discussion (SGD)	Case-Based Learning (CBL)	Self-Directed Learning (SDL)	Early Clinical Exposure / Clinical Correlation
Oral Cavity & Esophagus	✓	✓	✓	✓	✓	✓	✓
Walls of Abdomen & Peritoneum	✓	✓	✓	✓	✓	✓	✓
Stomach	✓	✓	✓	✓	✓	✓	✓
Small Intestine	✓	✓	✓	✓	✓	✓	✓
Large Intestine	✓	✓	✓	✓	✓	✓	✓
Liver & Biliary Tree	✓	✓	✓	✓	✓	✓	✓
Pancreas & Spleen	✓	✓	✓	✓	✓	✓	✓
Nutrition	✓	✓	✓	✓	✓	✓	✓

Educational Highlights

- Integrated teaching across Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Medicine and Surgery.
- Cadaveric demonstrations and practical sessions to strengthen understanding of the gastrointestinal tract and abdominal viscera.
- Histology and physiology practicals to correlate microscopic structure with normal gastrointestinal function.
- Case-based learning integrating gastroesophageal reflux disease (GERD), peptic ulcer disease, intestinal obstruction, hepatitis, cirrhosis, gallstone disease, pancreatitis and malnutrition.
- Nutrition-focused learning emphasizing balanced diet, nutritional assessment, micronutrient deficiencies and disease prevention.
- Self-directed learning to promote evidence-based practice and lifelong learning.
- Early clinical correlation through abdominal examination, liver function tests, nutritional assessment, imaging interpretation and discussion of common gastrointestinal disor


Syllabus


Theory

NORMAL STRUCTURE			
GROSS ANATOMY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 35	
		DISCIPLINE	TOPIC
GIT-A-001	Describe the gross anatomical features of oral cavity with its neurovascular supply and lymphatic drainage	Human Anatomy	Oral Cavity
	Discuss the location, anatomical features, relations and vascular supply of tonsils: nasopharyngeal, palatine and lingual.		
	Discuss the skeletal framework of hard palate with its neurovascular supply and lymphatic drainage		
	Describe the gross anatomical features of soft palate with its neurovascular supply and lymphatic drainage		
	Describe the attachments, nerve supply and actions of muscles of soft palate		
	Describe the structure of tongue with attachments of muscles, blood supply, nerve supply and lymphatic drainage. Discuss the anatomical basis of injury to hypoglossal nerve		
	Describe anatomical features, relations and neurovascular supply of parotid gland and its duct, mentioning the structures entering and exiting the gland.		
	Discuss the clinical correlates of parotid gland: parotiditis, Mumps, Frey's syndrome, parotid duct injury and parotid tumor surgery with its complications.		
	Describe the Waldeyer's ring.		
	Describe anatomical features, relations and neurovascular supply of submandibular and sublingual glands with their ducts.		

GIT-A-002	Describe the planes and quadrants of abdomen	Human Anatomy	Anterior Abdomen Wall
	Draw and label the cutaneous innervation and dermatomes of anterior abdominal wall and anterolateral Abdominal wall and describe the clinical correlates		

	(Abdominal pain, Muscle rigidity, Referred pain, anterior abdominal nerve block)		
	Describe the fascia of anterior abdominal wall with its clinical significance Describe anterolateral Abdominal wall arteries, Veins and Lymphatics and related clinical correlates—Caput Medusae		
	Describe the attachments, nerve supply and actions of muscles of anterior abdominal wall		
	Identify the muscles of anterolateral abdominal wall on anatomical model and/or cadaver		
	Describe the extent, formation and contents of rectus sheath		
	Give the formation and extent of inguinal ligament		
	Describe the formation of superficial and deep inguinal rings and conjoint tendon		
	Locate the position of superficial and deep inguinal rings on simulated subject or Cadaver		
	Describe the extent, boundaries and contents of inguinal canal		
	Define the following hernias: umbilical, epigastric, incisional, Spigelian, lumbar, femoral, internal and inguinal		
	Differentiate between direct and indirect inguinal hernias		
	Describe the location of abdominal surgical incisions		
	Mark the abdominal incisions on simulated patient/ subject and explain their anatomical basis		
	List the structures and coverings of spermatic cord		
GIT-A-004	Trace the horizontal and vertical peritoneal reflections Describe the relationship of viscera to the peritoneum	Human Anatomy	Peritoneum

	Describe the gross anatomical features of the following: 1. Mesentery 2. Omentum 3. Peritoneal ligaments		

	4. Peritoneal fold 5. Peritoneal sac, 6. Recesses, 7. Spaces and 8. Gutters		
	Describe the nerve supply of Peritoneum		
	Describe the anatomical basis and manifestations of the following: 1. Peritonitis and ascites 2. Peritoneal adhesions (and adhesiostomy) 3. Abdominal paracentesis		
GIT-A-005	Describe the extent of esophagus, its constrictions, neurovascular supply and lymphatic drainage Discuss the anatomical basis of esophageal varices, achalasia and Gastro Esophageal Reflux Disease (GERD)		Esophagus
GIT-A-006	Describe the location, position, parts, external and internal structure, relations, vascular and nerve supply and lymphatic drainage of stomach	Human Anatomy	Stomach
	Draw and label a diagram illustrating the lymphatic drainage of Stomach		
	Describe the clinical presentation and the anatomical basis and manifestations of the following conditions: Carcinoma of stomach and peptic ulcers		
	Identify and demonstrate the parts, external and internal features of stomach on anatomical model and cadaver		

GIT-A-007	Describe the location, position, parts, relations, neurovascular supply and lymphatic drainage of duodenum, Jejunum & Ileum (Small Intestine) Describe the anatomical basis and manifestations of the following conditions: 1. Duodenal Ulcers 2. Ileal diverticulum 3. Diverticulosis	Human Anatomy	Small & Large Intestine
	4. Large bowel cancer 5. Appendicitis 6. Volvulus 7. Intussusception Demonstrate the various positions of appendix Identify and demonstrate the Parts and external features of small and large intestines on anatomical model and cadaver		
GIT-A-008	Describe the origin, course, branches (tributaries in case of veins) and distribution of the blood vessels of GIT Describe the formation, tributaries and drainage of hepaticportal vein Discuss the sites and vessels contributing in portosystemic anastomosis Describe the clinical picture and anatomical basis for the blockage of porto-systemic anastomosis Identify the blood vessels supplying GIT on anatomical model and cadaver	Human Anatomy	Liver
	Describe location, lobes, important relations, peritoneal ligaments, blood supply, lymphatic drainage, nerve supply, related clinical correlates of liver and subphrenic spaces.	Human Anatomy	Liver
GIT-A-009	Describe components of Biliary tree- hepatic duct and bile duct	Human Anatomy	Biliary System

	Describe relations, functions, blood supply, lymphatic drainage and nerve supply of Gallbladder		
	Describe related clinical correlates- gall stones, biliary colic, cholecystectomy, gallbladder gangrene		
GIT-A-010	Describe the location, surfaces, peritoneal reflections, relations, neurovascular supply and lymphatic drainage of pancreas	Human Anatomy	Pancreas
	Describe the anatomical basis and manifestations of pancreatitis and pancreatic cancer		
	Identify the parts of the pancreas		

GIT-A-011	Describe the location, surfaces, peritoneal reflections, relations, neurovascular supply and lymphatic drainage of spleen	Human Anatomy	Spleen
	Describe the anatomical basis and manifestations of splenic trauma and splenomegaly		
	Identify the borders, surfaces and Impressions of spleen		
	Demonstrate the correct anatomical positioning of spleen		
GIT-A-012	Describe the gross anatomical features, peritoneal relations, blood supply, nerve supply and lymphatic drainage of cecum ascending and descending colon, sigmoid colon, rectum and anal canal	Human Anatomy	Sigmoid Colon, Rectum & Anal Canal
	Describe the anatomical basis for Sigmoidoscopy, rectal prolapse, rectal examination, rectal cancer and hemorrhoids		

GIT-A-013	Outline the anatomical basis and surgical treatment plan for the following diseases: 1. Esophageal Injuries 2. Gastric Carcinoma 3. Intestinal Obstruction 4. Pancreatic Carcinoma 5. Obstructive Jaundice 6. Gall Stones	Human Anatomy integrated with Surgery	Surgical Intervention
EMBRYOLOGY & POST-NATAL DEVELOPMENT			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 08	
		DISCIPLINE	TOPIC
GIT-A-014	Describe the development of tongue	Embryology	Oral Cavity
	Describe the embryological basis of tongue tie		
	Describe the development of palate		
	Describe the embryological basis of various facial clefts		
	Identify the parts of the developing tongue and palate		
GIT-A-015	Describe the formation and divisions of gut tube Describe the molecular regulation of gut tube development.	Embryology	Foregut
	Describe the development of mesenteries		
	Describe the development of esophagus		
	Describe the embryological basis of esophageal atresia and/or tracheoesophageal fistula		
	Describe the development and rotation of stomach		
	Describe the embryological basis of pyloric stenosis		
	Describe the development of duodenum, liver and gall bladder. Describe the molecular regulation of liver.		
	Describe the embryological basis of intrahepatic and extrahepatic biliary atresia		

	Describe the development of pancreas. Describe the molecular regulation of pancreas.		
	Describe the embryological basis of annular pancreas		
GIT-A-016	Describe the development of midgut especially mentioning physiological herniation, rotation, retraction of herniated loops and mesenteries of the intestinal loops	Embryology	Midgut
	Describe the embryological basis of the following 1. mobile cecum 2. volvulus 3. retro colic hernia 4. Omphalocele 5. gastroschisis		
	Describe the embryological basis of Meckel's diverticulum		
	Describe the embryological basis of; 1. Gut rotation defects 2. Gut atresia and stenosis		
GIT-A-017	Describe the development of hindgut	Embryology	Hindgut
	Describe the embryological basis of; 3. Rectourethral and rectovaginal fistulas 4. Recto anal fistulas and atresia 5. Imperforate anus 6. Congenital megacolon		
	Identify the parts of the developing foregut, midgut and hindgut originating from the endoderm		

MICROSCOPIC ANATOMY (HISTOLOGY & PATHOLOGY)			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 07	
		DISCIPLINE	TOPIC

GIT-A-018	Describe the light microscopic structure of; 1. Lips 2. Tongue including lingual papillae and taste buds 3. Oral Cavity (Cheeks, Teeth gums, hard & Soft palate) Describe the histological structure of parotid, submandibular and sublingual glands. Compare and contrast the histological structures of parotid, submandibular and sublingual glands. Describe the serous and mucous acini and give histological differences between the two. Describe the structure and location of serous demilunes. Describe histology of oropharynx	Histology	Oral Cavity & Esophagus
	Relate the characteristics of various layers of GIT with their function		
	Describe the light microscopic structure of esophagus		
	Tabulate the histological differences between different parts of esophagus		
	Describe the histological changes associated with reflux esophagitis and Barrett's esophagus		
GIT-A-019	Describe the light microscopic structure of stomach	Histology	Stomach
	Describe the role of parietal cells in pernicious anemia		
GIT-A-020	Describe the light microscopic structure of 1. Duodenum 2. Jejunum 3. Ileum	Histology	Small Intestine
	Discuss the histological basis of celiac disease		
	Discuss the histological basis of Crohn's disease		

GIT-A-021	Describe the light microscopic structure of 1. Colon 2. Appendix 3. Rectum Define colorectal cancer, anal abscess, hemorrhoids	Histology	Large Intestine
GIT-A-022	Describe the light microscopic structure of: 1. Liver 2. Gall Bladder 3. Pancreas	Histology	Accessory Organs

NORMAL FUNCTION

MEDICAL PHYSIOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 20	
		DISCIPLINE	TOPIC
GIT-P-001	Classify the components of enteric nervous system	Medical Physiology	General Principles of GIT Function - Motility, Nervous Control & Blood Flow
	Discuss the location and significance of myenteric plexus		
	Describe the Meissner's plexus		
	Differentiate between myenteric and Meissner's plexuses		
	Explain the mechanism of developing slow wave		
	Explain the mechanism of developing spike potential		
	Enlist the factors that depolarize & hyperpolarize the GIT membrane		
	Enlist the excitatory & inhibitory neurotransmitters of enteric nervous system		
	Explain the role of sympathetic & parasympathetic nervous system in controlling GIT function.		
	Enlist the gastrointestinal reflexes & explain the functions of these reflexes		

	Enlist the hormones acting on GIT, their stimuli, site of release and actions		
	Enumerate different types of movements that occur in GIT		
	Discuss the functions and control of GIT movements		

	Discuss the effect of gut activity and metabolic factors on GIT blood flow / Splanchnic circulation		
	Explain the nervous control of GIT blood flow / Splanchnic circulation		
GIT-P-002	Trace the reflex arc of mastication	Medical Physiology	Oral Cavity & Esophagus
	Explain the process and importance of chewing reflex		
	Enlist the stages of swallowing		
	Describe the mechanism of voluntary stage of swallowing		
	Trace the reflex arc of involuntary stage of swallowing		
	Enlist the steps involved in involuntary stage of swallowing	Medical Physiology	
	Explain the effect of swallowing on respiration	Medical Physiology	
	Discuss the mechanism of esophageal stage of swallowing	Medical Physiology	
	Enlist causes of dysphagia	Medical Physiology integrates with Surgery	
	Explain the types and role of different peristalsis originating in esophagus	Medical Physiology	
	Discuss the role of Lower Esophageal Sphincter (Gastroesophageal)	Medical Physiology	
	Discuss the pathophysiology of achalasia & Megaesophagus	Medical Physiology	
	Enlist the features and treatment of achalasia	Medical Physiology	
GIT-P-003	Explain storage function of stomach	Medical Physiology	Stomach
	Describe the basic electrical rhythm of stomach wall	Medical Physiology	

	Explain the role of pyloric pump and pyloric sphincter in gastric emptying	Medical Physiology	
	Explain the factors that promote Stomach Emptying	Medical Physiology	
	Discuss the duodenal (nervous & hormonal) factors that inhibit Stomach emptying	Medical Physiology	
	Enlist the factors that initiate enterogastric inhibitory reflexes	Medical Physiology	

	Enumerate the causes, features, and pathophysiology of gastritis	Medical Physiology integrates with Medicine	
	Explain the physiological basis of each feature of gastritis	Medical Physiology integrates with Medicine	
	Recommend treatment of gastritis	Medical Physiology integrates with Medicine	
	Enumerate the causes, features, and pathophysiology of peptic ulcer		
	Explain the physiological basis of each feature of peptic ulcer		
GIT-P-004	Enumerate and explain the secretions and movements of small intestine	Medical Physiology	Small Intestine
	Explain the term “peristaltic rush”		
	Explain the functions of ileocecal valve and sphincter		
	Enumerate the types of intestinal sprue	Medical Physiology integrates with Medicine	
	Enlist the features of intestinal sprue		
	Explain the consequences of sprue on the body		
GIT-P-005	Enumerate the types of movements taking place in colon	Medical Physiology	Large Intestine

	Explain the mechanism of developing movements of colon and their control through Gastrocolic and Duodenocolic Reflexes	Medical Physiology	
	Enlist the defecation reflexes	Medical Physiology	
	Explain the mechanism of defecation reflex	Medical Physiology	
	Trace the reflex arc of defecation	Medical Physiology	
	Name the other autonomic reflexes that affect bowel activity	Medical Physiology	
	Explain the pathophysiology of constipation	Medical Physiology integrates with Medicine	
		Medical Physiology	

	Describe the cause of Hirschsprung's disease integrate with Medicine.		
GIT-P-006	Explain the functions of liver	Medical Physiology	Liver
	Differentiate between liver and gall bladder bile and the hormones acting on them	Medical Physiology	
	Enumerate the causes and composition of developing gall stones	Medical Physiology Integrate with Surgery	
GIT-P-007	Explain function and secretions of pancreas	Medical Physiology	Pancreas
	Enlist the causes and pathophysiology of acute and chronic pancreatitis	Integrate with Medicine	
	Enumerate the features of acute pancreatitis and explain the physiological basis of each feature of pancreatitis	Integrate with Medicine	
GIT-P-008.	Describe the stages of vomiting act	Medical Physiology	Vomiting Reflex
	Trace the reflex arc of vomiting	Medical Physiology	

	Explain the role of chemoreceptor trigger zone for initiation of vomiting by drugs or by motion sickness	Medical Physiology	
GIT-P-009	Define Acute Diarrhea Define Chronic Diarrhea Enlist various causes for acute and chronic diarrhea	Integrated with Medicine Gastroenterology	Acute & Chronic Diarrhea

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 40	
		DISCIPLINE	TOPIC
GIT-B-001	Give the composition and importance of saliva and related clinical disorder (xerostomia) Give the composition and importance of gastric juice with special reference to mechanism of HCl secretion and related clinical disorders (achlorhydria, gastric ulcer Give the composition and importance of pancreatic juice, bile and succus entericus and related clinical disorders (pancreatitis, cystic fibrosis, cholelithiasis).	Biochemistry	Biochemistry of GIT /GIT secretions & digestion and absorption of dietary carbohydrates
	Describe digestion and absorption of dietary carbohydrates along with inherited and acquired disorders (lactose intolerance, sucrase-isomaltase deficiency).		
GIT-B-002	Elaborate key features of various transport systems for entry of glucose into cells.	Biochemistry	Carbohydrate metabolism/ Entry of glucose into cells
GIT-B-003	Enlist the hormones that play important roles in regulating carbohydrate metabolism. Elaborate the metabolic effects of these hormones. Infer the consequences of deficiency and excess of these hormones	Biochemistry	Carbohydrate metabolism/ Hormonal control of BSL
GIT-B-004	Describe the glycolytic pathway along with its regulation and significance.	Biochemistry	Carbohydrate metabolism/ Glycolysis

	Compare key features of aerobic and anaerobic glycolysis.		
	Calculate the number of ATP produced during aerobic and anaerobic glycolysis.		
	Explain hemolytic anemia in subjects with pyruvate kinase deficiency based on your biochemical knowledge.		
	Clearly differentiate between substrate level phosphorylation and oxidative phosphorylation.		
GIT-B-005	Discuss the metabolic fates of pyruvate.	Biochemistry	Carbohydrate metabolism/ Metabolic fates of pyruvate
	Describe the transport of pyruvate from cytosol to mitochondria.		
	Elaborate the reaction catalyzed by pyruvate dehydrogenase complex (PDH) along with regulation and significance.		
	Enlist inherited and acquired causes of lactic acidosis and give biochemical explanation for lactic acidosis in each condition.		
GIT-B-006	Describe the TCA cycle along with regulation & significance. Calculate the energy yield of TCA	Biochemistry	Carbohydrate metabolism/ Kreb's Cycle

GIT-B-007	Define gluconeogenesis and enumerate gluconeogenic substrates (precursors)	Biochemistry	Carbohydrate metabolism/ Gluconeogenesis
	Delineate the reactions involved in synthesis of glucose from various gluconeogenic substrates.		
	Elaborate the regulation and importance of gluconeogenesis.		
	Explain the significance of Cori cycle and glucosealanine cycle		
GIT-B-008	Illustrate the reactions of glycogenesis, glycogenolysis along with their regulation and significance	Biochemistry	Carbohydrate metabolism/ Glycogen metabolism
	Enlist various types of glycogen storage diseases (GSDs)		

	Infer the key biochemical and clinical features of various GSDs from the respective enzyme deficiencies.		
GIT-B-009	Describe the reactions and regulation of Hexose Mono Phosphate Pathway (HMP).	Biochemistry	Carbohydrate metabolism/ HMP Hexose Monophosphat e Pathway
	Discuss the importance of HMP shunt		
	Explain hemolytic anemia in subjects suffering from G6PD deficiency.		
	Diagnose G6PD (glucose-6-phosphate dehydrogenase) deficiency based on given data.		
GIT-B-010	Describe the reactions, regulation, and biomedical importance of uronic acid pathway and sorbitol pathway	Biochemistry	Carbohydrate metabolism/ Uronic acid pathway & sorbitol pathway
GIT-B-011	Outline the reactions involved in ethanol metabolism.	Biochemistry	Carbohydrate metabolism/ Ethanol metabolism
	Explain how ethanol consumption causes hypoglycemia and fatty liver.		
GIT-B-012	Diagrammatically illustrate the organization of electron transport chain (ETC) depicting the flow of electrons	Biochemistry	Respiratory chain & oxidative phosphorylation /ETC
	Enlist the components of complex I, II, III, and IV		
	Enumerate clinically important inhibitors of electron transport chain and mention their site of action.		
GIT-B-013	Elaborate the structure of ATP synthase (complex V).	Biochemistry	

	Explain how the free energy generated by the transport of electrons by ETC is used to produce ATP from ADP + Pi (i.e. chemiosmotic hypothesis)		Respiratory chain & oxidative phosphorylation /ATP synthesis
	Elaborate the effect of oligomycin and uncouplers on ATP production.		
	Describe the effect of arsenic poisoning on carbohydrate metabolism and ATP production.		

	Elaborate the glycerol 3-P shuttle and malate-aspartate shuttle for the transfer of reducing equivalents from cytosol into the mitochondria.		
GIT-B-014	Define and classify nutrients into macro and micronutrients. Elaborate the concept and importance of Balanced Diet Enlist the components of balanced diet and elaborate the importance of each component.	Biochemistry	Nutrition/ Balanced diet
GIT-B-015	Delineate special nutritional requirements during pregnancy, lactation, growth, and old age. Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids.	Integrate with Community Medicine	Nutrition/ Special nutritional requirements
GIT-B-016	Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies	Integrate with community Medicine/ Pediatrics	Nutrition/ PEM
GIT-B-017	Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults	Biochemistry	Nutrition/ Caloric requirements
GIT-B-018	Define basal metabolic rate (BMR)	Biochemistry	Nutrition/
	Elaborate the effect of various physiological and pathological factors on BMR.		BMR
GIT-B-019	Define body mass index (BMI).		Nutrition/

	Categorize individuals into underweight, normal, overweight, obese, and morbidly obese based on theirs BMI values.	Integrate with community Medicine	BMI & Obesity
	Elaborate the role of genetic, environmental, and behavioral factors in determining body weight.		
	Clearly differentiate between upper body obesity and lower body obesity.		
	Enlist health risks associated with obesity.		
GIT-B-020	Define Marasmus and Kwashiorkor	Integrated with Pediatrics	Malnutrition
	Define Malnutrition Identify various causes of malnutrition Identify the risk factors of malnutrition Outline treatment strategies	Integrated with Medicine Gastroenterolo gy	

AGING			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC
GIT-CM-001	Identify causes and risk factors for malnutrition in elderly	Community Medicine	Preventive Medicine in Geriatrics
	Outline treatment strategies		

PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 05	
		DISCIPLINE	TOPIC
GIT-Ph-001	Classify anti diarrheal drugs and describe the pharmacokinetics, mechanism of action, pharmacological effects, uses and adverse effects	Pharmacology	Anti Diarrheal Drugs
GIT-Pa-001	Define gastritis. Enlist the types of gastritis	Pathology	Gastritis

	Describe the morphological features of gastritis. Describe salient features of acute & chronic gastritis		
GIT-Pa-002	Describe the salient features (etiology, pathogenesis and morphology) of peptic ulcer disease	Pathology	Peptic Ulcer
	Discuss the role of H. Pylori in causing peptic ulcer disease	Microbiology	
GIT-Pa-003	Enumerate common infectious agents of diarrheal diseases Discuss pathogenesis and clinical features of common pathogens		Infectious agents causing Diarrhea

DISEASE PREVENTION & IMPACT			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 09	
		DISCIPLINE	TOPIC
GIT-BhS001	Identify health related behaviors and apply principles of learning to modify eating and addictive patterns	Behavioral Sciences	Health related behaviors
GIT-BhS002	Discuss health belief model and its application in managing common presentations related to gastro-intestinal system		Health related believes
	Explain the transtheoretical model of changing behaviors to modify the diseases pattern		
GIT-BhS003	Describe motivational interviewing and outline a management plan to help the individuals with obesity and diabetes to lose weight		Management of Obesity
GIT-BhS004	Describe and distinguish Medically Un described Symptoms (MUS)		Medically Un described Symptoms
	Describe the association of psychosocial factors with MUS		
	Outline the principles of management plan according to biopsychosocial model		
	Describe role of Cognitive Behavioral Therapy (CBT)		
GIT-BhS005	To identify effect on mental development of nutritional deficiencies		Role of nutritional deficiencies in mental development

GIT-CM001	Describe prevention and control of polio, viral hepatitis A, cholera, typhoid and food poisoning	Community Medicine	Epidemiology of
	Describe prevention and control of amoebiasis, ascariasis, hook worm infestation		communicable diseases (Intestinal infection)
GIT-CM002	Describe the advice to be given for breast feeding, weaning and childhood		Preventive medicine in pediatrics
	Discuss risk factors, prevention and management of protein energy malnutrition (PEM)		
GIT-CM003	Describe balanced diet for adult and obesity		Nutrition & Health
	Plot and interpret growth chart for children under 5 years of age		
	Describe prevention and control of deficiency of Vitamin A and D		


Practicals

C2K23 Year-02

PRACTICAL

HISTOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 12	
		DISCIPLINE	TOPIC
GIT-A-023	Identify, draw and label the histological sections of Tongue and Lips and enumerate points of identification	Histology Practical	Oral Cavity
GIT-A-024	Identify, draw and label the histological sections of Salivary glands (Submandibular, Sublingual and Parotid)	Histology Practical	Salivary Gland
GIT-A-025	Identify, draw and label the histological structure of the esophagus and enumerate points of identification Identify, draw and label the histological structure of stomach and enumerate points of identification	Histology Practical	Upper GIT
GIT-A-026	Identify, draw and label the histological structure of small intestine (Duodenum, Jejunum, and Ileum) and enumerate points of identification	Histology Practical	Small Intestine
GIT-A-027	Identify, draw and label the histological structure of large intestine and enumerate points of identification	Histology Practical	Large Intestine
GIT-A-028	Identify, draw and label the histological sections of Gall bladder, liver and enumerate points of identification	Histology Practical	Organs associated with GIT
	Identify, draw and label the histological sections of pancreas and enumerate points of identification	Histology Practical	Organs associated with GIT
GIT-A-029	Identify, draw and label the histological sections of Palatine tonsil, appendix, peyer's patches and enumerate points of identification	Histology Practical	Lymphatic tissue associated with GIT

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 11	
		DISCIPLINE	TOPIC

GIT-B-021	Estimate blood glucose level by glucose oxidase method and interpret the results	Biochemistry Practical	Estimations of blood/urine analytes
	Determine blood glucose level by glucometer and interpret the result.		
	Interpret the graphs related to GCT and GTT		
	Determine urine glucose by dipstick method and by chemical method and interpret the result.		
	Estimate serum amylase and interpret the result.		
GIT-B-022	Calculate BMI of given subject and interpret the results.		Interpretation of results
PHYSIOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 06	
		DISCIPLINE	TOPIC
GIT-P-010	Demonstrate Cranial nerve V, IX & X testing	Physiology	Cranial nerve
PATHOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC
GIT-Pa-004	Identify microscopic features of: Acute and Chronic Gastritis H.Pylori Induced Gastritis	Pathology	Gastritis
PHARMACOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC
GIT-Ph-002	Preparation and calculation of oral rehydration salt (ORS)	Pharmacology	ORS

Assessment Matrix

The Assessment Matrix demonstrates the alignment of assessment methods with the intended learning outcomes and teaching–learning strategies employed throughout the GIT & Nutrition-I module. A balanced combination of formative and summative assessment methods is used to evaluate students' knowledge, practical skills, clinical reasoning, communication, professionalism and competency development in accordance with PMDC standards and UHS assessment regulations.

Theme	Formative Assessment	Summative Assessment	Assessment Domain
Oral Cavity & Esophagus	MCQs, Tutorials, Practical Demonstration, Viva, Classroom Participation	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Walls of Abdomen & Peritoneum	MCQs, Practical Exercises, Tutorials, Viva	Theory Paper, Practical Examination (OSPE)	Cognitive, Psychomotor
Stomach	MCQs, Case-Based Discussion, Practical Assessment, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Small Intestine	MCQs, Practical Assessment, Tutorials, Case Discussion	Theory Paper, Practical Examination (OSPE)	Cognitive, Psychomotor
Large Intestine	MCQs, Practical Exercises, Viva, Classroom Participation	Theory Paper, Practical Examination (OSPE)	Cognitive, Psychomotor
Liver & Biliary Tree	MCQs, Liver Function Test Interpretation, Case-Based Discussion, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor, Affective
Pancreas & Spleen	MCQs, Practical Assessment, Tutorials, Viva	Theory Paper, Practical Examination (OSPE)	Cognitive, Psychomotor
Nutrition	MCQs, Nutritional Assessment, Assignments, Seminar Presentation	Theory Paper, Viva Voce	Cognitive, Affective

Block Assessment Summary

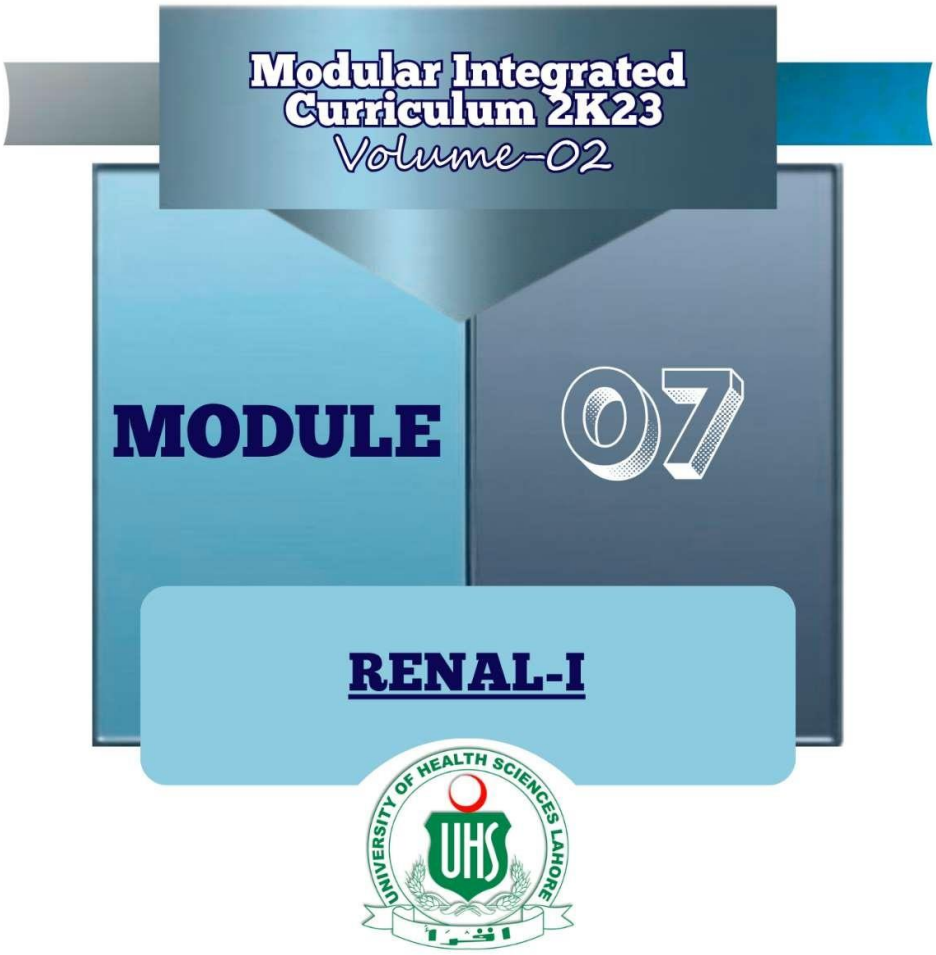
Assessment Component	Method
Formative Assessment	MCQs, Tutorials, Practical Exercises, Histology Practicals, Case-Based Discussions, Viva Voce, Assignments, Classroom Participation
Summative Assessment	Integrated Theory Examination (MCQ as per UHS regulations), Practical Examination (OSPE), Viva Voce (where applicable)
Feedback Mechanism	Immediate verbal feedback, written feedback, post-assessment review sessions and individualized academic guidance
Remediation	Conducted in accordance with institutional assessment policy and UHS promotion regulations

Assessment Alignment

Assessment within the GIT & Nutrition-**I** module is constructively aligned with the intended learning outcomes and instructional strategies. Students are assessed on their understanding of gastrointestinal anatomy, embryology, histology, physiology, biochemistry, pathology, pharmacology and nutrition. Practical assessments evaluate competencies in anatomical identification, histology, interpretation of laboratory investigations, nutritional assessment and clinical reasoning. The integration of formative and summative assessments ensures evaluation across the cognitive, psychomotor and affective domains while supporting competency-based medical education.

References

1. **University of Health Sciences (UHS), Lahore.** *Integrated MBBS Curriculum 2K23.*
2. **University of Health Sciences (UHS), Lahore.** *Second Professional MBBS Study Guide – Module 06: GIT & Nutrition-I.*
3. **Pakistan Medical & Dental Council (PMDC).** *Undergraduate Medical Education Standards* (latest applicable edition).
4. **World Federation for Medical Education (WFME).** *Global Standards for Quality Improvement in Medical Education.*
5. **Quaid-e-Azam Medical College, Bahawalpur.** *Department of Medical Education Curriculum and Assessment Guidelines.*
6. **Institutional Assessment Policy**, Quaid-e-Azam Medical College, Bahawalpur.


Modular Integrated Curriculum 2K23
Volume-02
MODULE
07
RENAL-I
UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS

MODULE RATIONALE

The renal module for second-year MBBS (Bachelor of Medicine, Bachelor of Surgery) students is a crucial component of the medical curriculum. This module is designed to provide students with a comprehensive understanding of the structure, function, and pathology of the kidneys, as well as the principles of renal physiology and the clinical management of and electrolyte balance, acidbase balance, and blood pressure. Understanding renal physiology is essential for comprehending various disease renal disorders. Here are some key rationales for including a renal module in the curriculum:

MODULE OUTCOMES

- Discuss the gross and microscopic anatomy of kidney and urinary system.
- Explain the embryological development of kidney and urinary tract
- Explain common developmental abnormalities of renal system
- Identify role of renal system in maintaining blood pressure and acid base balance Enlist functions of kidney and pathologies related to them.
- Explain method of electrolyte balance and pathologies related to it.
- Highlight pathologies related to kidneys and their distinctive clinical features
- Interpret investigations done to diagnose abnormal structural and functional presentations.

THEMES

- Kidney
- Ureter
- Bladder
- Acid/base balance

CLINICAL RELEVANCE

- Protein in urine.
- Kidney stones.
- Kidney pain.
- Blood in urine (hematuria) Kidney infection.
- Acute kidney injury (AKI) Kidney cancer.
- Dialysis

BLOCK AT A GLANCE

Item	Details
Programme	MBBS
Academic Year	Second Professional MBBS
Block	Block 4
Module	Renal-I (Module 07)
Curriculum	UHS Integrated MBBS Curriculum 2K23
Educational Model	Integrated Competency-Based Curriculum
Duration	As per UHS Academic Calendar
Major Themes	Kidney, Ureter, Bladder, Acid–Base Balance
Integrated Disciplines	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Radiology, Medicine, Urology
Learning Domains	Cognitive, Psychomotor, Affective
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning (CBL), Self-Directed Learning (SDL), Clinical Correlation
Assessment	Formative Assessment, MCQs,Practical Examination (OSPE), Viva Voce, Continuous Assessment
Clinical Correlation	Proteinuria, Hematuria, Kidney Stones, Acute Kidney Injury (AKI), Urinary Tract Infection (UTI), Dialysis, Hypertension, Acid–Base Disorders
PMDC Competencies Addressed	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate

CURRICULUM DASHBOARD

Curriculum Indicator	Block 4 – Renal-I
Programme	MBBS
Academic Year	Second Professional
Module	Renal-I
Curriculum	UHS Integrated Curriculum 2K23
Major Themes	4
Module Outcomes	Understand the normal structure, development and function of the renal system, regulation of fluid, electrolyte and acid–base balance, and correlate them with common renal disorders and their management.
Integrated Disciplines	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Medicine, Urology, Radiology
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning, Self-Directed Learning
Assessment Methods	MCQs, SEQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Learning Domains	Cognitive, Psychomotor, Affective
PMDC Competencies	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate
Horizontal Integration	Integration across Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine and Behavioral Sciences
Vertical Integration	Nephrology, Urology, Internal Medicine, Radiology
Clinical Correlation	AKI, Chronic Kidney Disease, UTI, Glomerulonephritis, Nephrotic Syndrome, Renal Stones, Dialysis, Acid–Base Disorders
Quality Assurance	Continuous assessment, structured feedback, curriculum review, DME monitoring, PMDC and UHS guidelines

Theme-wise Curriculum Mapping Matrix

The Theme-wise Curriculum Mapping Matrix demonstrates the integration of basic and clinical sciences within **the Renal-I** module. Each theme aligns the intended learning outcomes with integrated disciplines, teaching–learning strategies, assessment methods, PMDC competencies, and horizontal and vertical integration, ensuring constructive alignment throughout the module.

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
Kidney	Describe the gross anatomy, embryology, histology and physiology of the kidneys, nephron and renal blood supply. Explain glomerular filtration, tubular functions and correlate them with common renal diseases.	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology	Interactive lectures, practical sessions, demonstrations, CBL, SDL	MCQs, SEQs, Practical, OSPE	Medical Expert, Scholar	Anatomy + Histology + Physiology + Biochemistry	Nephrology, Internal Medicine
Ureter	Explain the anatomy, development and histology of the ureter and correlate with ureteric obstruction, stones and radiological investigations.	Anatomy, Embryology, Histology, Radiology, Urology	Interactive lectures, demonstrations, practical sessions	MCQs, Practical, Viva	Medical Expert	Anatomy + Histology + Radiology	Urology, Surgery
Bladder	Describe the anatomy, histology and physiology of the urinary bladder and micturition, with clinical correlation of urinary retention, cystitis and neurogenic bladder.	Anatomy, Histology, Physiology, Pathology, Medicine	Interactive lectures, practical sessions, CBL, SDL	MCQs, SEQs, Practical, OSPE	Medical Expert, Communicator, Scholar	Anatomy + Physiology + Pathology	Urology, Internal Medicine
Acid–Base Balance	Explain renal regulation of electrolytes, body fluids and acid–base balance. Interpret arterial blood gases and correlate acid–base disorders with clinical conditions.	Physiology, Biochemistry, Pharmacology, Community Medicine, Behavioral Sciences	Interactive lectures, tutorials, CBL, SDL	MCQs, Case-Based Assessment, Viva	Medical Expert, Scholar, Health Advocate	Physiology + Biochemistry + Pharmacology	Nephrology, Critical Care, Internal Medicine

Theme Integration

The **Renal-I** module integrates Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Radiology and clinical disciplines to provide students with a comprehensive understanding of the urinary system. Students integrate normal renal structure and function with common renal disorders such as urinary tract infections, nephrolithiasis, glomerulonephritis, acute kidney injury and acid–base disturbances, promoting clinical reasoning and competency-based learning.

Weekly Curriculum Map

The Weekly Curriculum Map outlines the logical sequence of learning activities throughout the **Renal-I** module. It demonstrates the progressive integration of basic medical sciences with clinical relevance, ensuring the achievement of the intended module learning outcomes through competency-based medical education.

Week	Major Theme	Integrated Disciplines	Teaching–Learning Methods	Assessment
Week 1	Kidney – Gross Anatomy, Embryology & Histology	Anatomy, Embryology, Histology	Interactive lectures, demonstrations, practical sessions, SDL	Formative MCQs, Practical
Week 2	Renal Physiology & Urine Formation	Physiology, Biochemistry	Interactive lectures, laboratory practicals, CBL	MCQs, Practical Assessment
Week 3	Ureter & Urinary Bladder	Anatomy, Histology, Physiology, Radiology	Interactive lectures, demonstrations, practical sessions	MCQs
Week 4	Electrolyte Homeostasis & Acid–Base Balance	Physiology, Biochemistry, Pharmacology	Interactive lectures, tutorials, case-based learning	MCQs, OSPE
Week 5	Renal Pathology & Pharmacology	Pathology, Pharmacology, Medicine, Microbiology	Interactive lectures, CBL, demonstrations, SDL	Practical Assessment, Viva
Week 6	Disease Prevention, Behavioral Sciences, Integrated Revision & Block Assessment	Community Medicine, Behavioral Sciences, Geriatrics, All Integrated Disciplines	Small-group discussions, seminars, revision sessions, practical revision, feedback	Block Examination (Theory & Practical)

Weekly Progression

The Renal-I module follows a system-based integrated approach, beginning with the anatomy and embryological development of the urinary system, progressing to renal physiology, urine formation, electrolyte and acid–base regulation, and culminating in the study of common renal diseases and their prevention. Clinical correlation, practical sessions, laboratory exercises and case-based learning are integrated throughout the module to strengthen students' understanding of renal function, diagnostic investigations and evidence-based management of common renal disorders including acute kidney injury, glomerulonephritis, urinary tract infections and nephrolithiasis.

PMDC Competency Mapping

The PMDC Competency Mapping Matrix demonstrates the alignment of the **Renal-I** module with the PMDC Undergraduate Medical Education Competency Framework. Through an integrated systems-based approach, the module develops students' understanding of renal anatomy, physiology, fluid and electrolyte homeostasis, acid–base balance, and common renal disorders while fostering professionalism, communication, teamwork, leadership and lifelong learning in accordance with competency-based medical education.

Theme	Medical Expert	Communicator	Collaborator	Leader	Professional	Scholar	Health Advocate
Kidney	✓	✓	✓		✓	✓	
Ureter	✓		✓		✓	✓	
Bladder	✓	✓	✓		✓	✓	✓
Acid–Base Balance	✓	✓	✓	✓	✓	✓	✓

Competency Integration Summary

PMDC Competency	Contribution within the Module
Medical Expert	Develops comprehensive knowledge of renal anatomy, embryology, histology, physiology, biochemistry, pathology and pharmacology with emphasis on clinical application and patient care.
Communicator	Enhances communication skills through case discussions, practical demonstrations, interpretation of investigations and small-group learning.
Collaborator	Promotes teamwork during laboratory work, practical sessions, tutorials and integrated learning activities.
Leader	Encourages responsibility, ethical decision-making and leadership during collaborative learning and health promotion activities.
Professional	Reinforces ethical conduct, patient safety, accountability and professional behaviour throughout teaching and assessment.
Scholar	Promotes self-directed learning, critical thinking, evidence-based medicine and lifelong learning through integrated educational strategies.
Health Advocate	Develops awareness regarding prevention of kidney disease, early detection of renal disorders, blood pressure control, hydration, healthy lifestyle and community education.

Competency Alignment

The **Renal-I** module primarily develops the **Medical Expert** competency by providing students with an integrated understanding of the normal structure, development and function of the urinary system, fluid and electrolyte homeostasis, and acid–base balance. Through integration with Community Medicine, Behavioural Sciences, Pharmacology, Radiology and clinical disciplines, the module further strengthens competencies in communication, collaboration, professionalism, scholarship, leadership and health advocacy, particularly in the prevention, diagnosis and management of common renal disorders such as urinary tract infections, nephrolithiasis, glomerulonephritis, acute kidney injury and chronic kidney disease.

Teaching–Learning Matrix

The Teaching–Learning Matrix outlines the instructional strategies employed throughout the **Renal-I** module to facilitate achievement of the intended learning outcomes. The module adopts an integrated, learner-centred approach that combines basic medical sciences with clinical application through a variety of active learning strategies in accordance with the principles of competency-based medical education.

Theme	Interactive Lectures	Practical / Laboratory	Demonstration	Small Group Discussion (SGD)	Case-Based Learning (CBL)	Self-Directed Learning (SDL)	Early Clinical Exposure / Clinical Correlation
Kidney	✓	✓	✓	✓	✓	✓	✓
Ureter	✓	✓	✓	✓	✓	✓	✓
Bladder	✓	✓	✓	✓	✓	✓	✓
Acid–Base Balance	✓	✓	✓	✓	✓	✓	✓

Teaching–Learning Strategy Summary

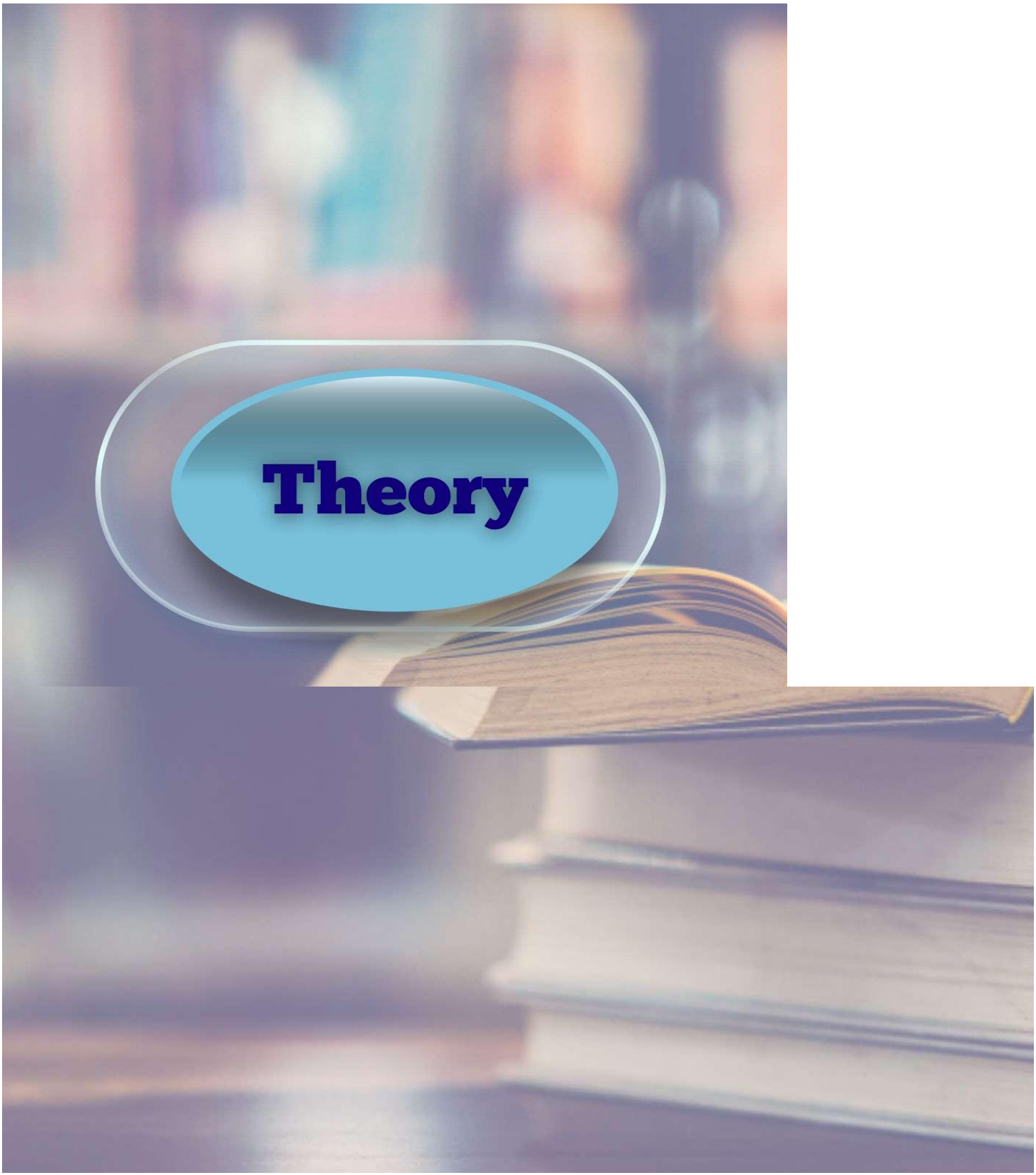
The Renal-I module adopts an integrated, student-centred teaching approach to facilitate the development of foundational knowledge, clinical reasoning, practical skills and professional attitudes. Interactive lectures provide the conceptual framework, while anatomy demonstrations, histology practicals, physiology and biochemistry laboratory sessions reinforce understanding of renal structure and function. Small-group discussions and case-based learning promote critical thinking and clinical decision-making, whereas self-directed learning encourages lifelong learning. Continuous clinical correlation enables students to relate normal renal physiology to common renal diseases and their management.

Educational Highlights

- **Integrated teaching** across Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Radiology, Medicine and Urology.
- **Cadaveric demonstrations and practical sessions** to strengthen understanding of the kidneys, ureters, urinary bladder and urethra.
- **Histology and physiology practicals** to correlate microscopic renal structure with nephron function, glomerular filtration and tubular transport.
- **Case-based learning** integrating acute kidney injury (AKI), chronic kidney disease (CKD), glomerulonephritis, nephrotic syndrome, urinary tract infections (UTIs), renal stones and acid–base disorders.
- **Laboratory-based learning** emphasizing urinalysis, renal function tests, electrolyte interpretation and arterial blood gas (ABG) analysis.
- **Self-directed learning** to promote evidence-based practice and lifelong learning.
- **Early clinical correlation** through interpretation of urine analysis, renal function tests, ultrasonography, radiological imaging, dialysis principles and management of electrolyte and acid–base disturbance


Syllabus

C2K23 Year-02



NORMAL STRUCTURE			
GROSS ANATOMY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 14	
		DISCIPLINE	TOPIC
R-A-001	Describe the fascia of posterior abdominal wall with its clinical significance-Psoas Fascia & Tuberculosis. Describe the posterior abdominal wall muscles, arteries (abdominal aorta), veins (inferior vena cava), lymphatics, & clinical correlates.	Human Anatomy	Posterior Abdomen Wall
R-A-002	Describe gross features and facial coverings of kidneys.	Human Anatomy	Kidney
	Compare and contrast the relations of right and left kidneys.		
	Describe blood supply, lymphatics and nerve supply of kidney		
	Discuss the clinical aspects of kidneys		
	Demonstrate the surface marking and radiographic anatomy of kidney. Identify the side of kidney		
R-A-003	Compare and contrast the relations of right and left ureter	Human Anatomy	Ureter
	Give the constrictions of ureter		
	Describe the blood supply nerve supply and lymphatics of ureter		
	Identify the ureter.		
R-A-004	Describe the gross anatomical features, relations, surfaces, blood supply, nerve supply and lymphatics of urinary bladder	Human Anatomy	Urinary bladder
	Give the clinical corelates of urinary bladder		

	Identify the gross features and surfaces of urinary bladder		

R-A-005	Interpret basic urological signs/symptoms & investigations.	Integrate with urology	Sign/symptom/investigations
R-A-006	Describe the etiology, and management of urinary retention.		Urinary retention
R-A-007	Identify and describe the various anatomic landmarks of the renal system on radiographs.	Integrate with Radiology	radiograph
R-A-008	Describe the parts of urethra.	Human Anatomy	Urethra
EMBRYOLOGY & POST-NATAL DEVELOPMENT			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		DISCIPLINE	TOPIC
R-A-009	Describe development of intermediate mesoderm and its derivatives	Embryology	Development of urinary system
	Describe the development of pronephros, mesonephros and metanephros	Embryology	
	Describe positional changes during descent of kidney with correlation to its blood supply Describe the molecular regulation of kidney development.	Embryology	
	Describe the development of urinary bladder and urethra	Embryology	
	List and describe the common congenital anomalies of kidney, urinary bladder and urethra.	Embryology	
MICROSCOPIC STRUCTURE			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 04	
		DISCIPLINE	TOPIC
R-A-010	Describe the histological, structural organization and functions of kidney with clinicals.	Histology	Structure of kidney

R-A-012	Describe the histological structure of ureter	Histology	Structure of ureter
R-A-013	Describe the histological structure of urinary bladder Discuss clinical correlates (Cystitis, Urinary bladder cancer, Urinary Tract Infections (UTIs))	Histology	Structure of urinary bladder
R-A-011	Describe the light and ultrastructure of Juxtaglomerular apparatus and glomerular filtration barrier	Histology	Juxtaglomerular apparatus

NORMAL FUNCTION			
MEDICAL PHYSIOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 36	
		DISCIPLINE	TOPIC
R-P-001	Explain the general organization of the kidney and urinary tract Explain the physiological anatomy of the nephron	Physiology	Physiological anatomy of kedneys
R-P-002	Explain the renal blood supply		Renal Blood Supply
R-P-003	Describe major composition of intracellular and extracellular fluids		Body fluid compartment
	Define Hypo and hypernatremia		
	Explain the causes of hypo & hypernatremia and their effects on Composition of body fluid compartments		
	Describe difference between iso-osmotic, hyperosmotic, hypo-osmotic fluids		
	Enlist the methods to measure body fluids volumes.		
R-P-004	Enumerate causes of Intracellular and extracellular edema	Integrate with Medicine	Edema
	Describe safety factors that prevent edema		
R-P-005	Explain the functions of the kidney	Physiology	Function
R-P-006	Describe the mechanism of micturition and its control		Micturition reflex
	Explain the role of higher center on micturition		
	Explain the physiological anatomy and innervation of bladder		
	Discuss the voluntary control of micturition		

R-P-007	Explain the causes, pathophysiology, and features of atonic bladder. Discuss the causes, pathophysiology, and features of automatic bladder.	Physiology	Abnormalities of micturition

	Write the causes, pathophysiology, and features of uninhibited neurogenic bladder		
R-P-008	Enlist the steps of urine formation	Physiology	Urine formation
	Explain the physiological anatomy and functions of glomerular capillary membrane		
	Discuss the composition of filtrate		
	Explain the minimal change nephropathy and increase permeability to plasma protein		
R-P-009	Define Glomerular Filtration Rate (GFR).	Physiology	Glomerular filtration
	Describe the determinants of GFR		
	Explain the factors affecting GFR		
	Discuss the hormones and autocoids that affect GFR		
	Explain mechanisms of autoregulation of GFR		
	Enlist the physiological and pathological factors that decrease GFR		
	Explain the effects of angiotensin II blocker on GFR during renal hypoperfusion		
R-P-010	Enumerate different types of transport along the kidney tubules for reabsorption	Physiology	Reabsorption
	Explain the reabsorption and secretion along different parts of the Nephron		
	Explain the regulation of tubular reabsorption		
	Discuss the forces / pressure and hormones that determine renal tubular reabsorption		

	Explain the reabsorption of water along different parts of nephron		
	Define obligatory and facultative reabsorption		
	Discuss the characteristics of late distal tubules and cortical collecting ducts		
	Discuss the characteristics of medullary collecting ducts		
R-P-011	Explain the use of clearance method to quantify kidney function	Physiology	Clearance method

R-P-012	Describe mechanism of re-absorption of sodium along different parts nephrons	Physiology	Transport maximum
	Define and explain the term Transport maximum for the substances		
	Define filtered load for the substance		
	Justify the difference of transport maximum and renal threshold of glucose in renal tubules		
R-P-013	Explain the renal mechanisms for excreting Dilute urine	Physiology	Urine concentration and dilution
	Explain the mechanism for forming a concentrated urine		
	Discuss the role of urea in the process of counter current multiplier mechanism		
	Describe the countercurrent exchange in vasa Recta to preserve hyperosmolarity of renal medulla		
R-P-014	Define and explain the term obligatory urine volume. Define and explain free water clearance. Define Urine specific gravity.	Physiology	Obligatory urine volume

R-P-015	Enumerate different abnormalities of urinary concentrating ability	Physiology	Disorders of urine concentrating ability
R-P-016	Enumerate the types of Diabetes insipidus	Integrate with Medicine	Diabetes insipidus
	Enlist the features of diabetes insipidus		
	Explain the pathophysiology and treatment of central diabetes insipidus		
	Discuss the pathophysiology of nephrogenic diabetes insipidus		
R-P-017	Make the flow chart to show the Osmoreceptorantidiuretic hormone (ADH) feedback mechanism for regulating extracellular fluid osmolarity in response to a water deficit.	Physiology	Osmoreceptor-ADH Feedback System
	Enlist the factors which increase and decrease the release of ADH		
		Physiology	Thirst

R-P-018	Explain the mechanism of thirst		
R-P-019	Enumerate the factors that can alter potassium distribution between intracellular and extracellular fluids		Renal regulation of potassium
	Discuss the process of secretion of potassium by renal tubules Explain the regulation of internal potassium distribution and potassium secretion		
R-P-020	Explain the control of extracellular fluid osmolarity and sodium concentration		Control of ECF osmolarity
R-P-021	Explain the integration of renal mechanism for control of Extracellular Fluid (ECF)		Control of ECF
	Explain the importance of pressure natriuresis and diuresis in maintaining body sodium and fluid balance		

R-P-022	Explain the renal handling of calcium concentration to regulate plasma calcium concentration Enumerate the factors that alter renal calcium Enlist the factors that alter renal phosphate excretion		Renal regulation of calcium Renal regulation of phosphate
R-P-023	Explain the nervous and hormonal factors that increase the effectiveness of renal body fluid feedback control	Physiology	Renal body fluid feedback control
R-P-024	Explain the conditions that cause large increase in blood volume and ECF volume Explain the conditions that cause large increase ECF volume but with normal blood volume		ECF and blood volume
R-P-025	Explain the renal handling of H^+ ion.		Acid base balance
R-P-026	Analyze the acid base disturbances on the basis of pH, HCO3 and CO2 Explain the causes and compensation of metabolic acidosis Explain the causes and compensation of metabolic alkalosis	Physiology	Acid base disturbance
	Explain the causes and compensation of respiratory acidosis Explain the causes and compensation of respiratory alkalosis Explain the causes and compensation of mixed acid base disorder		
R-P-027	Define and explain anion gap	Physiology	Anion gap
MEDICAL BIOCHEMISTRY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 23	

		DISCIPLINE	TOPIC
R-B-001	Discuss the synthesis and degradation of purines (De-Novo and salvage pathway)	Medical Biochemistry	Purine metabolism
R-B-002	Discuss the synthesis and degradation of pyrimidine (De-Novo and salvage pathway)		Pyrimidine metabolism
R-B-003	Outline the sequence of reactions that converts IMP to AMP and GMP and to their corresponding triphosphates		Nucleotide metabolism
R-B-004	Discuss the regulation of purine and pyrimidine biosynthesis and degradation		Regulation of purine and pyrimidine
R-B-005	Interpret the Lesh-Nhyan syndrome. Gout, SCID/ADA on basis of sign symptoms and data		Purine metabolism disorders
R-B-006	Interpret Orotic aciduria in relevance to nucleotides and urea Differentiate between CPS I and II	Medical Biochemistry	Pyrimidine metabolism disorders
R-B-007	Interpret the role of synthetic analogues of nucleotides in medicine based on sign/symptoms and data e.g Methotrexate, 5 Flurouracil and Allupurinol.		Analogues of nucleotides
	Interpret the role of PABA analogs and mycophenolic acid in purine biosynthesis		
R-B-008	Discuss the role of Ribonucleotide reductase in Nucleotide metabolism (hydroxyurea)		Role of Ribonucleotide reductase

R-B-009	Define acidosis and alkalosis. Classify acid base disorders. Enlist causes of metabolic acidosis and give its compensation. Enlist causes of respiratory acidosis and give its compensation. Enlist causes of metabolic alkalosis and give its compensation. Enlist causes of respiratory alkalosis and give its compensation.	Biochemistry/integrate with Medicine	Acid Base balance imbalance/ Types of acid base disorders
R-B-010	Interpret disorders metabolic and respiratory disorders of acid base balance on basis of sign, symptoms and arterial blood gas (ABG) findings Give biochemical explanation for tetany associated with alkalosis	Biochemistry	Acid Base balance imbalance/ Tetany in alkalosis
PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 14	
		DISCIPLINE	TOPIC
R-Ph-001	Classify diuretics Describe carbonic anhydrase inhibitor. MOA, clinical uses, and adverse effects	Pharmacology & Therapeutics	Diuretics
	Describe Thiazide & loop diuretics their Mechanism of Action, clinical uses, and adverse effects.		
	Describe Potassium sparing and osmotic diuretics their mechanism of action, clinical uses, and adverse effects.		
R-Pa-001	Discuss the etiology and pathogenesis of different types of stones.	Pathology	Renal Stones

R-Pa-002	Identify the causes, morphological aspect & outcome of hydronephrosis.		Hydronephrosis
R-Pa-003	Define pyelonephritis and enumerate its types. Describe the morphological features of acute and chronic pyelonephritis		Pyelonephritis
R-Pa-004	Define acute and chronic cystitis. Describe morphological features of different type of cystitis.		Cystitis
R-Pa-005	Enlist common causative agents of urinary tract infections and describe pathogenesis and clinical features of common causative agents of UTI.	Microbiology	UTI causative agents
R-Pa-006	Define various presentations of glomerulonephritis e.g asymptomatic proteinuria or hematuria detected during routine testing, nephrotic syndrome, acute nephritic syndrome, and rapidly progressive glomerulonephritis (RPGN). Define nephrotic and nephritic syndrome.	Integrate with Medicine	Glomerulonephritis
R-Pa-007	Define AKI (acute kidney injury) Identify various risk factors and causes for AKI. Outline management strategies.		Acute Kidney Injury
R-Pa-008	Define UTI (Urinary Tract Infection)		Urinary tract infection
	Identify various risk factors and causes of UTI.		
	Describe signs and symptoms of UTI.		
	Outline management strategies.		

DISEASE PREVENTION AND IMPACT			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 04	
		DISCIPLINE	TOPIC

R-CM-001	Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life Year (DALY) and Quality-Adjusted Life Year (QALY)	Community Medicine and Public Health	Quality of life
	Life expectancy.		
R-BhS-001	To identify the behavioral abnormalities caused by renal function.	Behavioral Sciences	Dementia, uremic encephalopathy, delusion, muscle paralysis & Societal impact
	To identify the cognitive abnormality.		
	To identify the dangers for the patient, his family, and society.		
AGING			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 02	
		DISCIPLINE	TOPIC
R-Ag-001	To define preventive care in diseases related to urinary system(adults). Primary, secondary, and tertiary prevention.	Community	Disease prevention
R-Ag-002	Define urinary incontinence. Outline management strategies.	Medicine	Urinary incontinence


Practicals

C2K23 Year-02

PRACTICAL

HISTOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 06	
		DISCIPLINE	TOPIC
R-A-014	Identify and draw and label the histological structure of kidney and enumerate points of identification	Practical	Kidney
R-A-015	Identify, draw and label the histological structure of ureter and enumerate its points of identification	Practical	Ureter
R-A-016	Identify, draw and label the histological structure of urinary bladder and enumerate its points of identification	Practical	Urinary bladder
R-A-017	Diagram showing site of action of diuretics, classification of diuretics, table showing the effect of various diuretics on urinary electrolytes and ph.	Practical	Action, Classification and effects of diuretics

PHYSIOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 02	
		DISCIPLINE	TOPIC
R-P-028	Perform a complete examination of the urine sample URS-10 (using urine reagent-10) and interpret its report	Physiology Practical	Interpretation of report
	Determine the specific gravity of urine		

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 10	
		DISCIPLINE	TOPIC
R-B-011	Estimate blood urea, creatinine & creatinine clearance and interpret the results.	Biochemistry Practical	Interpretation of results

	Determination of proteins in urine by dipstick method and by chemical methods and interpret your results.		

	Estimate serum uric acid by kit method		
PATHOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01 + 01	
		DISCIPLINE	TOPIC
R-Pa-009	Identify morphological features of acute pyelonephritis Identify morphological features of Chronic pyelonephritis	Pathology	Pyelonephritis
PHARMACOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01 + 01	
		DISCIPLINE	TOPIC
R-Ph-002	Label the diagram showing the site of action of diuretics along with examples Tabulate the effects of various diuretics on urinary electrolytes and pH	Pharmacology	Diuretics

Assessment Matrix

The Assessment Matrix demonstrates the alignment of assessment methods with the intended learning outcomes and teaching–learning strategies employed throughout the **Renal-I** module. A balanced combination of formative and summative assessment methods is utilized to evaluate students' knowledge, practical skills, clinical reasoning, communication, professionalism and competency development in accordance with PMDC standards and UHS assessment regulations.

Theme	Formative Assessment	Summative Assessment	Assessment Domain
Kidney	MCQs, Tutorials, Practical Demonstration, Histology Practical, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Ureter	MCQs, Practical Exercises, Tutorials, Radiological Image Interpretation	Theory Paper, Practical Examination (OSPE)	Cognitive, Psychomotor
Bladder	MCQs, Case-Based Discussion, Practical Assessment, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Acid–Base Balance	MCQs, Electrolyte Interpretation, ABG Analysis, Case Discussion	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor, Affective

Block Assessment Summary

Assessment Component	Method
Formative Assessment	MCQs, Tutorials, Practical Exercises, Histology Practicals, Case-Based Discussions, Viva Voce, Laboratory Exercises, Classroom Participation
Summative Assessment	Integrated Theory Examination (MCQs/SEQs as per UHS regulations), Practical Examination (OSPE), Viva Voce (where applicable)
Feedback Mechanism	Immediate verbal feedback, written feedback, post-assessment review sessions and individualized academic guidance
Remediation	Conducted in accordance with institutional assessment policy and UHS promotion regulations

Assessment Alignment

Assessment within the **Renal-I** module is constructively aligned with the intended learning outcomes and instructional strategies. Students are assessed on their understanding of renal anatomy, embryology, histology, physiology, biochemistry, pathology and pharmacology. Practical assessments evaluate competencies in anatomical identification, histological interpretation, urinalysis, renal function tests, electrolyte assessment, arterial blood gas (ABG) interpretation and clinical reasoning. The integration of formative and summative assessments ensures evaluation across the cognitive, psychomotor and affective domains while supporting competency-based medical education.

Assessment Highlights

- Integrated theory and practical assessment throughout the module.
- Continuous formative assessment with structured and timely feedback.
- Competency-based assessment using **OSPE**, urinalysis, renal function tests, electrolyte interpretation and **ABG analysis**.
- Clinical reasoning assessed through case-based discussions on AKI, CKD, UTI, nephrolithiasis and acid–base disorders.
- Structured remediation for students requiring additional academic support.
- Assessment fully aligned with **PMDC competencies** and the **UHS Integrated MBBS Curriculum 2K23**.

References

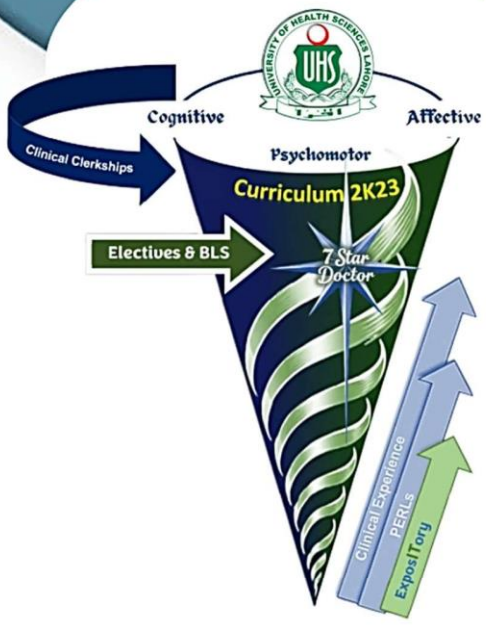
1. **University of Health Sciences (UHS), Lahore.** *Integrated MBBS Curriculum 2K23.*
2. **University of Health Sciences (UHS), Lahore.** *Second Professional MBBS Study Guide – Module 07: Renal-I.*
3. **Pakistan Medical & Dental Council (PMDC).** *Undergraduate Medical Education Standards* (latest applicable edition).
4. **World Federation for Medical Education (WFME).** *Global Standards for Quality Improvement in Medical Education.*
5. **Quaid-e-Azam Medical College, Bahawalpur.** *Department of Medical Education (DME) Curriculum and Assessment Guidelines.*
6. **Institutional Assessment Policy**, Quaid-e-Azam Medical College, Bahawalpur.

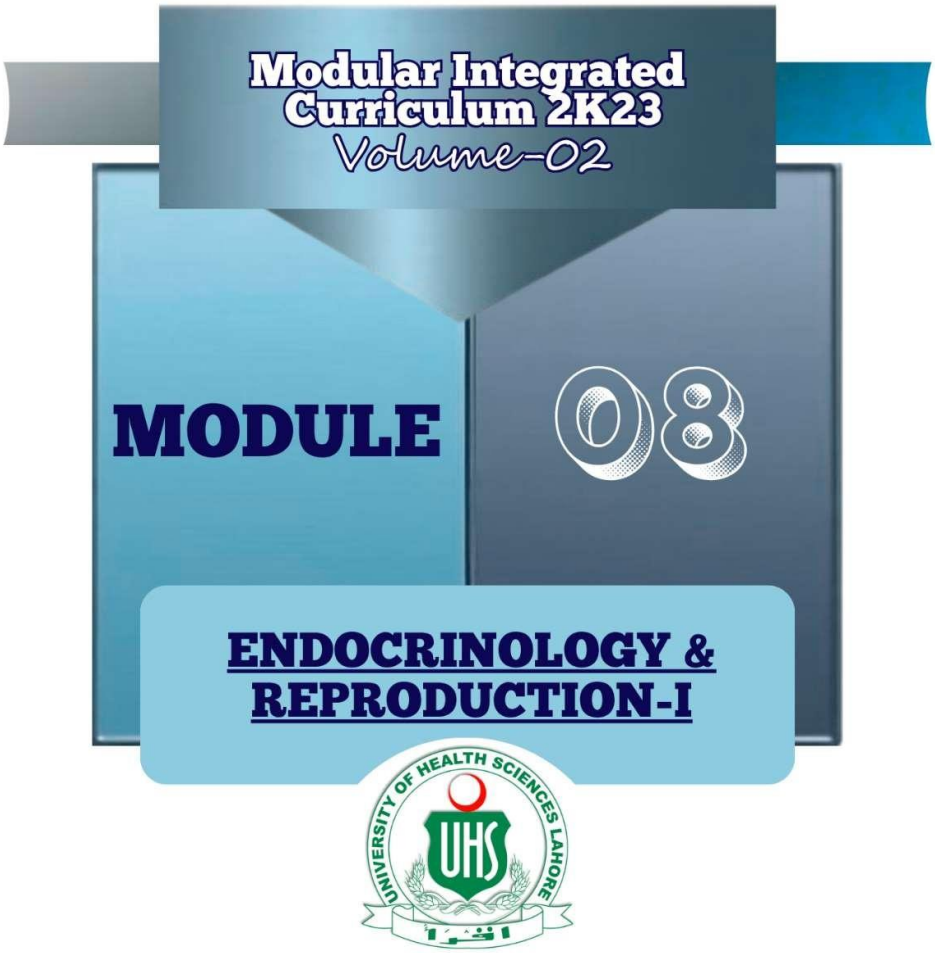
C2K23 Year-02

Modular Integrated Curriculum 2K23

MBBS Year-02

BLOCK-5




Modular Integrated Curriculum 2K23
Volume-02
MODULE
08
ENDOCRINOLOGY & REPRODUCTION-I
UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS

MODULE RATIONALE

Endocrinal system is a unique system consists of glands which control body systems through its secretions known as hormones. These chemical compounds known as hormones play an integral role in maintaining cell activity and organ functions through biochemical signals. Human reproduction is controlled by hormones released by gonads.

Changes in hormonal levels can affect human fertility.

In this module the anatomy and physiology of the endocrine organs, functional biochemistry of the hormones secreted will be taught in integrated fashion with reference to common disease occurring in Pakistani community.

MODULE OUTCOMES

- Explain Development, structure, hormones and regulation of pituitary gland, thyroid gland, parathyroid gland, endocrine pancreas, adrenal glands, testes and ovaries.
- Describe the etiology, pathophysiology, relevant clinical features and common investigations of disorders of these glands.
- Apply levels of prevention for common endocrinal public health issues in Pakistan.
- Elaborate events in normal pregnancy and principles of genetics.

THEMES

- Introduction to Endocrinology, Mechanism of action, Second messenger, measurements
- Pituitary gland
- Thyroid Gland & Parathyroid Gland
- Adrenal glands
- Pancreatic Hormones
- Reproduction & Genetics

CLINICAL RELEVANCE

- Diabetes
- Hypothyroidism & Hyperthyroidism
- Cushing Syndrome & Addison's disease
- Dysfunctional Uterine Bleeding
- Infertility

IMPLEMENTATION TORs

- The time calculation for completion of modules and blocks is based on 35 hours per week. Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

BLOCK AT A GLANCE

Item	Details
Programme	MBBS
Academic Year	Second Professional MBBS
Block	Block 5
Module	Endocrinology & Reproduction-I (Module 08)
Curriculum	UHS Integrated MBBS Curriculum 2K23
Educational Model	Integrated Competency-Based Curriculum
Duration	As per UHS Academic Calendar
Major Themes	Introduction to Endocrinology, Pituitary Gland, Thyroid & Parathyroid Glands, Adrenal Glands, Pancreatic Hormones, Reproduction & Genetics
Integrated Disciplines	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Medicine, Obstetrics & Gynecology
Learning Domains	Cognitive, Psychomotor, Affective
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning (CBL), Self-Directed Learning (SDL), Clinical Correlation
Assessment	Formative Assessment, MCQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Clinical Correlation	Diabetes Mellitus, Hypothyroidism, Hyperthyroidism, Cushing Syndrome, Addison Disease, Infertility, Dysfunctional Uterine Bleeding, Disorders of Puberty
PMDC Competencies Addressed	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate

CURRICULUM DASHBOARD

Curriculum Indicator	Block 5 – Endocrinology & Reproduction-I
Programme	MBBS
Academic Year	Second Professional
Module	Endocrinology & Reproduction-I
Curriculum	UHS Integrated Curriculum 2K23
Major Themes	6
Module Outcomes	Explain the development, structure, physiology and regulation of endocrine glands, describe common endocrine disorders, apply preventive strategies for endocrine diseases, and understand normal reproduction and principles of genetics.
Integrated Disciplines	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Medicine and Obstetrics & Gynecology
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Demonstrations, Histology Practicals, Small Group Discussions, Case-Based Learning, Self-Directed Learning
Assessment Methods	MCQs, SEQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Learning Domains	Cognitive, Psychomotor, Affective
PMDC Competencies	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate
Horizontal Integration	Integration across Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine and Behavioral Sciences
Vertical Integration	Endocrinology, Internal Medicine, Obstetrics & Gynecology, Pediatrics
Clinical Correlation	Diabetes Mellitus, Thyroid Disorders, Adrenal Disorders, Infertility, Disorders of Puberty, Pregnancy-related Endocrine Changes
Quality Assurance	Continuous assessment, structured feedback, curriculum review, DME monitoring, PMDC and UHS guidelines

Theme-wise Curriculum Mapping Matrix

The Theme-wise Curriculum Mapping Matrix demonstrates the integration of basic and clinical sciences within the Endocrinology & Reproduction-I module. Each theme aligns the intended learning outcomes with integrated disciplines, teaching–learning strategies, assessment methods, PMDC competencies, and horizontal and vertical integration to ensure constructive alignment throughout the module.

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
Introduction to Endocrinology	Explain the organization of the endocrine system, mechanisms of hormone action, second messenger systems and laboratory measurement of hormones.	Physiology, Biochemistry, Pharmacology	Interactive lectures, tutorials, demonstrations, SDL	MCQs, SEQs, Viva	Medical Expert, Scholar	Physiology + Biochemistry + Pharmacology	Endocrinology
Pituitary Gland	Describe the anatomy, histology, physiology and hormonal regulation of the pituitary gland with correlation to pituitary disorders.	Anatomy, Histology, Physiology, Pathology	Interactive lectures, practicals, CBL, SDL	MCQs, Practical, OSPE	Medical Expert, Scholar	Anatomy + Histology + Physiology	Endocrinology, Internal Medicine
Thyroid & Parathyroid Glands	Explain the development, structure, physiology and pathology of the thyroid and parathyroid glands and correlate with common disorders.	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology	Interactive lectures, demonstrations, practicals, CBL	MCQs, SEQs, Practical	Medical Expert, Scholar	Anatomy + Physiology + Biochemistry	Endocrinology, Surgery
Adrenal Glands	Describe the anatomy, physiology and hormonal functions of the adrenal glands and relate them to adrenal disorders.	Anatomy, Histology, Physiology, Biochemistry, Pathology, Pharmacology	Lectures, practical sessions, CBL	MCQs, Practical, Viva	Medical Expert, Scholar	Anatomy + Physiology + Pharmacology	Endocrinology, Internal Medicine

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
Pancreatic Hormones	Explain endocrine functions of the pancreas, glucose homeostasis and the pathophysiology of diabetes mellitus.	Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine	Interactive lectures, CBL, SDL	MCQs, SEQs, Practical	Medical Expert, Health Advocate	Physiology + Biochemistry + Pathology	Endocrinology, Internal Medicine
Reproduction & Genetics	Describe reproductive endocrinology, normal pregnancy, infertility and basic principles of genetics with clinical application.	Anatomy, Embryology, Physiology, Biochemistry, Behavioral Sciences, Obstetrics & Gynecology	Interactive lectures, seminars, CBL, SDL	MCQs, Practical, Viva	Medical Expert, Communicator, Health Advocate	Anatomy + Physiology + Behavioral Sciences	Obstetrics & Gynecology, Pediatrics, Genetics

Theme Integration

The Endocrinology & Reproduction-I module integrates Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Medicine and Obstetrics & Gynecology to provide students with a comprehensive understanding of endocrine regulation and reproductive physiology. The module emphasizes the relationship between normal hormonal function and common endocrine disorders, including diabetes mellitus, thyroid disorders, adrenal diseases, infertility and reproductive health, thereby promoting clinical reasoning and competency-based learning.

Weekly Curriculum Map

The Weekly Curriculum Map outlines the logical sequence of learning activities throughout the Endocrinology & Reproduction-I module. It demonstrates the progressive integration of basic medical sciences with clinical relevance, ensuring the achievement of the intended module learning outcomes through competency-based medical education.

Week	Major Theme	Integrated Disciplines	Teaching–Learning Methods	Assessment
Week 1	Introduction to Endocrinology	Physiology, Biochemistry, Pharmacology	Interactive lectures, tutorials, demonstrations, SDL	Formative MCQs, Tutorials
Week 2	Pituitary Gland	Anatomy, Histology, Physiology, Pathology	Interactive lectures, practical sessions, CBL, demonstrations	MCQs, Practical Assessment
Week 3	Thyroid & Parathyroid Glands	Anatomy, Embryology, Histology, Physiology, Biochemistry	Interactive lectures, practicals, CBL, SDL	MCQs, SEQs
Week 4	Adrenal Glands	Anatomy, Histology, Physiology, Biochemistry, Pharmacology	Interactive lectures, demonstrations, practical sessions	MCQs, OSPE
Week 5	Pancreatic Hormones	Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine	Interactive lectures, case-based learning, SDL	Practical Assessment, Viva
Week 6	Reproduction & Genetics, Integrated Revision & Block Assessment	Anatomy, Embryology, Physiology, Biochemistry, Behavioral Sciences, Obstetrics & Gynecology, All Integrated Disciplines	Interactive lectures, seminars, small-group discussions, revision sessions, practical revision, feedback	Block Examination (Theory & Practical)

Weekly Progression

The Endocrinology & Reproduction-I module follows a system-based integrated approach, beginning with the fundamental principles of endocrinology and hormone action, progressing through the pituitary, thyroid, parathyroid and adrenal glands, and culminating in pancreatic endocrine function, reproduction and genetics. Clinical correlation, practical sessions, case-based learning and self-directed learning are integrated throughout the module to strengthen understanding of endocrine physiology, reproductive health and common endocrine disorders including diabetes mellitus, thyroid diseases, adrenal disorders and infertility.

PMDC Competency Mapping

The PMDC Competency Mapping Matrix demonstrates the alignment of the Endocrinology & Reproduction-I module with the PMDC Undergraduate Medical Education Competency Framework. Through an integrated systems-based approach, the module develops students' understanding of endocrine physiology, hormonal regulation, reproductive health and genetics while fostering professionalism, communication, teamwork, leadership and lifelong learning in accordance with competency-based medical education.

Theme	Medical Expert	Communicator	Collaborator	Leader	Professional	Scholar	Health Advocate
Introduction to Endocrinology	✓		✓		✓	✓	
Pituitary Gland	✓	✓	✓		✓	✓	
Thyroid & Parathyroid Glands	✓	✓	✓		✓	✓	✓
Adrenal Glands	✓	✓	✓	✓	✓	✓	✓
Pancreatic Hormones	✓	✓	✓	✓	✓	✓	✓
Reproduction & Genetics	✓	✓	✓	✓	✓	✓	✓

Competency Integration Summary

PMDC Competency	Contribution within the Module
Medical Expert	Develops comprehensive knowledge of endocrine anatomy, physiology, biochemistry, pathology and pharmacology with emphasis on diagnosis, prevention and management of endocrine and reproductive disorders.
Communicator	Enhances communication skills through case discussions, patient counselling scenarios, seminars and small-group learning activities.
Collaborator	Promotes teamwork during practical sessions, tutorials, laboratory work and integrated learning activities.
Leader	Encourages responsibility, ethical decision-making and leadership during collaborative learning and health promotion activities.
Professional	Reinforces ethical conduct, patient confidentiality, professionalism and accountability throughout teaching and assessment.
Scholar	Promotes self-directed learning, critical thinking, evidence-based medicine and lifelong learning through integrated educational strategies.

PMDC Competency	Contribution within the Module
Health Advocate	Develops awareness regarding prevention and early detection of endocrine disorders, healthy lifestyle promotion, diabetes prevention, reproductive health and genetic counselling.

Competency Alignment

The Endocrinology & Reproduction-I module primarily develops the Medical Expert competency by providing students with an integrated understanding of endocrine regulation, hormone action, reproductive physiology and genetics. Through integration with Community Medicine, Behavioural Sciences, Pharmacology and clinical disciplines, the module further strengthens competencies in communication, collaboration, professionalism, scholarship, leadership and health advocacy, particularly in the prevention, diagnosis and management of common endocrine and reproductive disorders such as diabetes mellitus, thyroid diseases, adrenal disorders, infertility and reproductive endocrine abnormalities.

Teaching–Learning Matrix

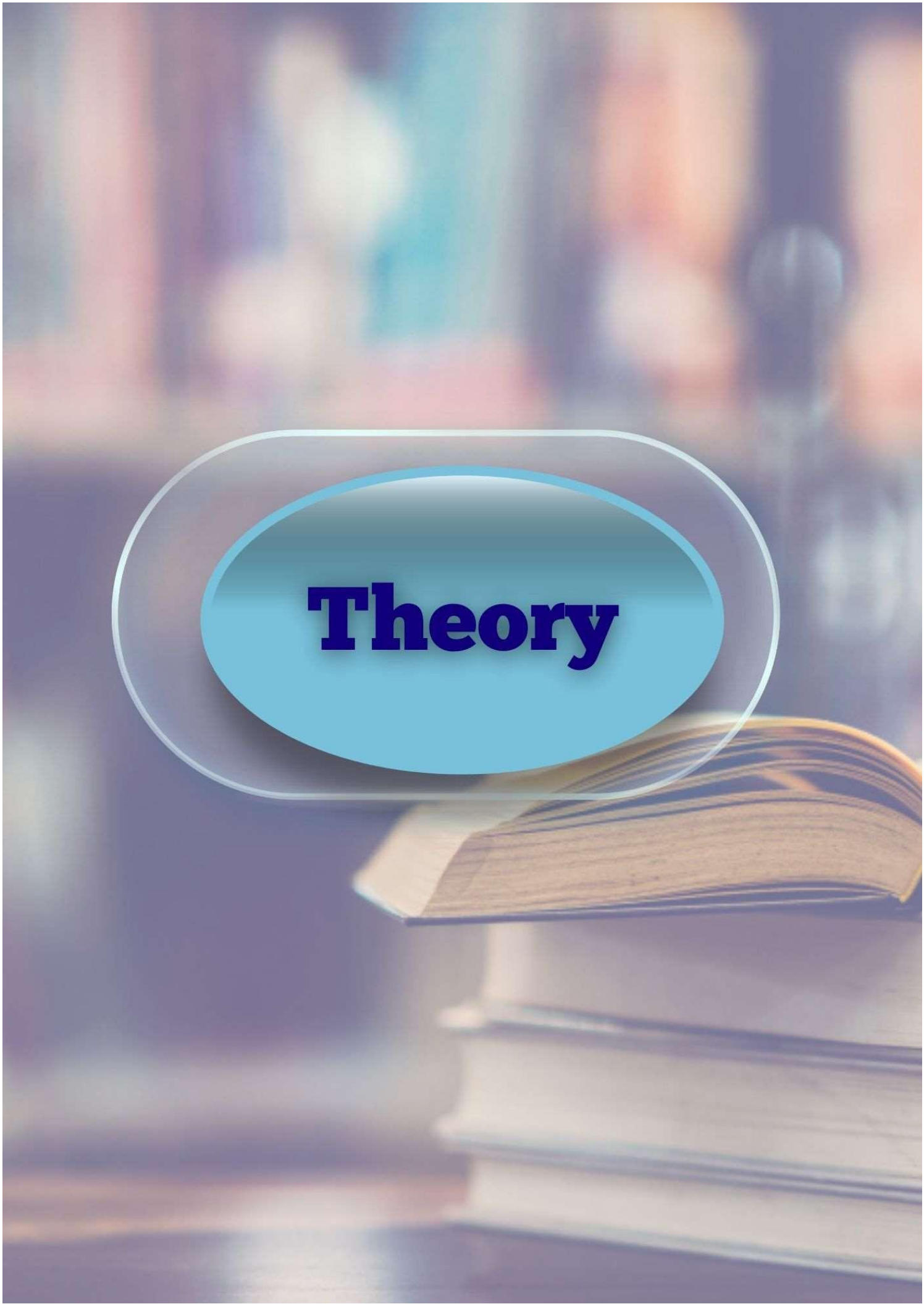
The Teaching–Learning Matrix outlines the instructional strategies employed throughout the **Endocrinology & Reproduction-I** module to facilitate achievement of the intended learning outcomes. The module adopts an integrated, learner-centred approach that combines basic medical sciences with clinical application through a variety of active learning strategies in accordance with the principles of competency-based medical education.

Theme	Interactive Lectures	Practical / Laboratory	Demonstration	Small Group Discussion (SGD)	Case-Based Learning (CBL)	Self-Directed Learning (SDL)	Early Clinical Exposure / Clinical Correlation
Introduction to Endocrinology	✓	✓	✓	✓	✓	✓	✓
Pituitary Gland	✓	✓	✓	✓	✓	✓	✓
Thyroid & Parathyroid Glands	✓	✓	✓	✓	✓	✓	✓
Adrenal Glands	✓	✓	✓	✓	✓	✓	✓
Pancreatic Hormones	✓	✓	✓	✓	✓	✓	✓
Reproduction & Genetics	✓	✓	✓	✓	✓	✓	✓

Teaching–Learning Strategy Summary

The **Endocrinology & Reproduction-I** module adopts an integrated, student-centred teaching approach to facilitate the development of foundational knowledge, clinical reasoning, practical skills and professional attitudes. Interactive lectures provide the conceptual framework, while anatomy demonstrations, histology practicals, physiology and biochemistry laboratory sessions reinforce understanding of endocrine structure and function. Small-group discussions and case-based learning promote critical thinking and clinical decision-making, whereas self-directed learning encourages lifelong learning. Continuous clinical correlation enables students to relate normal endocrine physiology and reproductive health to common endocrine and reproductive disorders.


Syllabus


Theory

NORMAL STRUCTURE			
GROSS ANATOMY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 35	
		DISCIPLINE	TOPIC
EnR-A-001	Describe the location, anatomy blood supply and functions of pituitary gland	Anatomy	Diencephalon (Endocrinology)
EnR-A-002	Describe the Thyroid, Parathyroid with their type, Relations, blood supply, and nerve supply.	Anatomy	Thyroid & Parathyroid gland
	Explain the anatomical basis for surgical removal of the glands of neck with special emphasis on the complications that can be encountered	Anatomy	
	Identify the Thyroid with their type, relations, blood supply, and nerve supply.	Anatomy	
EnR-A-003	Describe the structure, fascia, coverings, blood and nerve supply of testis	Anatomy	Testis
EnR-A-004	Describe the gross anatomical features and neurovasculature of epididymis and vas deferens, Seminal vesicles, Bulbourethral gland	Anatomy	Accessory Male organs
EnR-A-005	Describe the morphological features and neurovascular supply of prostate. Describe, Draw & Label Lobes of prostate gland Correlate the clinical manifestations of prostate with lobes and/or zones of prostate		Prostate

EnR-A-006	Describe the anatomical basis and manifestations of the following conditions: 1) Hydrocele of spermatic cord and/or testes 2) Hematocele of testes 3) Torsion of the spermatic cord 4) Varicocele Vestigial remnants of embryonic genital duct	Anatomy	Testis clinical conditions
	Describe the anatomical basis of vasectomy, & metastasis of cancer of testis and scrotum	Anatomy	

EnR-A-007	Describe shape, relations blood supply & nerve supply of suprarenal gland	Anatomy	Supra-Renal Gland
	Explain the anatomical causes of Adrenal Abnormalities	Anatomy	
EnR-A-008	Define Bony Pelvis (Girdle) and describe the structures forming it.	Anatomy	Pelvic Girdle
	Describe the bones and salient anatomical features of Bony pelvis (girdle)	Anatomy	
EnR-A-009	Describe the type, articulations and mechanics of movements {axes and planes} of the following joints: 1) Sacro-Iliac 2) Pubic Symphysis 3) Lumbosacral 4) Sacrococcygeal	Anatomy	Sacroiliac-Joint
EnR-A-010	List the contents of True and False Pelvis	Anatomy	Bony Pelvis (Girdle)
	Tabulate the differences between male and female pelvis	Anatomy	
	Describe different types of pelvises	Anatomy	
	Describes different diameters of pelvis and their application in obstetric practice	Anatomy (Obs & Gynae)	
EnR-A-011	Describe the anatomical basis of pelvic fractures and their consequences	Anatomy	Pelvic Girdle

	Describe the topographical anatomy of pelvic walls and its components	Anatomy	
	Describe the mechanics of changes occurring in pelvic ligaments and joint mobility in late pregnancy	Anatomy (Obs & Gynae)	
EnR-A-012	Describe the topographical anatomy of pelvic floor.	Anatomy	Pelvic floor
	Describe origin, insertion, nerve supply and actions of muscle forming pelvic floor	Anatomy	
EnR-A-013	Tabulate the attachments, innervations and actions of muscles forming the pelvic walls and floor	Anatomy	Pelvic Muscles
EnR-A-014	Describes injury to pelvic floor during child birth and its complications	Anatomy (Obs & Gynae)	Pelvic Girdle
EnR-A-015	Describe the peritoneal reflections in the male and female pelvis	Anatomy	Peritoneum peritoneal cavity of pelvis

EnR-A-016	Describe the gross anatomical features of Sacrum	Anatomy	Sacrum
EnR-A-017	Describe the gross anatomical features of pelvic fascia	Anatomy	Pelvic Fascia
EnR-A-018	Describe the boundaries of pelvic outlet and inlet	Anatomy	Pelvic Outlet and inlet
	Enumerate the structures passing through the pelvic inlet and pelvic outlet	Anatomy	
EnR-A-019	Tabulate the differences in peritoneal reflections in male and female pelvis	Anatomy	Peritoneal Reflection in Pelvis
EnR-A-020	Describe the origin, course, branches and distribution of common iliac artery	Anatomy	Pelvic Vessels
	Describe the origin, course, branches and distribution of external and internal iliac arteries	Anatomy	
	Describe the origin, course, tributaries and area of drainage of pelvic veins	Anatomy	
EnR-A-021	Describe the location, afferents and efferent of pelvic lymph nodes	Anatomy	Pelvic Lymph Nodes

EnR-A-022	Tabulate the origin, course, distribution and anastomosis of arteries of the pelvis	Anatomy	Pelvic Vessels & Pelvic nerves
	Describe the origin, root value, course, relations, branches and distribution of Pelvic nerves	Anatomy	
	Describe the anatomical basis and clinical picture for ligation of internal iliac artery and collateral circulation in pelvis	Anatomy	
	Describe the clinical picture and anatomical basis for the injury to pelvic nerves	Anatomy	
	Give anatomical justification for pelvic nerve blocks	Anatomy	
EnR-A-023	Describe the morphological features of urethra (male and female)	Anatomy	Pelvis
	Tabulate the parts of the male urethra with their location and salient features	Anatomy	
	Describe the clinical picture and anatomical justification for Ureteric Caliculi, Cystocele, Suprapubic Cystotomy, Rupture of Bladder	Anatomy	

	Describe the clinical picture and anatomical justification for Hypertrophy of Prostate	Anatomy	
	Describe the gross anatomical features of Ovaries and Fallopian Tubes with their relations, blood supply, nerve supply and lymphatic drainage Describe related clinical conditions: 1) Positions of ovaries 2) Cysts of ovaries 3) Ectopic pregnancy 4) Tubal ligation 5) Salpingitis	Anatomy	

	Describe the gross anatomical features, parts, peritoneal ligaments, blood supply, nerve supply & lymphatic & clinical aspects of Uterus and Vagina Describe related clinical conditions 1. Prolapse of uterus 2. Vaginal trauma 3. culdocentesis	Anatomy	
	Describe, identify, justify and demonstrate the supports of uterus	Anatomy	
EnR-A-024	Describe the gross anatomical features of Boundaries & divisions of perineum	Anatomy	Perineum
	Draw and label the boundaries of perineum	Anatomy	
	List the contents of perineum	Anatomy	
	Tabulate the differences between the Male and female perineum	Anatomy	
	Describe the attachments of the perineal membrane and list its relations	Anatomy	
	Discuss the formation of Superficial and Deep Perineal Pouches	Anatomy	
	List the contents of Superficial and Deep Perineal Spaces	Anatomy	

	Tabulate the attachments, actions and nerve supply of muscles of perineum	Anatomy	
	Describe the topographical anatomy and neurovasculature of Penis	Anatomy	
	Tabulate the muscles forming the perineal body with their attachments and nerve supply	Anatomy	

EnR-A-025	Describe the clinical presentation and anatomical justification for: 1) Hypospadias 2) Phimosis 3) Circumcision 4) Erectile Dysfunction 5) Internal Hernias 6) Suprapubic Cystotomy 7) Rupture Of Bladder 8) Rectal Examination 9) Disposition Of Uterus	Anatomy	Pelvis
EnR-A-026	Describe the extent, structure, vascular supply, lymphatic drainage of Breast (Mammary Glands)	Integrate with Medicine	Mammary Gland
	Demonstrate palpation of breast and define its relation to the Fibrous septa in Carcinoma of Breast	Integrate with Surgery	
	Explain the anatomical basis of position adopted for breast examination and mammography.	Integrate with Radiology	

EMBRYOLOGY & POST-NATAL DEVELOPMENT

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 14	
		DISCIPLINE	TOPIC
EnR-A-027	Describe the development of Thyroid gland	Anatomy	Development of Thyroid gland
	Explain the embryological basis of the Thyroglossal Cyst		
EnR-A-028	Describe the development of para-thyroid glands		Development Of Parathyroid glands
EnR-A-029	Anatomically justify the clinical presentation of: 1. Ectopic Parathyroid 2. Aberrant Thyroid	Anatomy	Development of Thyroid, Parathyroid

EnR-A-030	Describe the development of pituitary gland Describe the embryological basis for the congenital anomalies of pituitary development	Anatomy	Development of Pituitary Gland
EnR-A-031	Describe the contributing factors, histogenesis and the development of adrenal gland	Anatomy	Development Of Adrenal Gland
	Describe the embryological basis for the congenital anomalies of adrenal development	Anatomy	
EnR-A-032	Identify the stages in the development of the adrenal gland	Anatomy	Adrenal Gland
EnR-A-033	Describe the indifferent gonads	Anatomy	Development of Reproductive system
	List and describe the Factors influencing the differentiation of gonads		
	Evaluate the role of the factors influencing Sex determination and differentiation		
	Describe the Development and descent of testis	Anatomy	
EnR-A-034	Describe the embryological basis and locations of undescended testes	Anatomy	Testis
EnR-A-035	Explain the Development and descent of ovaries	Anatomy	Development of Reproductive system
	Describe the anatomical basis for indifferent gonads, Klinefelter, turner syndromes & androgen insufficiency	Anatomy	
	Describe the Formation of Genital Ducts In different stage (paramesonephric and mesonephric ducts)	Anatomy	
	Development of Mammary gland. Describe related clinical anomalies.		
	Describe the development of female genital ducts and glands, Development of uterus & Vagina. Describe related clinical anomalies: 1) Uterus Arcuatus 2) Uterus septus 3) Uterus Bicornis Bicollis 4) Uterus Bicornis Unicollis	Anatomy	

	5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen		
	Describe the development of male genital ducts and glands	Anatomy	
	Discuss the Development of male external genitalia	Anatomy	
	Describe the Development of female external genitalia	Anatomy	
	Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis)	Anatomy	
	Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele	Anatomy	
	Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis	Anatomy	

MICROSCOPIC STRUCTURE (HISTOLOGY & PATHOLOGY)

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 14	
		DISCIPLINE	TOPIC
EnR-A-036	Describe the histological basis and manifestation of Gastric Carcinoid Tumors	Anatomy/ Pathology	Stomach
	Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions	Anatomy	
EnR-A-037	Describe microscopic structure of Pituitary gland.	Anatomy	Pituitary Gland
	Classify pituitary gland on the basis of cell type, hormone produced and functions	Anatomy	

	Explain the histological basis and manifestation of Pituitary Adenomas	Anatomy	
EnR-A-038	Describe the light microscopic structure of Adrenal Gland	Anatomy	Adrenal Gland

	Explain the histological basis and manifestation of Addison disease	Anatomy	
EnR-A-039	Describe the light microscopic structure of endocrine pancreas	Anatomy	Pancreas
	Classify the pancreatic islets on the basis of cell type, hormone produced and functions	Anatomy	
	Explain the histological basis and manifestation of Diabetes Mellitus	Anatomy	
	Explain the components and functions of neuroendocrine system	Anatomy	
EnR-A-040	Describe the light microscopic structure of Thyroid Gland	Anatomy	Thyroid Gland
	Describe the light microscopic structure of Parathyroid Gland	Anatomy	
	Describe the light microscopic structure of Pineal gland	Anatomy	
EnR-A-041	Describe the light and ultramicroscopic structure of Testes, structure & function of Sertoli cells. Describe Blood testes Barrier	Anatomy	Testes
	Describe the histological basis and manifestation of Orchitis, Cryptorchidism	Anatomy Pathology	
EnR-A-042	Describe the light microscopic structure of Epididymis	Anatomy	Epididymis
EnR-A-043	Describe the light microscopic structure of vas deferens	Anatomy	Vas deferens
EnR-A-044	Describe the light microscopic structure of seminal vesicle	Anatomy	Seminal Vesicle
EnR-A-045	Describe the light microscopic structure of Prostate Gland	Anatomy	Prostate gland

	Describe the lobes of prostate and correlate with the pathologies of prostate	Anatomy pathology	
EnR-A-046	Describe the light microscopic structure of ovaries	Anatomy	Ovaries
	Describe the light microscopic structure of ovarian follicles in different stages of menstrual cycle.	Anatomy	
	Describe the histological basis and manifestation of Polycystic Ovary Syndrome	Anatomy Pathology	
	Discuss the light microscopic structure of uterus	Anatomy	Uterus

EnR-A-047	Describe the light microscopic structure of different stages of Menstrual cycle	Anatomy	
	Describe the histological basis and manifestation of Endometriosis	Anatomy Gynae & Obs.	
EnR-A-048	Describe the light microscopic structure of Fallopian Tube.	Anatomy	Fallopian Tube
EnR-A-049	Describe the light microscopic structure of Cervix	Anatomy	Cervix
	Describe the histological basis and manifestation of Cervical Carcinoma	Anatomy Pathology	
EnR-A-050	Describe the light microscopic structure of Vagina	Anatomy	Vagina
EnR-A-051	Describe light microscopic structure of mammary gland (inactive, during pregnancy, after lactation) Discuss histological basis of Breast cancer	Anatomy pathology	Mammary Gland

NORMAL FUNCTION

MEDICAL PHYSIOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 60	
		DISCIPLINE	TOPIC

EnR-P-001	Define different chemical messengers. Enlist endocrine organs and hormones of the body. Enlist the hormones on the basis of chemical nature. Discuss the feedback control of hormone secretion. Explain the up and down regulation of receptors. Enlist the location of hormone receptors. Explain the mechanism of intracellular signaling after hormone receptor activation. Name the hormones that use enzyme-linked hormone receptors signaling. Explain the mechanism of enzyme linked receptors. Enlist second messenger mechanisms for mediating intracellular hormonal functions. Define second messenger system.	Physiology	Introduction to Endocrinology

	Explain the adenylyl cyclase– cAMP Second Messenger System. Enumerate the hormones that use the adenylyl cyclase– cAMP Second Messenger System. Explain The cell membrane phospholipid second messenger System. Enumerate the hormones that use cell membrane phospholipid second messenger system. Explain the mechanism of calcium Calmodulin system.		

EnR-P-002	Name the hormones/ factors of hypothalamus. Name the hormones of anterior pituitary. Name the hormones of posterior pituitary. Describe the functional relationship between hypothalamus, anterior and posterior pituitary gland. Explain the significance of hypothalamic- hypophysial portal circulation. Explain the hypothalamic pituitary tract. Explain the mechanism of action of growth hormone. Explain the actions of Growth hormone on Carbohydrate. Discuss the actions of Growth hormone on protein metabolism. Describe the actions of Growth hormone on fat metabolism. Explain the effect of growth hormone on skeletal growth and age. Explain the significance of somatomedins in mediating the actions of growth hormone. Describe the regulation of Growth Hormone. Describe the causes and features and treatment of panhypopituitarism in adults and childhood. Define Sheehan's syndrome. Enlist the types of dwarfism according to cause. Explain the pathophysiology and features of gigantism and acromegaly.	Physiology	Hypothalamus / Pituitary Gland

	Explain the mechanism of action of antidiuretic hormone. Discuss the actions of antidiuretic hormone. Regulation of antidiuretic hormone production. Elaborate the mechanism of action of oxytocin. Discuss the actions of oxytocin.		

EnR-P-003	Discuss the transport of thyroid hormone Discuss the mechanism of action of thyroid hormone Explain the actions of thyroid hormone on carbohydrate metabolism Discuss the actions of thyroid hormone on protein metabolism Explain the actions of thyroid hormones on fat metabolism Explain the non-metabolic functions of thyroid hormone Explain the regulation of thyroid hormone Enumerate antithyroid substances and explain their mechanism of action Enumerate the causes of hyperthyroidism	Physiology	Thyroid gland
	Explain the features, pathophysiology and treatment of thyrotoxicosis/ grave's disease Explain the thyroid function test to investigate hypo and hyperthyroidism Enlist the causes of hypothyroidism. Explain the signs and symptoms of hypothyroid patient. Explain the pathophysiology of Hashimoto hypothyroidism Discuss the features and pathophysiology and treatment of myxedema Explain the pathophysiology and features of endemic colloid goiter Discuss the pathophysiology and features of nontoxic colloid goiter Enlist the causes of cretinism Discuss the features and pathophysiology of cretinism		

EnR-P-004	Name the hormones of adrenal cortex. Explain the physiological anatomy of adrenal cortex. Explain the cellular mechanism of Aldosterone action. Explain the effects of mineralocorticoid hormone. Discuss the regulation of aldosterone secretion. Discuss the metabolic and non-metabolic functions of cortisol Explain the interconversion of active cortisol and inactive cortisone by the 2, 11 beta hydroxysteroid dehydrogenase isoform. Explain the mechanism for regulation of glucocorticoid secretion by hypothalamus and pituitary Name adrenal androgens and enlist the functions of adrenal androgens. Discuss the causes, features, pathophysiology and treatment of hypoadrenalism (Addison's disease). Enlist the causes of hyperadrenalism. Explain the features, pathophysiology and treatment of Cushing's syndrome. Differentiate between Cushing's syndrome and Cushing's disease Explain the clinical importance of dexamethasone suppression test to diagnose Cushing's syndrome. Discuss the features, pathophysiology and treatment of Conn's syndrome. Enlist the cause, features and pathophysiology of congenital adrenal hyperplasia/ Androgenital syndrome.	Physiology & Pathology	Adreno cortical hormones

EnR-P-005	Enumerate the types of pancreatic cells with their hormones. Explain the mechanism of action of insulin. Discuss the synthesis and mechanism of release of insulin. Explain the effects of insulin on carbohydrate, protein and lipid metabolism.	Physiology	Pancreatic hormones

	Enlist the actions of insulin on liver, adipose tissue and skeletal muscle. Enlist the factors and conditions that increase or decrease insulin secretion.		
	Explain the role of insulin (and other hormones) in "switching" between carbohydrate and lipid metabolism. Discuss the effects of glucagon on carbohydrate and lipid metabolism. Explain the factors that regulate the secretion of glucagon. Explain the 24-hour regulation of glucose. Discuss the importance of blood glucose regulation. Explain the actions of somatostatin.		
EnR-P-006	Enlist the types of diabetes mellitus Explain the causes of Type I and type II diabetes mellitus Discuss the features and pathophysiology of diabetes mellitus Explain the role of insulin resistance, obesity and metabolic syndrome in developing type II diabetes mellitus Explain how to diagnose the diabetes mellitus Explain the treatment of type I and type II diabetes mellitus Explain the features, cause of insulinoma	Physiology	Abnormalities of Glucose regulation

EnR-P-007	Discuss the physiological anatomy of parathyroid gland Explain the rapid and slow mechanism of resorption of bone by parathyroid hormone Discuss the actions of parathyroid Explain the control of parathyroid secretion by calcium ion concentration	Physiology	Parathyroid hormones
EnR-P-008	Discuss the effects of Vitamin D Discuss the effects of calcitonin on calcium Discuss the regulation of calcium (the first & second line of defense) Explain the causes and features of hypoparathyroidism	Physiology	Regulation of calcium in body

	Explain the causes and the features of primary and secondary hyperparathyroidism Enumerate the causes and features of osteoporosis		
EnR-P-009	Enlist the functions of adrenal medullary hormones and explain pheochromocytoma	Physiology	Adreno medullary hormones
EnR-P-010	Describe the hormonal factors that affect spermatogenesis Explain the maturation and storage of sperm in epididymis Discuss the structure and physiology of a mature sperm Describe the composition of semen Discuss the functions of prostate & seminal vesicles in the formation of semen Explain the phenomenon of capacitation and its significance Describe the acrosome Reaction and its significance Discuss the role of pineal gland in reproduction	Physiology	Spermatogenesis Capacitation & Acrosome reaction

EnR-P-011	Discuss the site of secretion of testosterone Name the active form of testosterone Explain the production of estrogen in males Describe the basic intracellular mechanism of action of testosterone	Physiology	Testosterone
	Explain the functions of testosterone in intrauterine life and after birth Discuss the regulation of male sexual functions by hormones from the hypothalamus and anterior pituitary gland		
EnR-P-012	Enumerate and explain the phases of ovarian cycle along with the hormonal changes Explain the postulated mechanism of ovulation Explain the formation and involution of Corpus luteum Endometrial cycle Explain the structural and hormonal changes of endometrial cycle	Physiology	Menstrual cycle

	Explain the regulation of female monthly cycle Discuss the role of progesterone on female sexual organs		
EnR-P-013	Enumerate the ovarian hormones Discuss the synthesis of estrogen and progesterone Describe the interaction of follicular theca and granulosa cells for production of estrogens with the help of a diagram Explain the functions of the estrogens on different organs Discuss the role of progesterone on female sexual organs	Physiology	Female sexual hormones
EnR-P-014	Explain the physiological basis of puberty, menarche Define menopause Explain the cause of menopause Discuss the physiological changes in the function of the body at the time of menopause	Physiology	Puberty, menarche & menopause

EnR-P-015	Explain the non-hormonal functions of placenta Explain the hormonal factors in pregnancy/ hormones of placenta Explain the changes in non- placental hormones during pregnancy Response of the mother's body to pregnancy Explain the mechanical and hormonal factors that increase uterine contractility during parturition	Physiology	Normal Pregnancy
EnR-P-016	Explain the physiology of lactation Discuss the actions of prolactin Justify the suppression of ejection of milk during pregnancy Discuss the physiological basis of suppression of the female ovarian cycles in nursing mothers for many months after delivery	Physiology	Lactation
EnR-P-017	Describe the circulatory & respiratory changes at birth	Physiology	Neonatal Physiology

MEDICAL BIOCHEMISTRY		
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 32

		DISCIPLINE	TOPIC
EnR-B-001	Describe the features of Signal transduction Describe different types of receptors	Biochemistry	Signal Transduction
EnR-B-002	Discuss the classification of hormones	Biochemistry	Classification of hormones

EnR-B-003	Describe different types of second messengers Differentiate the G protein and non-G protein mediated pathways of signal transduction Discuss the hormones which act through: Cyclic AMP (Adenosine monophosphate) Discuss the hormones which act through: Cyclic GMP (guanosine monophosphate) Discuss the hormones which act through calcium phosphoinositol Describe the Receptor tyrosine kinase pathway of signal transduction Explain the Serine threonine kinase pathway of signal transduction Discuss the Nuclear Receptor mediated pathway of signal transduction Describe the Receptor coupled to Jak Stat pathway of signal transduction	Biochemistry	Second messengers
	Explain the control and negative feedback mechanism of hormone regulation	Biochemistry	
	Discuss the biosynthesis, secretion, mechanism of action and metabolic functions of Insulin, glucagon, epinephrine, cortisol, thyroid and growth hormone with special reference to carbohydrate, protein and lipid metabolism	Biochemistry	
	Interpret disorders of hormones on the basis of sign, symptoms and given data	Biochemistry	
EnR-B-004	Explain the synthesis, secretion, transport and clearance of steroid and protein hormones.	Biochemistry	Synthesis of Hormones
EnR-B-005	Enlist the steps in the synthesis of adrenocortical hormone. Explain the synthesis and secretion of ACTH	Biochemistry	Synthesis of ACTH & adrenocortical

	(Adrenocorticotropic hormone) in association with melanocyte-stimulating hormone, lipotropin, and endorphin.		
EnR-B-006	Explain the structure, biosynthesis, secretion, transport, regulation, catabolism, mechanism of action and biochemical role of testosterone, progesterone and estrogen	Biochemistry	Synthesis of testosterone, progesterone and estrogen
EnR-B-007	Discuss the role of steroid hormones in oral contraception, Infertility	Biochemistry	Steroid in infertility
EnR-B-008	Define the following terms: chromosome, allele (dominant and recessive), gene, locus, heterozygote, homozygote, hemizygous, autosome, genotype, phenotype, haploid and diploid number of chromosomes, aneuploidy, proband, proposita, pedigree, propositus, penetrance, codominance and polygenic	Biochemistry	Nomenclature of genetics
EnR-B-009	Discuss the structures of genes, how they are organized and regulated.	Biochemistry	Genes
EnR-B-010	Describe Mendelian Law of Segregation and Law of Independent Assortment.	Biochemistry	Mendelian laws
EnR-B-011	Describe the patterns of inheritance characteristic of autosomal dominant, autosomal recessive, X- linked dominant, X-linked recessive and mitochondrial traits.	Biochemistry	Patterns of inheritance
EnR-B-012	Interpret genetic symbols as they appear in pedigrees.	Biochemistry	Pedigrees
EnR-B-013	Analyze pedigree to determine the mode of inheritance of following traits: 1) X-linked recessive (Duchenne Muscular dystrophy) 2) X-linked dominant (Rickets) 3) Autosomal recessive (Xeroderma Pigmentosum) 4) Autosomal dominant (Huntington's Disease)) Mitochondrial disorder (Mitochondrial diabetes)	Biochemistry	Mode of inheritance

EnR-B-014	Discuss different structural and numerical chromosomal abnormalities.	Biochemistry	Chromosomal abnormalities

EnR-B-015	Interpret the normal human karyotype in terms of number and structure of chromosomes.	Biochemistry	Karyotypes
EnR-B-016	Describe the effect of the following chromosomal mutations on a segment of DNA: point mutation, frameshift mutation, deletion, insertion, inversion, Robertsonian Translocation and mosaicism.	Biochemistry	Mutations
EnR-B-017	Discuss the concept of central dogma from gene to protein	Biochemistry	Central dogma
EnR-B-018	Describe in detail all the steps in prokaryotic DNA replication with emphasis on: Different proteins required, Primers, DNA polymerase; their different components and functions, Initiation, elongation and termination of replication, Topoisomerases	Biochemistry	Prokaryotic DNA replication
EnR-B-019	Describe in detail all the steps in Eukaryotic DNA replication with emphasis on differences between Pro- and Eukaryotes	Biochemistry	Eukaryotic DNA replication
EnR-B-020	Discuss telomeres and Telomerase and their clinical significance		Telomeres and Telomerase
EnR-B-021	Describe DNA repair, mutation and cancers Interpret Xeroderma pigmentosa on basis of sign /symptoms and data		DNA Repair
EnR-B-022	Explain the transcription in prokaryotes focusing on the following key points; RNA polymerase, its components and functions, Initiation, elongation and termination of transcription.		Transcription in prokaryotes
EnR-B-023	Illustrate the transcription in eukaryotes focusing on the differences between pro- and eukaryotic replication		Transcription in Eukaryotes

EnR-B-024	Discuss post transcriptional modifications		post transcriptiona l modifications
EnR-B-025	Describe the role of Wobble hypothesis in codon recognition by tRNA	Biochemistry	Wobble hypothesis
EnR-B-026	Interpret the translation focusing on the following key points: Initiation, elongation and termination		Translation
EnR-B-027	Describe Post-translational modification of proteins		

	Illustrate RNA dependent synthesis of RNA and DNA		Posttranslational modification
EnR-B-028	Discuss the gene expression especially Lac operon and Tryptophan operon		Gene Expression
	Discuss the regulation of eukaryotic gene expression with special emphasis on iron metabolism and RNA interference	Biochemistry	
EnR-B-029	Discuss the following Recombinant DNA techniques with reference to their principles, procedures and application: 1) PCR (Polymerase Chain Reaction) 2) RFLP (Restriction Fragment Length Polymorphism) 3) Cloning 4) Human Genome Project 5) Blotting Techniques 6) DNA (Deoxyribose Nucleic Acid) sequencing	Biochemistry	Techniques
PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 02	
		DISCIPLINE	TOPIC

EnR-Ph-001	Classify drugs that mimic or inhibit hypothalamic and pituitary hormones. Explain their mechanism of action. Enumerate their clinical uses and potential adverse effects.	Pharmacolo gy	Hypothalamic and Pituitary hormones
EnR-Ph-002	Classify drugs that mimic or inhibit gonadal hormones and explain their mechanism of action. Enumerate their clinical uses and potential adverse effects.		Gonadal Hormones
PATHOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 12	
		DISCIPLINE	TOPIC
EnR-Pa-001	Enumerate clinical manifestations along with hormone levels of anterior pituitary	Pathology	Pathology of Anterior Pituitary Gland
	Classification of pituitary adenomas		
EnR-Pa-002	Enumerate and describe posterior pituitary syndromes (inappropriate ADH (Anti Diuretic Hormone) secretion, diabetes insipidus)	Pathology	Pathology of Posterior Pituitary Gland
EnR-Pa-003	Define thyroiditis Describe salient morphological features of clinically significant subtypes of thyroiditis: i. Hashimoto Thyroiditis ii. Granulomatous Thyroiditis	Pathology	Thyroiditis
EnR-Pa-004	Describe the pathogenesis & salient morphological features of Grave's Disease Describe the pathogenesis & salient morphological features of Diffuse and Multinodular goiter	Pathology	Grave's Disease

EnR-Pa-005	Enumerate causes of hypo and hyperthyroidism along with levels of thyroid hormones	Pathology	Pathology of Thyroid Gland
EnR-Pa-006	Enumerate causes of hypercalcemia, hyper and hypoparathyroidism Describe the histopathological features of parathyroid hyperplasia and adenoma	Pathology	Pathology of Parathyroid Gland
EnR-Pa-007	Give etiological Classification of DM (Diabetes Mellitus) Give differentiating features of DM-I and DM-II on the basis of pathogenesis, clinical features, diagnosis and complications	Pathology	Pathology of Endocrine Pancreas Gland
EnR-Pa-008	Enumerate causes of Cushing syndrome with lab investigations Enlist causes and clinical features of adrenocortical insufficiency (Addison disease)	Pathology	Pathology of Adrenal Gland
EnR-Pa-009	Describe the morphological features of inflammatory disorders of breast.		Breast

EnR-Pa-010	Enumerate the infectious agents that cause the lower genital tract infections and PIDs along with lab investigations	Microbiology	Female Reproductive Pathology
	Enumerate causes of infertility in females along with hormonal investigations Enlist causes of dysfunctional uterine bleeding with histopathological features Discuss pathophysiology and lab diagnosis of eclampsia and preeclampsia Enlist sites of abnormal placental implantations (ectopic pregnancy)	Pathology	

EnR-Pa-011	Enumerate causes of inflammation of male genital tract Enlist causes of male infertility with semen analysis Describe pathological features of testicular torsion	Pathology	Male Reproductive Pathology
DISEASE PREVENTION & IMPACT			
CODE	COMMUNITY MEDICINE	TOTAL HOURS = 05	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
EnR-CM-001	Define Diabetes Mellitus according to WHO (World Health Organization) criteria Classify types of Diabetes Mellitus Describe epidemiological risk factors for Diabetes Epidemiological distribution & statistics of DM Screening of community for Diabetes Apply levels of prevention for control of Diabetes.	Community Medicine and Public Health	Diabetes
EnR-CM-002	Classify types of genetic disorders common in community. Describe health promotional measures to control genetic diseases. Describe screening programs for community to prevent genetic disorders. Apply levels of preventive and social measures for control of genetic abnormalities.	Community Medicine	Genetics
EnR-CM-003	Define women health and life cycle approach for healthrelated events. Highlight statistics related to human reproductive health issues.	Community Medicine	Reproductive health

	Enumerate health related problems across a woman's reproductive lifetime. Explain the components of reproductive health.		
CODE	BEHAVIORAL SCIENCES	TOTAL HOURS = 1	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
EnR-BhS-001	Discuss common sexual dysfunctions and their prevalence, with emphasis on culture bound syndromes. Identify the various biological, psychological, and relational factors that can contribute to sexual difficulties. Discuss barriers to seek help. Discuss the importance of person centered and nonjudgmental approach when discussing sexual health concerns. Explain the ethical obligations of healthcare professionals in respecting patient confidentiality and informed consent when addressing sexual health issues.	Behavioral Sciences	Sexual difficulties and Medical Practices

AGING			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC
EnR-Ag-001	Enlist the changes that occur in female body after menopause.	Gynae/ OBS	Menopause


Practicals

PRACTICAL

HISTOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 11	
		DISCIPLINE	TOPIC
EnR-A-052	Identify draw & Label the Pituitary gland under light microscope	Anatomy	Pituitary gland
EnR-A-053	Identify draw & label the Thyroid & Parathyroid glands under light microscope	Anatomy	Thyroid & Parathyroid
EnR-A-054	Identify draw & Label the Adrenal gland under light microscope	Anatomy	Adrenal Gland
EnR-A-055	Identify draw & Label Testes, Epididymis & Vas deferens under the light Microscope	Anatomy	Testes Epididymis Vas Deferens
EnR-A-056	Identify draw & label the seminal vesicle & prostate gland under light Microscope	Anatomy	Seminal Vesicle Prostate Gland
EnR-A-057	Identify, draw and label the ovaries under light microscope	Anatomy	Ovaries
EnR-A-058	Identify, draw and label the slide of different phases of uterus under light microscope	Anatomy	Uterus
EnR-A-059	Identify, draw and label the fallopian tube under light microscope	Anatomy	Fallopian Tube
EnR-A-060	Identify, draw and label the cervix under light microscope	Anatomy	Cervix
EnR-A-061	Identify, draw and label the vagina under light microscope	Anatomy	Vagina
EnR-A-062	Identify, draw and label the mammary gland (different stages) under light microscope	Anatomy	Mammary gland

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 06

		DISCIPLINE	TOPIC
EnR-B-030	Demonstrate DNA extraction	Biochemistry	DNA

EnR-B-031	Demonstrate Gel Electrophoresis	Biochemistry	Electrophoresis
EnR-B-032	Demonstrate PCR	Biochemistry	PCR
EnR-B-033	Demonstrate ELISA (enzyme-linked immunoassay) to measure concentration of hormones	Biochemistry	ELISA

PHYSIOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 04	
		DISCIPLINE	TOPIC
EnR-P-018	Perform Pregnancy test (urine+Blood) Interpret BetaHCG values to diagnose a normal pregnancy	Physiology	Pregnancy test
EnR-P-019	Diagram/flow chart showing the signs and symptoms of hypothyroidism./hyperthyroidism		Thyroid

PHARMACOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 02	
		DISCIPLINE	TOPIC
En-R-Ph-003	Label the diagram/flow chart showing the synthesis and MOA of hypothalamic, pituitary and gonadal hormones.	Pharmacology	Hypothalamic and Pituitary and Gonadal Hormones

PATHOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 15	
		DISCIPLINE	TOPIC

EnR-Pa-012	Identify the salient microscopic features of pituitary adenomas.	Pathology	Pituitary adenomoas
EnR-Pa-013	Identify the salient gross and microscopic features of Multinodular goiter	Pathology	Thyroid Disorders
	Identify the salient gross and microscopic features of Diffuse & Multinodular Goiter		
	Identify the salient microscopic features of		

	i. Hashimoto Thyroid ii. Granulomatous Thyroid iii. Grave's Disease.		
	Interpretation of Thyroid Function Tests in Thyroid disorders		
EnR-Pa-014	Interpretation of causes of Hypercalcemia according to PTH levels		Parathyroid Disorders
	Identify the salient morphological features of Parathyroid hyperplasia		
EnR-Pa-015	Interpretation of BSF, GTT, and HbA1C to diagnose Diabetes Mellitus.		Diabètes Melllitus
EnR-Pa-016	Interpretation of lab tests in diagnosing Cushing syndrome and Addison Disease.		Adrenal Disorders
EnR-Pa-017	Discuss lab tests regarding: i. Hyperthyroidism ii. Hypothyroidism iii. Diabetes mellitus iv. Diabetic ketoacidosis		Clinical chemistry Scenarios

Assessment Matrix

The Assessment Matrix demonstrates the alignment of assessment methods with the intended learning outcomes and teaching–learning strategies employed throughout the **Endocrinology & Reproduction-I** module. A balanced combination of formative and summative assessment methods is utilized to evaluate students' knowledge, practical skills, clinical reasoning, communication, professionalism and competency development in accordance with PMDC standards and UHS assessment regulations.

Theme	Formative Assessment	Summative Assessment	Assessment Domain
Introduction to Endocrinology	MCQs, Tutorials, Classroom Discussions, Viva	Theory Paper, Viva Voce	Cognitive
Pituitary Gland	MCQs, Practical Demonstration, Histology Practical, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Thyroid & Parathyroid Glands	MCQs, Case-Based Discussion, Practical Assessment, Thyroid Function Test Interpretation	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Adrenal Glands	MCQs, Practical Exercises, Case Discussion, Viva	Theory Paper, Practical Examination (OSPE)	Cognitive, Psychomotor
Pancreatic Hormones	MCQs, Blood Glucose Interpretation, Practical Assessment, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor, Affective
Reproduction & Genetics	MCQs, Seminars, Genetic Case Discussion, Viva, Classroom Participation	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor, Affective

Block Assessment Summary

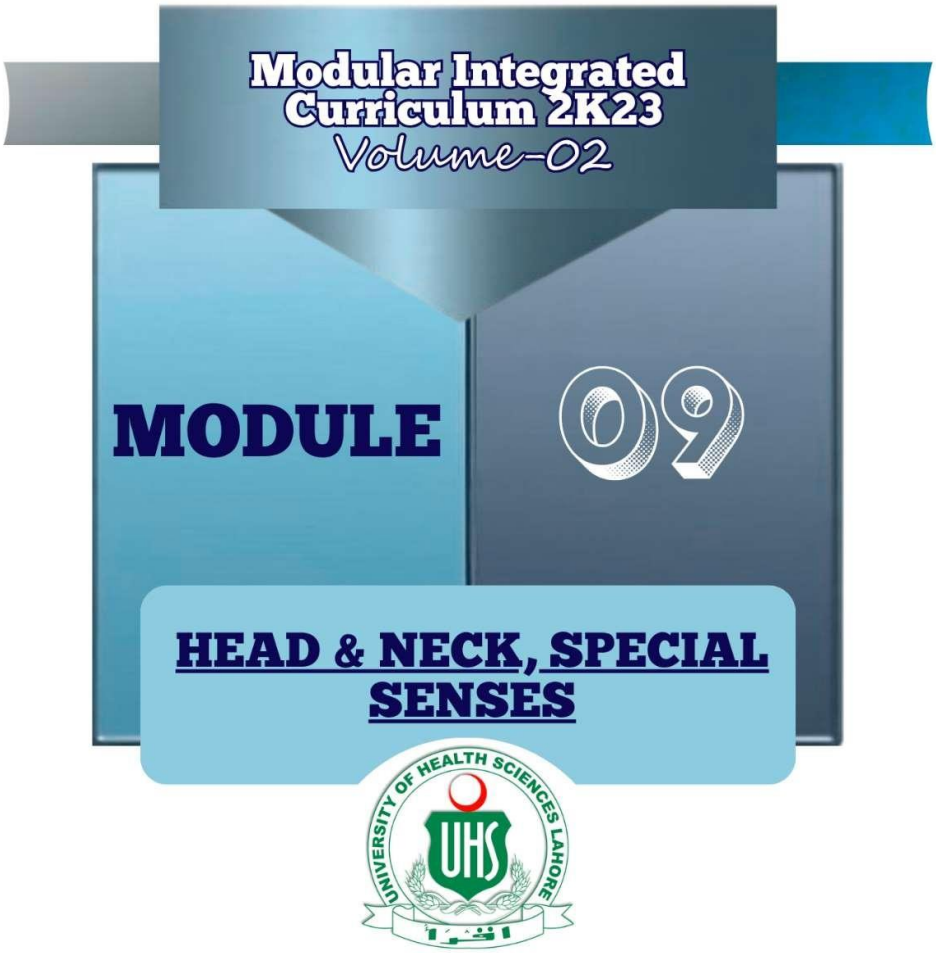
Assessment Component	Method
Formative Assessment	MCQs, Tutorials, Practical Exercises, Histology Practicals, Case-Based Discussions, Viva Voce, Laboratory Exercises, Seminars and Classroom Participation
Summative Assessment	Integrated Theory Examination (MCQs as per UHS regulations), Practical Examination (OSPE), Viva Voce (where applicable)
Feedback Mechanism	Immediate verbal feedback, written feedback, post-assessment review sessions and individualized academic guidance
Remediation	Conducted in accordance with institutional assessment policy and UHS promotion regulations

Assessment Alignment

Assessment within the Endocrinology & Reproduction-I module is constructively aligned with the intended learning outcomes and instructional strategies. Students are assessed on their understanding of endocrine anatomy, embryology, histology, physiology, biochemistry, pathology, pharmacology and reproductive biology. Practical assessments evaluate competencies in endocrine laboratory investigations, interpretation of hormone profiles, blood glucose monitoring, thyroid function tests and clinical reasoning related to endocrine and reproductive disorders. The integration of formative and summative assessments ensures evaluation across the cognitive, psychomotor and affective domains while supporting competency-based medical education.

References

1. **University of Health Sciences (UHS), Lahore.** *Integrated MBBS Curriculum 2K23.*
2. **University of Health Sciences (UHS), Lahore.** *Second Professional MBBS Study Guide – Module 08: Endocrinology & Reproduction-I.*
3. **Pakistan Medical & Dental Council (PMDC).** *Undergraduate Medical Education Standards* (latest applicable edition).
4. **World Federation for Medical Education (WFME).** *Global Standards for Quality Improvement in Medical Education.*
5. **Quaid-e-Azam Medical College, Bahawalpur.** *Department of Medical Education (DME) Curriculum and Assessment Guidelines.*
6. **Institutional Assessment Policy**, Quaid-e-Azam Medical College, Bahawalpur.


Modular Integrated Curriculum 2K23
Volume-02
MODULE
09
HEAD & NECK, SPECIAL SENSES
UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS

MODULE RATIONALE

The second year MBBS students will have a detailed understanding of the anatomy, physiology, and clinical aspects of the Head and Neck, Special Senses. This knowledge is critical for the diagnosis and treatment of a wide range of diseases associated with these senses.

This module covers the important structures and functions of the Head & Neck, eye, ear, tongue, nose, as well as the pathologies and treatments associated with them. This includes common conditions such as cataracts, glaucoma, aging changes, hearing loss, tinnitus, otitis media, olfactory disorders.

Additionally, the special senses module includes training in relevant clinical examination skills, such as ophthalmoscopy, otoscopy, rhinoscopy, and vestibular testing. These skills are essential for identifying and diagnosing special senses conditions, and for monitoring the effectiveness of treatments.

An understanding of these structures is important for the general practice of medicine as they play a critical role in the overall health and well-being of patients. For example, vision and hearing loss can lead to a decline in cognitive function and social isolation, while smell and taste disorders can affect appetite and nutrition.

MODULE OUTCOMES

- Integrate the anatomical and pathophysiological aspects of the Head & Neck, eye, ear, nose, tongue, vestibular system and the neural pathways, receptors involved in their function with the clinical aspects.
- Develop the ability to identify and diagnose common pathologies such as cataracts, glaucoma, age-related degeneration, hearing loss, impacted wax, otitis media and olfactory disorders.
- Demonstrate the clinical examination (simulation) skills necessary for the assessment of special senses, such as ophthalmoscopy, otoscopy, rhinoscopy, and vestibular testing.
- Differentiate the differential diagnosis and options available for special senses conditions, including medical, surgical, and rehabilitative approaches.
- Illustrate awareness of the impact on overall health and well-being, the importance of preventing and early detection of related disorders.
- Develop the ability to communicate effectively with patients and their families, including explaining diagnosis and treatment options, and providing emotional support.
- Practice the attitude to work in a multidisciplinary team, collaborating with other healthcare professionals to provide comprehensive care for patients.

Equip themselves with the ability to appreciate the significance of lifelong learning and professional development to keep up with latest advances in the clinical field.

THEMES

- Vision
- Hearing
- Taste
- Olfaction
- Head & Neck

CLINICAL RELEVANCE

- Glaucoma
- Cataract
- Night Blindness
- Conjunctivitis
- Impacted Wax
- Otitis Media
- Otomycosis
- Glue Ear
- Rhinitis

IMPLEMENTATION TORs

- The time calculation for completion of modules and blocks is based on 35 hours per week. Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

BLOCK AT A GLANCE

Item	Details
Programme	MBBS
Academic Year	Second Professional MBBS
Block	Block 5
Module	Head & Neck and Special Senses (Module 09)
Curriculum	UHS Integrated MBBS Curriculum 2K23
Educational Model	Integrated Competency-Based Curriculum
Duration	As per UHS Academic Calendar
Major Themes	Vision, Hearing, Taste, Olfaction, Head & Neck
Integrated Disciplines	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Ophthalmology, Otorhinolaryngology (ENT), Radiology
Learning Domains	Cognitive, Psychomotor, Affective
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning (CBL), Self-Directed Learning (SDL), Clinical Correlation
Assessment	Formative Assessment, MCQs, SEQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Clinical Correlation	Glaucoma, Cataract, Night Blindness, Conjunctivitis, Impacted Wax, Otitis Media, Otomycosis, Glue Ear, Rhinitis
PMDC Competencies Addressed	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate

CURRICULUM DASHBOARD

Curriculum Indicator	Block 5 – Head & Neck and Special Senses
Programme	MBBS
Academic Year	Second Professional
Module	Head & Neck and Special Senses
Curriculum	UHS Integrated Curriculum 2K23
Major Themes	5
Module Outcomes	Integrate the anatomy, physiology and pathophysiology of the head and neck and special senses; perform basic clinical examination skills; differentiate common disorders; appreciate multidisciplinary management and preventive strategies.
Integrated Disciplines	Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Ophthalmology, ENT
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning, Self-Directed Learning
Assessment Methods	MCQs, SEQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Learning Domains	Cognitive, Psychomotor, Affective
PMDC Competencies	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate
Horizontal Integration	Integration across Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Community Medicine, Behavioral Sciences, Ophthalmology and ENT
Vertical Integration	Ophthalmology, Otorhinolaryngology, Neurology, Neurosurgery, Radiology
Clinical Correlation	Cataract, Glaucoma, Conjunctivitis, Otitis Media, Hearing Loss, Rhinitis, Olfactory Disorders, Disorders of Taste
Quality Assurance	Continuous assessment, structured feedback, curriculum review, DME monitoring, PMDC and UHS guidelines

Theme-wise Curriculum Mapping Matrix

The Theme-wise Curriculum Mapping Matrix demonstrates the integration of basic and clinical sciences within the **Head & Neck and Special Senses** module. Each theme aligns the intended learning outcomes with integrated disciplines, teaching–learning strategies, assessment methods, PMDC competencies, and horizontal and vertical integration to ensure constructive alignment throughout the module.

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
Vision	Describe the anatomy, embryology, histology and physiology of the eye and visual pathway. Correlate normal vision with common ophthalmic disorders.	Anatomy, Embryology, Histology, Physiology, Ophthalmology	Interactive lectures, practical sessions, demonstrations, CBL, SDL	MCQs, SEQs, Practical, OSPE	Medical Expert, Scholar	Anatomy + Histology + Physiology	Ophthalmology
Hearing	Explain the anatomy and physiology of the ear and auditory pathway, and correlate them with common hearing disorders.	Anatomy, Embryology, Histology, Physiology, ENT	Interactive lectures, demonstrations, practical sessions, CBL	MCQs, Practical, Viva	Medical Expert, Scholar	Anatomy + Physiology + ENT	Otorhinolaryngology
Taste	Describe the anatomy and physiology of taste receptors and gustatory pathways, and explain disorders of taste sensation.	Anatomy, Physiology, Biochemistry	Interactive lectures, tutorials, demonstrations	MCQs, Practical	Medical Expert	Anatomy + Physiology + Biochemistry	ENT, Neurology
Olfaction	Explain the anatomy and physiology of the olfactory system and correlate with common	Anatomy, Physiology, ENT	Interactive lectures, demonstrations, CBL	MCQs, Viva	Medical Expert, Scholar	Anatomy + Physiology	ENT, Neurology

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
	disorders affecting smell.						
Head & Neck	Describe the anatomy, embryology, histology and neurovascular supply of the head and neck and correlate with common clinical conditions affecting this region.	Anatomy, Embryology, Histology, Pathology, Community Medicine, Behavioral Sciences	Interactive lectures, practical sessions, demonstrations, CBL, SDL	MCQs, SEQs, Practical Examination, OSPE	Medical Expert, Communicator, Scholar, Health Advocate	Anatomy + Embryology + Histology + Pathology	ENT, Ophthalmology, Neurosurgery, Radiology

Theme Summary

Theme	Educational Focus
Vision	Eye anatomy, visual physiology, visual pathway and common eye disorders
Hearing	Ear anatomy, auditory physiology, hearing mechanisms and hearing disorders
Taste	Gustatory receptors, taste pathways and disorders of taste
Olfaction	Olfactory receptors, smell pathways and olfactory disorders
Head & Neck	Head and neck anatomy, embryology, neurovascular supply and clinical correlations

Theme IntegrationThe

Head & Neck and Special Senses module integrates Anatomy, Embryology, Histology, Physiology, Biochemistry, Pathology, Community Medicine, Behavioral Sciences, Ophthalmology and Otorhinolaryngology (ENT) to provide students with a comprehensive understanding of the head and neck region and the special senses. The module emphasizes the relationship between normal structure and function and common disorders such as cataract, glaucoma, hearing loss, otitis media, rhinitis and disorders of taste and smell, promoting clinical reasoning, preventive healthcare and competency-based le

Weekly Curriculum Map

The Weekly Curriculum Map outlines the logical sequence of learning activities throughout the **Head & Neck and Special Senses** module. It demonstrates the progressive integration of basic medical sciences with clinical relevance, ensuring the achievement of the intended module learning outcomes through competency-based medical education.

Week	Major Theme	Integrated Disciplines	Teaching–Learning Methods	Assessment
Week 1	Head & Neck Anatomy and Embryology	Anatomy, Embryology, Histology	Interactive lectures, cadaveric demonstrations, practical sessions, SDL	Formative MCQs, Practical
Week 2	Vision	Anatomy, Histology, Physiology, Ophthalmology	Interactive lectures, demonstrations, practical sessions, CBL	MCQs, Practical Assessment
Week 3	Hearing	Anatomy, Physiology, ENT	Interactive lectures, practical sessions, demonstrations, case-based learning	MCQs, SEQs
Week 4	Taste & Olfaction	Anatomy, Physiology, Biochemistry, ENT	Interactive lectures, tutorials, practical sessions, SDL	MCQs, OSPE
Week 5	Clinical Correlation of Head & Neck and Special Senses	Pathology, Community Medicine, Behavioral Sciences, Ophthalmology, ENT	Interactive lectures, CBL, seminars, demonstrations	Practical Assessment, Viva
Week 6	Integrated Revision & Block Assessment	All Integrated Disciplines	Revision sessions, practical revision, small-group discussions, feedback	Block Examination (Theory & Practical)

Weekly Progression

The Head & Neck and Special Senses module follows a system-based integrated approach, beginning with the anatomy and embryological development of the head and neck, progressing through the physiology of vision, hearing, taste and olfaction, and concluding with clinical application, disease prevention and management of common disorders. Practical sessions, clinical demonstrations, case-based learning and self-directed learning are integrated throughout the module to strengthen students' understanding of ophthalmic and otorhinolaryngological conditions while promoting competency-based medical education.

PMDC Competency Mapping

The PMDC Competency Mapping Matrix demonstrates the alignment of the Head & Neck and Special Senses module with the PMDC Undergraduate Medical Education Competency Framework. Through an integrated systems-based approach, the module develops students' understanding of the anatomy, physiology and pathology of the head and neck region and special senses while fostering professionalism, communication, teamwork, leadership and lifelong learning in accordance with competency-based medical education.

Theme	Medical Expert	Communicator	Collaborator	Leader	Professional	Scholar	Health Advocate
Vision	✓	✓	✓		✓	✓	✓
Hearing	✓	✓	✓		✓	✓	✓
Taste	✓	✓	✓		✓	✓	
Olfaction	✓	✓	✓		✓	✓	✓
Head & Neck	✓	✓	✓	✓	✓	✓	✓

Competency Integration Summary

PMDC Competency	Contribution within the Module
Medical Expert	Develops comprehensive knowledge of head and neck anatomy, embryology, histology, physiology, pathology and clinical application related to the special senses.
Communicator	Enhances communication skills through patient examination demonstrations, case discussions, seminars and clinical presentations.
Collaborator	Promotes teamwork during practical sessions, laboratory work, tutorials and interdisciplinary learning activities.
Leader	Encourages responsibility, ethical decision-making and leadership during collaborative learning and community health promotion.
Professional	Reinforces ethical practice, patient safety, confidentiality and professional behaviour throughout teaching and assessment.
Scholar	Promotes self-directed learning, critical thinking, evidence-based medicine and lifelong learning.
Health Advocate	Develops awareness regarding prevention and early detection of blindness, hearing impairment, rhinitis, oral health problems and other disorders affecting the head and neck region.

Competency Alignment

The **Head & Neck and Special Senses** module primarily develops the **Medical Expert** competency by providing students with an integrated understanding of the normal structure and function of the head and neck region and special senses. Through integration with Community Medicine, Behavioural Sciences, Ophthalmology and Otorhinolaryngology (ENT), the module further strengthens competencies in communication, collaboration, professionalism, scholarship, leadership and health advocacy, particularly in the prevention, diagnosis and management of common disorders such as cataract, glaucoma, conjunctivitis, hearing loss, otitis media, rhinitis and disorders of taste and smell.

Teaching–Learning Matrix

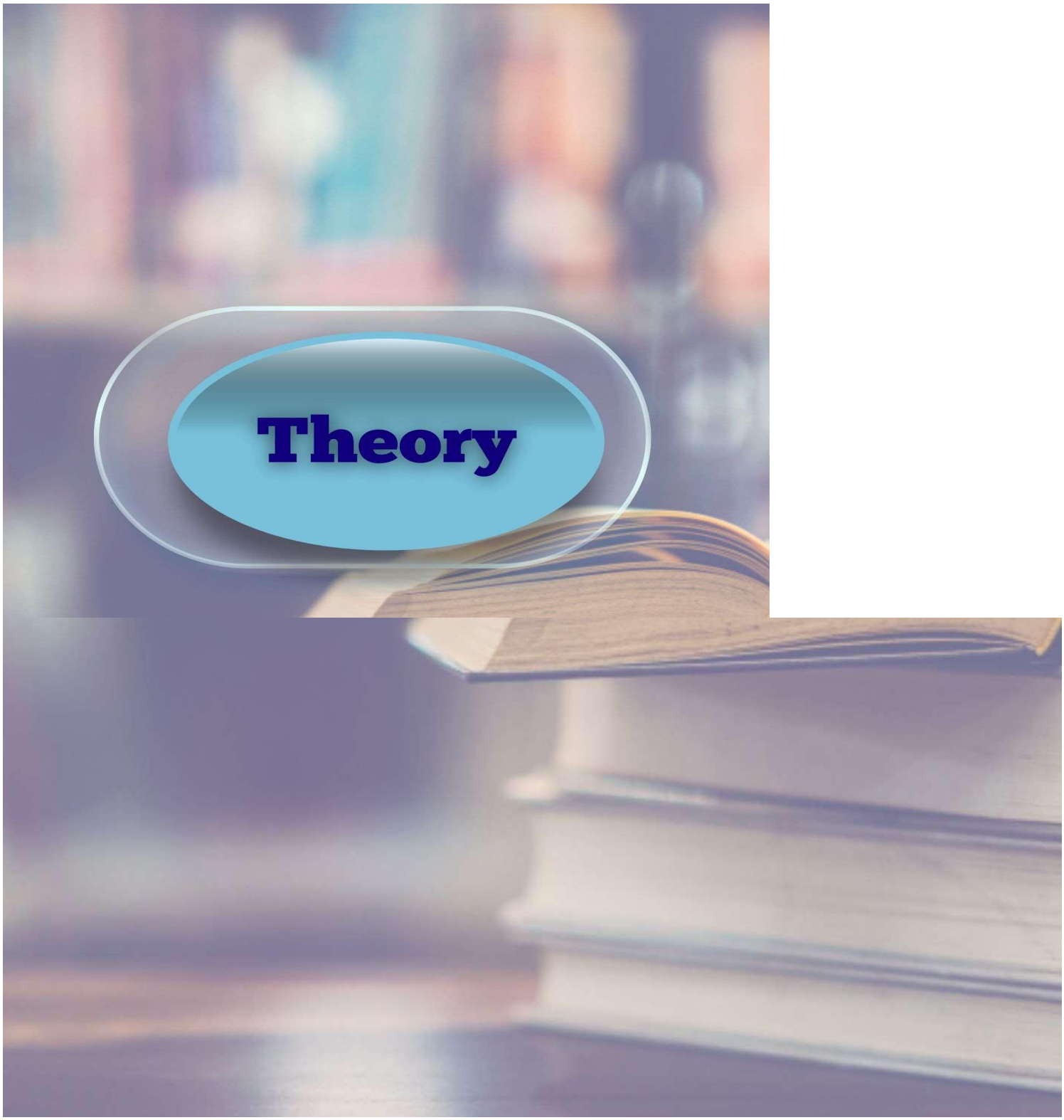
The Teaching–Learning Matrix outlines the instructional strategies employed throughout the **Head & Neck and Special Senses** module to facilitate achievement of the intended learning outcomes. The module adopts an integrated, learner-centred approach that combines basic medical sciences with clinical application through a variety of active learning strategies in accordance with the principles of competency-based medical education.

Theme	Interactive Lectures	Practical / Laboratory	Demonstration	Small Group Discussion (SGD)	Case-Based Learning (CBL)	Self-Directed Learning (SDL)	Early Clinical Exposure / Clinical Correlation
Vision	✓	✓	✓	✓	✓	✓	✓
Hearing	✓	✓	✓	✓	✓	✓	✓
Taste	✓	✓	✓	✓	✓	✓	✓
Olfaction	✓	✓	✓	✓	✓	✓	✓
Head & Neck	✓	✓	✓	✓	✓	✓	✓

Teaching–Learning Strategy Summary

The **Head & Neck and Special Senses** module adopts an integrated, student-centred teaching approach to facilitate the development of foundational knowledge, clinical reasoning, practical skills and professional attitudes. Interactive lectures provide the conceptual framework, while anatomy demonstrations, histology practicals, physiology laboratory sessions and small-group discussions reinforce understanding of the head and neck region and special senses. Case-based learning and self-directed learning promote critical thinking and lifelong learning, whereas continuous clinical correlation enables students to relate normal anatomy and physiology to common ophthalmological and otorhinolaryngological disorders.


Syllabus


Theory

NORMAL STRUCTURE			
GROSS ANATOMY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 56	
		DISCIPLINE	TOPIC
HNSS-A-001	Define the boundaries and openings of orbital cavity. List orbital contents and structures traversing these openings.	Human Anatomy	Eye
	In a tabulated manner list the extraocular and intraocular muscles of eyeball giving their nerve supply and actions		
	List and define the movements of eyeball with special reference to orbital and visual axis		
	Describe the functional modalities, course, distribution, branches of oculomotor, trochlear and abducent nerve. Describe the location, roots and distribution of ciliary ganglion.		
	Describe the course and distribution of optic nerve in reference to visual pathway. Give the effects of its lesions.		
	Give the clinical correlates of nerves supplying the eyeball and its muscles. Give anatomical justification for Horner's syndrome.		
	Describe the course and branches of ophthalmic artery mentioning its origin and termination.		
	Describe the structure of eyelids, conjunctiva and tarsal glands with their neurovascular supply		
	List the parts of Lacrimal apparatus giving their location and anatomical features. Describe the nerve supply of lacrimal gland.	Human Anatomy	

	Describe the location, roots and distribution of pterygopalatine ganglion.	Human Anatomy	

	Give the anatomical structure of eyeball emphasizing on its three coats and their neurovascular supply	Human Anatomy	
HNSS-A002	Describe the boundaries of nasal cavity: nasal septum, lateral wall of nose, roof and floor. Give their anatomical features and neurovascular supply.	Human Anatomy	Nose
	Describe the anatomical features and neurovascular supply of external nose	Human Anatomy	
	List the paranasal sinuses giving their locations, openings, neurovascular supply and clinical significance.	Human Anatomy	
	Describe the course and distribution of olfactory nerve in reference to olfactory pathway. Give the effects of its lesions.	Human Anatomy	
	Describe the anatomical features and neurovascular supply of external ear	Human Anatomy	
HNSS-A003	Describe the boundaries, contents, neurovascular supply and communications of middle ear cavity.	Human Anatomy	Ear
	Describe the parts, anatomical features and neurovascular supply of internal ear.	Human Anatomy	
	Describe the course and distribution of vestibulocochlear neve mentioning the effects of its lesion. Describe auditory pathway.	Human Anatomy	
HNSS-A004	Discuss lesions of motor and sensory nerves supplying the tongue. Discuss the anatomical correlates of lingual carcinoma in reference to lymphatic drainage of tongue.	Human Anatomy	Tongue
HNSS-A005	Describe the features of Norma Frontalis, Norma Verticalis, Norma Parietalis, Norma occipitalis and Norma Basalis	Human Anatomy	Skull

	Describe the features of Norma lateralis: temporal, infratemporal & pterygopalatine fossae giving their boundaries, contents and communications.	Human Anatomy	
	Discuss the sutures and fontanelles of skull, their age changes and clinical significance.	Human Anatomy	
HNSS-A-006	List the layers of scalp and describe the anatomical features with neurovascular supply and lymphatic drainage of scalp.	Human Anatomy	Scalp
	Give anatomical justification of spread of scalp infections, profuse bleeding in superficial scalp lacerations, gaping of scalp wounds and black eye.	Human Anatomy	
HNSS-A-007	Enlist in tabulated manner the muscles of facial expression and mastication, giving their nerve supply and actions. Define modiolus.	Human Anatomy	Muscles of facial expressions
HNSS-A-008	Describe the functional modalities, course, branches, and distribution of cranial nerves innervating the face (sensory and motor): trigeminal and facial nerves	Human Anatomy	Neurovascular supply of face
	Describe the vascular supply and lymphatic drainage of face.	Human Anatomy	
	Draw a diagram to illustrate cutaneous innervation of face.	Human Anatomy	
	Discuss anastomoses of facial artery with contralateral vessels and branches of internal carotid artery with their clinical significance.	Human Anatomy	
HNSS-A-009	Describe the danger area of face with it its clinical significance. Define the routes of spread of infection from face and scalp to intracranially.	Human Anatomy	Danger area

HNSS-A010	Describe the bony features and muscle attachment of mandible.	Human Anatomy	Mandible.
	Classify temporomandibular joint mentioning its ligaments, relations, nerve supply and movements (with their mechanics and muscles producing them).	Human Anatomy	

HNSS-A-011	Describe the location, roots and distribution of otic and submandibular ganglia.	Human Anatomy	Otic and Submandibular ganglia.
HNSS-A-012	Describe the anatomical features of Hyoid bone and give attachments on the bone.	Human Anatomy	Hyoid bone
HNSS-A-013	Enumerate the types of cervical vertebrae and list the differences between them. Describe the anatomical features and attachments on cervical vertebrae.	Human Anatomy	Cervical vertebrae
	Classify the joints of cervical vertebrae mentioning their ligaments, movements with muscle producing them and neurovascular supply.	Human Anatomy	
HNSS-A-014	List the prevertebral muscles of cervical region. Describe their attachments, actions and innervation.	Human Anatomy	Prevertebral muscles
HNSS-A-015	Enumerate parts of deep cervical fascia with their respective extents, attachments, relations and contents.	Human Anatomy	Deep cervical fascia
HNSS-A-016	Describe the facial spaces in head and neck mentioning their communications and their relation to spread of infection.	Human Anatomy	Facial spaces
HNSS-A-017	Describe the attachments, actions and nerve supply of infrahyoid and suprahyoid muscles of neck.	Human Anatomy	Infrahyoid and suprahyoid muscles
HNSS-A-018	Describe the location, formation and distribution of ansa cervicalis.	Human Anatomy	Ansa cervicalis.
HNSS-A-019	Describe the attachments, actions and nerve supply of sternocleidomastoid and trapezius.	Human Anatomy	Sternocleidomastoid and trapezius

HNSS-A-020	Describe the boundaries and contents of suboccipital, anterior and posterior triangles of neck.	Human Anatomy	Triangles of neck
HNSS-A-021	Describe the cervical part of trachea and esophagus with their neurovascular supply.	Human Anatomy	Trachea and esophagus
HNSS-A-022	Describe the location, anatomical features and vascular supply of thyroid and parathyroid glands. List the variations in location of parathyroid glands.	Human Anatomy	Thyroid, Parathyroid glands
HNSS-A-023	Describe the carotid arteries mentioning their origin, course, branches, distribution and termination.	Human Anatomy	Carotid arteries
HNSS-A-024	Describe carotid body and carotid sinus and give their clinical significance.	Human Anatomy	Carotid body
HNSS-A-025	Give the venous drainage of Head and Neck region. Describe the formation, tributaries and area of drainage of vessels constituting jugular venous system.	Human Anatomy	Head & Neck venous supply
HNSS-A-026	Name the superficial and deep cervical lymph nodes and give their location and drainage areas	Human Anatomy	Lymphatics
HNSS-A-027	Describe the location, formation, branches, distribution and lesions of cervical plexus	Human Anatomy	Cervical plexus
HNSS-A-028	Name the pharyngeal constrictor muscles defining their attachments, innervation and structure traversing the gaps between adjacent muscles.	Human Anatomy	Pharynx
HNSS-A-029	Name the parts of larynx giving their extent, anatomical features, musculoskeletal framework and neurovascular supply.	Human Anatomy	Larynx
HNSS-A-030	Discuss the location, anatomical features, relations and vascular supply of tonsils: nasopharyngeal, palatine and lingual.	Human Anatomy	Tonsils
EMBRYOLOGY & POST-NATAL DEVELOPMENT			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 15	

		DISCIPLINE	TOPIC
HNSS-A-031	Describe the development of Skull	Embryology	Skull
HNSS-A-032	List the components of pharyngeal apparatus. Describe the development of pharyngeal arches, grooves, pouches and membrane and give derivatives and fate of each of them.	Embryology	Pharyngeal apparatus pharyngeal arches
HNSS-A-033	Describe the development and histogenesis of auditory tube, tympanic cavity, tonsils, thymus and parathyroid	Embryology	auditory tube, tympanic cavity, tonsils, thymus and parathyroid
HNSS-A-034	Discuss the embryological basis of congenital anomalies related to the development of pharyngeal	Embryology	Congenital anomalies
	arches, pharyngeal clefts and pharyngeal pouches: cervical sinus/fistula/cyst, 1st arch syndrome, DiGeorge syndrome, congenital malformations of thymus and parathyroid glands		
HNSS-A-035	Describe the development of face and nasolacrimal duct and their respective congenital anomalies.	Embryology	Face and nasolacrimal duct
HNS-A-036	Describe the development of nasal cavity and paranasal sinuses. Give the associated congenital anomalies.	Embryology	Nose
HNSS-A-037	Describe the development of larynx.	Embryology	Larynx
HNSS-A-038	Describe the development of lip and their associated congenital malformations.	Embryology	Lips and palate
HNSS-A-039	Describe the development of optic vesicle and retina.	Embryology	Eye & ear
	Describe the development of cornea, sclera, choroid, iris, ciliary body and lens and relate it to their respective congenital anomalies.	Embryology	

	Describe the development of internal ear and give the embryological basis of associated congenital anomalies.	Embryology	
MICROSCOPIC ANATOMY (HISTOLOGY & PATHOLOGY)			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 08	
		DISCIPLINE	TOPIC
HNSS-A040	Describe the histological structure of layers of eyeball, eyelid and retina.	Histology	Eye
	Describe the light and electron microscopic structure of cornea.	Histology	
HNSS-A-041	Describe the histological and ultramicroscopic structure of internal ear with special reference to Organ of Corti.	Histology	Ear
NORMAL FUNCTION			
MEDICAL PHYSIOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 30	
		DISCIPLINE	TOPIC
HNSS-P-001	Define and describe the visual acuity	Physiology	Visual Acquity
	Define Emmetropia	Physiology	
	Enlist the errors of refraction	Physiology	
	Explain the cause, features, physiological basis, and correction of Hyperopia	Physiology	
	Explain the cause, features, physiological basis, and correction of myopia	Physiology	

	Explain the cause, features, physiological basis, and correction of astigmatism	Physiology	
	Describe the pathophysiology and treatment of cataract	Integrate with Ophthalmology	
HNSS-P-002	Interpret common treatment modalities for Refractive errors	Integrate with Ophthalmology	Refractive Errors
HNSS-P-003	Describe the mechanism of formation and outflow of aqueous humor	Physiology	Fluid systems of the Eye
	Describe normal value of intraocular pressure and its regulation	Physiology	
	Describe the method for measuring the intraocular pressure	Integrate with Ophthalmology	
HNSS-P-004	Discuss the clinical features of Open Angle and Angle Closure Glaucoma Describe the causes and features and pathophysiology of glaucoma	Integrate with Ophthalmology	Glaucoma
HNSS-P-005	Describe the physiological anatomy and function of structural elements of retina	Physiology	Retina

	Enlist different layers of retina		
	Explain the significance of melanin pigment in retina		
	Describe macula and foveal region of retina and their significance		
	Describe the structure of rods and cones		
	Comment on the location of optic disc and its significance		
	Describe the cause, features, and treatment of retinal detachment		
	Differentiate the Visual Pathway from the Cones to the Ganglion Cells and from rods to the ganglion cells		
	Enlist the current investigations for Retinal Diseases	Integrate with Ophthalmology	

HNSS-P006	Describe the rhodopsin-retinal visual cycle	Physiology	Photochemistry of vision
	Describe the mechanism of excitation of rods/ rods receptor potential	Physiology	
	Describe the causes and treatment of night blindness	Physiology	
HNSS-P007	Define and describe different mechanisms of light adaptation	Physiology	Adaptation
	Define and describe different mechanisms of dark adaptation	Physiology	
	Enumerate the diseases leading to Night Blindness and retinal detachment	Integrate with Ophthalmology	
HNSS-P-008	Explain the tri color mechanism of color determination	Physiology	Color vision
	Define term protanopes, deuteranopes, tritanopes	Physiology	
	Enlist the types of color blindness and their causes	Physiology	
	Enlist clinical features of Color vision deficiencies	Integrate with Ophthalmology	
HNSS-P-009	Trace the visual pathway	Physiology	Visual Pathways
	Enlist and describe the abnormalities of visual pathway & visual field		

	Explain the effect of removal of primary visual cortex		
HNSS-P010	Define the physiological blind spot and describe its location	Physiology	Field of vision
	Define scotoma/ pathological blind spot and enlist causes	Physiology	
HNSS-P-011	Illustrate the abnormalities of field of vision	Integrate with Ophthalmology	Visual fields
HNSS-P-012	Describe the muscular and neural control of eye movements	Physiology	Eye movements
HNSS-P-013	Define and enlist the types of Strabismus	Integrate with Ophthalmology	Strabismus

HNSS-P-014	Explain the mechanism of accommodation	Physiology	Accommodation
	Enlist the components of near response in accommodation	Physiology	
	Describe the neural pathway for accommodation reflex	Physiology	
	Describe the regulation of accommodation	Physiology	
	Enlist the clinical features of Presbyopia	Integrate with Ophthalmology	
HNSS-P015	Trace the neural pathway for pupillary light reflex	Physiology	Pupillary light reflex
	Explain the pupillary light reflexes or reactions in CNS diseases	Physiology	
	Describe the cause and features of Horner syndrome	Physiology	
	Illustrate the differential diagnosis of Anisocoria	Integrate with Ophthalmology	
HNSS-P016	Describe the physiological anatomy of outer and middle ear	Physiology	Sense of hearing
	Enlist the functions of middle ear	Physiology	
	Discuss clinical features and treatment of impacted wax	Integrate Otorhinolaryngology	
	Define causes and clinical features of Otomycosis	Integrate Otorhinolaryngology	
	Describe the mechanism of impedance matching and its significance	Physiology	

	Describe the mechanism of attenuation reflex and its significance	Physiology	
HNSS-P-017	Describe the physiological anatomy of inner ear	Physiology	Inner Ear/ Cochlea
	Describe the mechanism of transmission of sound waves in cochlea	Physiology	

HNSS-P018	Describe the physiological anatomy and function of organ of Corti	Physiology	Organ of Corti
	Describe the mechanism of generation of endocochlear potential and its significance	Physiology	
HNSS-P019	Write down the normal range of frequency for hearing	Physiology	Determination of sound frequency
	Describe the role of place principle in determination of sound frequency	Physiology	
	Describe the role of volleys principle in determination of sound frequency	Physiology	
HNSS-P-020	Discuss determination of loudness of sound		Determination of Loudness
HNSS-P021	Trace the normal auditory nervous pathway	Physiology	Auditory pathway
	Describe the types of deafness	Physiology	
	Discuss the clinical features and investigations of Congenital and Acquired hearing loss	Integrate with Otorhinolaryngology	
HNSS-P022	Enlist the primary taste sensations	Physiology	Sense of Taste
	Define and explain the term taste blindness	Physiology	
	Describe the physiological anatomy and location of taste buds	Physiology	
HNSS-P-023	Describe the mechanism of stimulation of taste buds/ receptor potential	Physiology	Excitation of Taste buds
	Trace the pathway of taste sensation	Physiology	
HNSS-P024	Define and explain the terms: Ageusia, Hypergeusia, Hypogeusia and dysgeusia	Physiology	Abnormalities of Taste sensations
	Describe the senile changes in taste buds		
HNSS-P-025	Explain the terms: Taste preference and taste aversion	Physiology	Taste preference and aversion

HNSS-P-	Enlist the primary sensations of smell	Physiology	Sense of smell

026	Describe the physiological anatomy and location of olfactory membrane	Physiology	
	Explain the mechanism of excitation of olfactory cells, membrane potential and action potential on olfactory cells Discuss the Adaptation of olfactory sensations Discuss the transmission of smell signals in the the CNS		
HNSS-P-027	Enlist the causes and clinical features of Rhinitis	Integrate with Otorhinolaryngology	Rhinitis
	Differentiate between viral and allergic Rhinitis	Integrate with Otorhinolaryngology	

MEDICAL BIOCHEMISTRY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 07	
		DISCIPLINE	TOPIC
HNSS-B-001	Discuss the metabolism of mono and disaccharides	Biochemistry	Metabolism of mono and disaccharides
	Interpret Hereditary fructose intolerance, fructosuria, galactosemia and lactose intolerance, in relevance to the clinical findings	Biochemistry	
	Explain the Polyol pathway and effect of hyperglycemia on sorbitol pathway	Biochemistry	
	Discuss the sources, metabolically active forms, biochemical role and clinical correlation of Vit-A with vision	Biochemistry	

PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 03	
		DISCIPLINE	TOPIC
HNSS-Pa-001	Enlist the common causative agents of Eye, Ear infections	Pathology (Microbiology)	Eye/Ear infections

	Discuss the pathogenesis and clinical features of common pathogens		
DISEASE PREVENTION AND IMPACT			
CODE	COMMUNITY MEDICINE & BEHAVIORAL SCIENCE	TOTAL HOURS = 06	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
HNSS-CM-001	Identify factors leading to noise pollution	Community Medicine/ Otorhinolaryngology	Hearing loss
HNSS-CM-002	Describe the common causes of blindness in community	Community Medicine	Blindness
	Describe risk factors and preventive strategies for blindness at community level	Behavioral Sciences	
HNSS-BhS-001	At end of module the students will learn the psychosocial aspects of pain which will help in understanding the complex and multidimensional nature of pain.		Pain
AGING			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 03	
		DISCIPLINE	TOPIC
HNSS-Ag-001	Familiarize with the age-related hearing loss	Otorhinolaryngology	Deafness
HNSS-Ag-002	Discuss the age changes of mandible	Anatomy	Head & Neck


Practicals

PRACTICAL

HISTOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 09	
		DISCIPLINE	TOPIC
HNSS-A-042	Draw and label diagrams to show histological structure of serous demilunes, serous and mucous acini.	Histology	Head & Neck
HNSS-A-043	Draw and label diagrams to show histological structure of eyelid and cornea.	Histology	Eye
	Draw and label a diagram to show histological structure of retina. List its histological layers and their respective components	Histology	
HNSS-A-044	Draw and label a diagram to show histological structure of internal ear.	Histology	Ear

PHYSIOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 16	
		DISCIPLINE	TOPIC
HNSS-P-028	Examine the Second, Third, Fourth & Sixth Cranial Nerves	Physiology	Cranial Nerves
HNSS-P-029	Examination of Light Reflex		Light reflex
HNSS-P-030	Determine the Visual Acuity for Far and Near vision		vision
HNSS-P-031	Perform Ophthalmoscopy		ophthalmoscopy
HNSS-P-032	Examine Field of Vision and interpretation of visual field plotted	Physiology	Visual field
HNSS-P-033	Examine Color Vision		Color vision

HNSS-P-034	Perform Tuning fork test and audiometry, interpret the report		Ear

BIOCHEMISTRY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 05	
		DISCIPLINE	TOPIC
HNSS-B-002	Interpretation of insulin and C peptide	Biochemistry	Interpretation of results
HNSS-B-003	Demonstrate HbA1C		HbA1C
HNSS-B-004	Detect abnormal constituents in urine by chemical methods		Abnormal constituents in urine

Assessment Matrix

The Assessment Matrix demonstrates the alignment of assessment methods with the intended learning outcomes and teaching–learning strategies employed throughout the Head & Neck and Special Senses module. A balanced combination of formative and summative assessment methods is utilized to evaluate students' knowledge, practical skills, clinical reasoning, communication, professionalism and competency development in accordance with PMDC standards and UHS assessment regulations.

Theme	Formative Assessment	Summative Assessment	Assessment Domain
Vision	MCQs, Visual Acuity Testing, Ophthalmoscopy, Visual Field Examination, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Hearing	MCQs, Tuning Fork Tests, Audiometry Interpretation, Otoscopy Demonstration, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Taste	MCQs, Tutorials, Practical Demonstration, Case Discussion	Theory Paper, Practical Examination (OSPE)	Cognitive, Psychomotor
Olfaction	MCQs, Clinical Scenario Discussion, Nasal Examination, Viva	Theory Paper, Practical Examination (OSPE)	Cognitive, Psychomotor
Head & Neck	MCQs, Cranial Nerve Examination, Neck Lump Examination, Nasal Examination, Practical	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor, Affective

Theme	Formative Assessment	Summative Assessment	Assessment Domain
	Demonstration, Viva		

Block Assessment Summary

Assessment Component	Method
Formative Assessment	MCQs, Tutorials, Practical Exercises, Histology Practicals, Case-Based Discussions, Viva Voce, Clinical Skill Demonstrations, Laboratory Exercises and Classroom Participation
Summative Assessment	Integrated Theory Examination (MCQs/SEQs as per UHS regulations), Practical Examination (OSPE), Viva Voce (where applicable)
Feedback Mechanism	Immediate verbal feedback, written feedback, post-assessment review sessions and individualized academic guidance
Remediation	Conducted in accordance with institutional assessment policy and UHS promotion regulations

Assessment Alignment

Assessment within the Head & Neck and Special Senses module is constructively aligned with the intended learning outcomes and instructional strategies. Students are assessed on their understanding of the anatomy, embryology, histology, physiology and pathology of the head and neck region and special senses. Practical assessments evaluate competencies in visual acuity testing, ophthalmoscopy, cranial nerve examination, otoscopy, tuning fork tests, audiometry, nasal examination and neck lump examination. The integration of formative and summative assessments ensures evaluation across the cognitive, psychomotor and affective domains while supporting competency-based medical education.

References

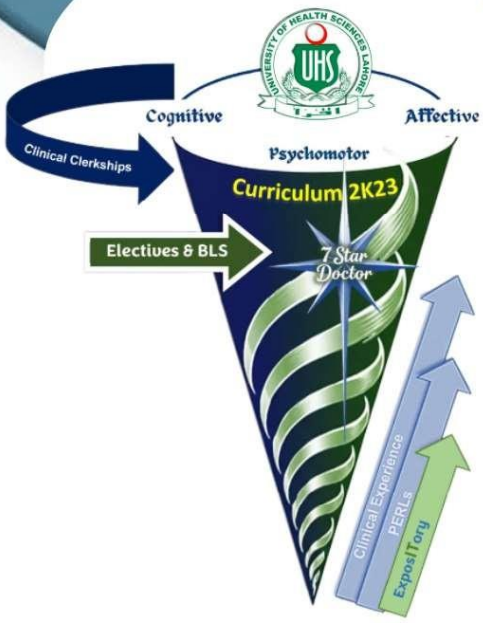
1. **University of Health Sciences (UHS), Lahore.** *Integrated MBBS Curriculum 2K23.*
2. **University of Health Sciences (UHS), Lahore.** *Second Professional MBBS Study Guide – Module 09: Head & Neck and Special Senses.*

3. **Pakistan Medical & Dental Council (PMDC).** *Undergraduate Medical Education Standards* (latest applicable edition).
4. **World Federation for Medical Education (WFME).** *Global Standards for Quality Improvement in Medical Education.*
5. **Quaid-e-Azam Medical College, Bahawalpur.** *Department of Medical Education (DME) Curriculum and Assessment Guidelines.*
6. **Institutional Assessment Policy**, Quaid-e-Azam Medical College, Bahawalpur.

Modular Integrated Curriculum 2K23

MBBS Year-02

BLOCK-6



Modular Integrated Curriculum 2K23

Volume-02

MODULE 10

NEUROSCIENCES-I

MODULE RATIONALE

The neurosciences module is crucial as understanding the brain and nervous system is essential for diagnosing and treating a wide range of neurological and psychiatric conditions. This includes conditions such as Alzheimer's disease, Parkinson's disease, epilepsy, migraines, traumatic brain injuries, depression, schizophrenia, and autism. By studying neurosciences, medical students will gain the knowledge and skills necessary to accurately diagnose and effectively treat these conditions.

MODULE OUTCOMES

- Describe the neuroanatomy, histology and embryology of the central nervous system.
- Discuss the physiology of Autonomic Nervous System (ANS), motor and sensory system.
- Explain the pathophysiology of common diseases pertaining to the nervous system.
- Explain a basic management and prevention plan for common neurological disorders.
- Appreciate the burden of neuroscience disorders and their psychosocial impact.

THEMES

- Neurons/ nerve fibers and receptor
- Cerebrum
- Spinal cord and tracks
- Cerebellum and brainstem, basal ganglia
- Autonomic Nervous System (ANS)

CLINICAL RELEVANCE

- Neurons/ nerve fibers and receptor
- Cerebrum
- Spinal cord and tracks
- Cerebellum and brainstem, basal ganglia
- ANS

IMPLEMENTATION TORs
• The time calculation for completion of modules and blocks is based on 35 hours per week. Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200. • The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council. • The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these. • However, the level of cognition can be kept at a higher level by the institution. • The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

BLOCK AT A GLANCE

Item	Details
Programme	MBBS
Academic Year	Second Professional MBBS
Block	Block 6
Module	Neurosciences-I (Module 10)
Curriculum	UHS Integrated MBBS Curriculum 2K23
Educational Model	Integrated Competency-Based Curriculum
Duration	As per UHS Academic Calendar
Major Themes	Neurons/Nerve Fibres & Receptors, Cerebrum, Spinal Cord & Tracts, Cerebellum & Brainstem (Basal Ganglia), Autonomic Nervous System (ANS)
Integrated Disciplines	Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Neurology, Neurosurgery, Psychiatry
Learning Domains	Cognitive, Psychomotor, Affective
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning (CBL), Self-Directed Learning (SDL), Clinical Correlation
Assessment	Formative Assessment, MCQs, SEQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Clinical Correlation	Stroke, Spinal Cord Injury, Parkinson Disease, Alzheimer's Disease, Epilepsy, Brainstem Syndromes, Autonomic Disorders
PMDC Competencies Addressed	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate

CURRICULUM DASHBOARD

Curriculum Indicator	Block 6 – Neurosciences-I
Programme	MBBS
Academic Year	Second Professional
Module	Neurosciences-I
Curriculum	UHS Integrated Curriculum 2K23
Major Themes	5
Module Outcomes	Describe the neuroanatomy, histology and embryology of the CNS; explain the physiology of the autonomic, motor and sensory systems; correlate neurological disorders with their pathophysiology and basic management; appreciate their psychosocial impact.
Integrated Disciplines	Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences, Neurology, Neurosurgery, Psychiatry
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Demonstrations, Small Group Discussions, Case-Based Learning, Self-Directed Learning
Assessment Methods	MCQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Learning Domains	Cognitive, Psychomotor, Affective
PMDC Competencies	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate
Horizontal Integration	Integration across Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine and Behavioral Sciences
Vertical Integration	Neurology, Neurosurgery, Psychiatry, Radiology
Clinical Correlation	Stroke, epilepsy, spinal cord injury, Parkinson disease, Alzheimer's disease, autonomic dysfunction and brainstem syndromes
Quality Assurance	Continuous assessment, structured feedback, curriculum review, DME monitoring, PMDC and UHS guidelines

Theme-wise Curriculum Mapping Matrix

The Theme-wise Curriculum Mapping Matrix demonstrates the integration of basic and clinical sciences within the **Neurosciences-I** module. Each theme aligns the intended learning outcomes with integrated disciplines, teaching–learning strategies, assessment methods, PMDC competencies, and horizontal and vertical integration to ensure constructive alignment throughout the module.

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
Neurons, Nerve Fibres & Receptors	Explain the structure and function of neurons, nerve fibres, synapses and sensory receptors with clinical relevance.	Anatomy, Physiology, Histology	Interactive lectures, practicals, demonstrations, SDL	MCQs, Practical, Viva	Medical Expert, Scholar	Anatomy + Physiology + Histology	Neurology
Cerebrum	Describe the anatomy, blood supply, functional areas and applied aspects of the cerebrum with correlation to common neurological disorders.	Anatomy, Physiology, Neurology	Interactive lectures, CBL, demonstrations	MCQs, SEQs, Practical	Medical Expert, Scholar	Anatomy + Physiology	Neurology, Neurosurgery
Spinal Cord & Tracts	Explain the organization, ascending and descending tracts, blood supply and clinical localization of spinal cord lesions.	Anatomy, Physiology, Pathology	Interactive lectures, practicals, CBL	MCQs, OSPE, Viva	Medical Expert, Scholar	Anatomy + Physiology + Pathology	Neurology
Cerebellum, Brainstem & Basal Ganglia	Describe the anatomy and functions of the cerebellum, brainstem and basal ganglia and correlate with	Anatomy, Physiology, Pathology	Interactive lectures, demonstrations, practical sessions	MCQs, Practical, Viva	Medical Expert, Scholar	Anatomy + Physiology + Pathology	Neurology, Neurosurgery

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
	movement disorders and brainstem syndromes.						
Autonomic Nervous System (ANS)	Explain the organization and physiology of the autonomic nervous system and its clinical importance in autonomic disorders.	Physiology, Pharmacology, Anatomy	Interactive lectures, CBL, SDL	MCQs, SEQs, Practical	Medical Expert, Scholar, Health Advocate	Physiology + Pharmacology + Anatomy	Neurology, Medicine

Theme Summary

Theme	Educational Focus
Neurons, Nerve Fibres & Receptors	Structure and function of neurons, synapses and receptors
Cerebrum	Cerebral cortex, functional areas, blood supply and higher functions
Spinal Cord & Tracts	Anatomy, ascending and descending pathways, localization of lesions
Cerebellum, Brainstem & Basal Ganglia	Coordination, posture, cranial nerve nuclei and movement control
Autonomic Nervous System (ANS)	Sympathetic and parasympathetic nervous systems and autonomic regulation

Theme Integration

The Neurosciences-I module integrates Anatomy, Physiology, Histology, Biochemistry, Pathology, Pharmacology, Community Medicine, Behavioral Sciences and clinical neurosciences to provide students with a comprehensive understanding of the structure and function of the nervous system. The module emphasizes clinical correlation with neurological disorders including stroke, spinal cord injury, Parkinson disease, Alzheimer's disease, epilepsy, brainstem syndromes and autonomic dysfunction, thereby strengthening clinical reasoning and competency-based medical education.

Weekly Curriculum Map

The Weekly Curriculum Map outlines the logical sequence of learning activities throughout the **Neurosciences-I** module. It demonstrates the progressive integration of basic medical sciences with clinical relevance, ensuring the achievement of the intended module learning outcomes through competency-based medical education.

Week	Major Theme	Integrated Disciplines	Teaching–Learning Methods	Assessment
Week 1	Neurons, Nerve Fibres & Receptors	Anatomy, Histology, Physiology	Interactive lectures, practical sessions, demonstrations, SDL	Formative MCQs, Practical
Week 2	Cerebrum	Anatomy, Physiology, Neurology	Interactive lectures, demonstrations, case-based learning	MCQs, Practical Assessment
Week 3	Spinal Cord & Tracts	Anatomy, Physiology, Pathology	Interactive lectures, practical sessions, CBL	MCQs, SEQs
Week 4	Cerebellum, Brainstem & Basal Ganglia	Anatomy, Physiology, Pathology	Interactive lectures, demonstrations, practical sessions	MCQs, OSPE
Week 5	Autonomic Nervous System (ANS)	Anatomy, Physiology, Pharmacology	Interactive lectures, case discussions, SDL	Practical Assessment, Viva
Week 6	Integrated Revision & Block Assessment	All Integrated Disciplines	Revision sessions, practical revision, small-group discussions, feedback	Block Examination (Theory & Practical)

Weekly Progressio

The **Neurosciences-I** module follows a system-based integrated approach, beginning with the fundamental structure and function of neurons and sensory receptors, progressing through the cerebrum, spinal cord, cerebellum and brainstem, and concluding with the autonomic nervous system. Clinical correlation, practical sessions, case-based learning and self-directed learning are incorporated throughout the module to strengthen students' understanding of neurological function and common disorders such as stroke, epilepsy, spinal cord injury, Parkinson disease, Alzheimer's disease, brainstem syndromes and autonomic dysfunction, thereby promoting competency-based medical education.

PMDC Competency Mapping

The PMDC Competency Mapping Matrix demonstrates the alignment of the **Neurosciences-I** module with the PMDC Undergraduate Medical Education Competency Framework. Through an integrated systems-based approach, the module develops students' understanding of neuroanatomy, neurophysiology and neurological disorders while fostering professionalism, communication, teamwork, leadership and lifelong learning in accordance with competency-based medical education.

Theme	Medical Expert	Communicator	Collaborator	Leader	Professional	Scholar	Health Advocate
Neurons, Nerve Fibres & Receptors	✓	✓	✓		✓	✓	✓
Cerebrum	✓	✓	✓	✓	✓	✓	✓
Spinal Cord & Tracts	✓	✓	✓	✓	✓	✓	✓
Cerebellum, Brainstem & Basal Ganglia	✓	✓	✓	✓	✓	✓	✓
Autonomic Nervous System (ANS)	✓	✓	✓	✓	✓	✓	✓

Competency Alignment

The **Neurosciences-I** module primarily develops the Medical Expert competency by providing students with an integrated understanding of the anatomy, physiology and function of the central and peripheral nervous systems. Through integration with Neurology, Neurosurgery, Pharmacology, Community Medicine and Behavioural Sciences, the module further strengthens competencies in communication, collaboration, professionalism, scholarship, leadership and health advocacy, particularly in the prevention, diagnosis and management of common neurological disorders including stroke, epilepsy, spinal cord injury, Parkinson disease, Alzheimer's disease, brainstem syndromes and autonomic dysfunction.

Teaching–Learning Matrix

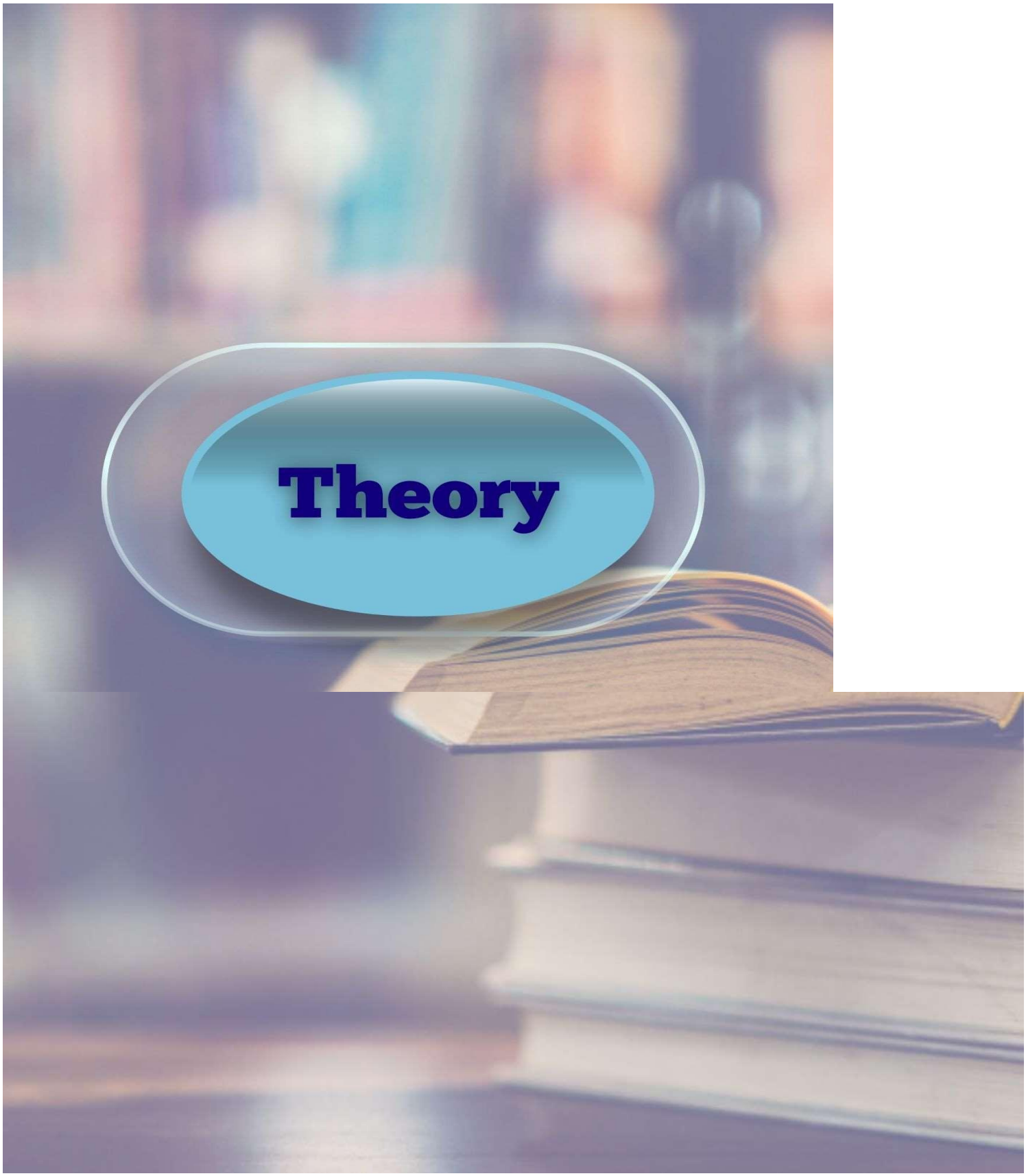
The Teaching–Learning Matrix outlines the instructional strategies employed throughout the **Neurosciences-I** module to facilitate achievement of the intended learning outcomes. The module adopts an integrated, learner-centred approach that combines basic medical sciences with clinical application through a variety of active learning strategies in accordance with the principles of competency-based medical education.

Theme	Interactive Lectures	Practical / Laboratory	Demonstration	Small Group Discussion (SGD)	Case-Based Learning (CBL)	Self-Directed Learning (SDL)	Early Clinical Exposure / Clinical Correlation
Neurons, Nerve Fibres & Receptors	✓	✓	✓	✓	✓	✓	✓
Cerebrum	✓	✓	✓	✓	✓	✓	✓
Spinal Cord & Tracts	✓	✓	✓	✓	✓	✓	✓
Cerebellum, Brainstem & Basal Ganglia	✓	✓	✓	✓	✓	✓	✓
Autonomic Nervous System (ANS)	✓	✓	✓	✓	✓	✓	✓

Teaching–Learning Strategy Summary

The **Neurosciences-I** module adopts an integrated, student-centred teaching approach to facilitate the development of foundational knowledge, clinical reasoning, practical skills and professional attitudes. Interactive lectures provide the conceptual framework, while neuroanatomy demonstrations, histology practicals and physiology laboratory sessions reinforce understanding of the structure and function of the nervous system. Small-group discussions and case-based learning promote critical thinking and clinical decision-making, whereas self-directed learning encourages lifelong learning. Continuous clinical correlation enables students to relate normal neurophysiology to common neurological disorders.


Syllabus


Theory

NORMAL STRUCTURE			
GROSS ANATOMY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 46	
		DISCIPLINE	TOPIC
NS-A-001	Describe the basic organization of nervous system	Human Anatomy	Nervous system
	Identify and describe the components of the Nervous system and their function	Human Anatomy	
NS-A-002	Trace the Origin, exit from vertebral canal, branches & Distribution of typical spinal nerve.	Human Anatomy	Spinal Nerves
NS-A-003	Identify the Location, Extent, Coverings and Blood supply of spinal cord Discuss & tabulate nuclear organization at different levels of Spinal cord. Describe, draw & label the transverse section of spinal cord at mid cervical level showing ascending & descending tracts Tabulate the sensory nerve endings, and anatomical sites of first, second, third order neurons of ascending tracts Tabulate first, second, third order neurons of descending tracts. Elaborate on the Cross-sectional details of white and gray matter of cervical, thoracic and lumbar segments of Spinal cord for localization of site of lesion.	Human Anatomy	Spinal cord Clinical correlates (Spinal cord)

NS-A-004	Differentiate clearly between upper and lower motor neuron lesions	Human Anatomy	Brainstem
	Location, Relations, Blood supply and external features of medulla, pons midbrain.	Human Anatomy	

	Cross sectional details of white and grey matter of Brain stem (mid brain, pons, medulla) Discuss clinical correlates of brain stem Medial and lateral medullary syndrome Weber syndrome, Benedikt syndrome		
NS-A-005	Location, Relations, Functional classification & Blood supply along with major connections of Cerebellum (Cerebellar Peduncles) Define important clinical correlates	Human Anatomy	Cerebellum
NS-A-006	Identify the Lobes, Sulci & Gyri, Cortical areas. Describe Venous drainage and arterial supply of each lobe	Human Anatomy	Cerebrum
	Describe Functional areas of cerebrum. Draw and Label Homunculus. Define important clinical correlates		
	Describe internal structure of cerebral hemisphere; 1. white matter 2. Basal ganglia 3. Lateral ventricle		
NS-A-007	Describe components & functions of Limbic system & Reticular formation		Limbic system. Reticular formation
NS-A-008	Explain the origin, exit from the brain and intracranial course of cranial nerves Describe the Functional Components and specific functions of each cranial nerve.	Human Anatomy	Cranial nerves
NS-A-009	Identify the Location and sub division of Diencephalon.	Human Anatomy	Diencephalon

NS-A-010	Discuss the Location, Relations, Blood supply, nuclei and major connections of Thalamus, Hypothalamus, Epithalamus, Subthalamus, Metathamalus Describe and Illustrate the Hypothalamic and pituitary gland Nuclei with their functions, location afferents. Describe the Hypothalamo-Hypophyseal Portal System	Human Anatomy	Thalamus and hypothalamus

	Describe the functions of Hypothalamus Explain the anatomical basis for the Thalamic Cauterization, Thalamic Pain, Thalamic Hand and Hypothalamic Disorders		
NS-A-011	Explain the Gross anatomy of Intracranial fossae with intracranial foramina	Human Anatomy	Intracranial fossa
NS-A-012	Explain the attachments, blood supply and nerve supply of the meninges of the brain	Human Anatomy	Meninges
NS-A-013	Discuss the Origin, tributaries & area of drainage, termination of Dural venous sinuses	Human Anatomy	Dural venous sinuses
NS-A-014	Explain the Formation, circulation and absorption into venous system of CSF (Cerebrospinal fluid) Describe ventricular system, Lateral, 3^{rd} & 4^{th} ventricles	Human Anatomy	CSF
NS-A-015	Discuss the Origin, course, branches and distribution of internal carotid artery, vertebral artery Formation, Location, branches and area of supply of Circle of Willis	Human Anatomy	Blood supply of brain & spinal cord
NS-A-016	Explain the Major subdivision of ANS into Sympathetic and parasympathetic nervous system with comparison of anatomical differences.	Human Anatomy	ANS
NS-A-017	Describe the Location, connections and functions of autonomic ganglion	Human Anatomy	Autonomic ganglia

NS-A-018	Explain the origin, termination and branches of the sympathetic chain Localize spinal cord lesions	Human Anatomy	Sympathetic chain

EMBRYOLOGY & POST-NATAL DEVELOPMENT			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 03	
		DISCIPLINE	TOPIC
NS-A-019	Explain the Development of Neural tube and Brain vesicles. Discuss related clinical anomalies	Embryology	Neural tube development
NS-A-020	Describe the development of the spinal cord and related clinical anomalies	Embryology	Spinal cord development

MICROSCOPIC ANATOMY (HISTOLOGY & PATHOLOGY)			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 05	
		DISCIPLINE	TOPIC
NS-A-021	Describe the histological structure of Nervous tissue, Neuron, Nerve fiber, Sensory & motor nerve endings, Neuroglia, Blood brain barrier, ganglia	Histology	Nervous tissue
NS-A-022	Describe the histological structure of the spinal cord	Histology	Spinal cord
NS-A-023	Describe the histological structure of Cerebrum, Cerebellum	Histology	Cerebrum, Cerebellum

NORMAL FUNCTION

MEDICAL PHYSIOLOGY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 60	
		DISCIPLINE	TOPIC
NS-P-001	Describe the general organization of nervous system Classify synapses	Medical Physiology	Organization of Nervous System, Neurons and

	Explain physiological anatomy of synapses		Synapses
	Describe the properties of synaptic transmission		
	Classify the substances that act as neurotransmitters		
	Classify all sensory receptors in the body		
	Enumerate the properties of receptors		
	Explain the mechanism of adaptation of receptors		
	Enlist the rapid adapting mechanism of receptors		
NS-P-002	Explain the properties of receptors		Nerve fibers
	Briefly describe the general, numerical, and Gasser classification of nerve fibers.		
	Explain the numerical classification of nerve fibers		
	Explain Gasser classification of nerve fibers		
	Explain summation and its types		
NS-P-003	Describe the sensory areas of brain		

	Enlist Brodmann number of sensory areas		Sensory areas of the brain
	Describe the effects produced by damage to each sensory area of brain		
	Describe the pathophysiology and features of personal neglect syndrome		
NS-P-004	Classify and explain somatic sensations	Medical Physiology	Somatic sensations
NS-P-005	Enumerate the ascending tracts/Pathways		Ascending Tracts/ pathways
NS-P-006	Enlist the functions & sensations carried by ascending tracts/Pathways	Medical Physiology	Anterolateral system
NS-P-007	Classify pain		Pain
	Differentiate between slow pain and fast pain		
	Describe the analgesia system in brain and spinal cord		

	Describe the cause and features of Brown Sequard Syndrome Define & explain the mechanism of referred pain Explain visceral and parietal pain		
NS-P-008	Describe the Physiological anatomy of spinal cord	Medical Physiology	Spinal cord
	Name the anterior motor neurons and their location		
	Explain the Renshaw cells feedback		
	Classify the spinal cord reflexes according to number of synapses		
NS-P-009	Describe the structure & functions of Muscle spindle		Muscle Spindle and stretch reflex
	Trace the reflex arc of stretch reflex		
	Discuss the clinical significance of stretch reflex		
NS-P-110	Define tone and how it is maintained		Tone
NS-P-011	Trace the reflex arc of Golgi Tendon Organ GTO, Golgi tendon reflex Explain the importance of Golgi tendon reflex		GTO
NS-P-012	Define and explain flexor reflex and cross extensor reflex. Discuss the reflexes of posture and locomotion		Spinal cord reflexes

	Describe the spinal cord reflexes for scratch, muscle spasm and autonomic reflexes		
NS-P-013	Name the motor areas of brain		Motor areas of the brain
	Enlist Brodmann number of motor areas of brain Explain the features produced due to damage to the motor areas		
NS-P-014	Enlist the functions of brain stem	Medical Physiology	Brainstem
NS-P-015	Enumerate the descending tracts		Descending tracts
	Describe the functions of Pyramidal tract		

	Describe the functions of Pyramidal & extrapyramidal tracts		
NS-P-016	Discuss the location of upper and lower motor neuron		Location of motor neurons
	Explain the features of upper motor neuron lesion		
	Explain the features of lower motor neuron lesions		
NS-P-017	Define spinal shock	Medical Physiology	Spinal shock and hemi section
	Enumerate and explain the stages of spinal shock		
	Describe the features of hemi section of spinal cord (at the level, above the level, below the level)		
NS-P-018	Name the functional parts of cerebellum		Cerebellum
	Explain the functions of spinocerebellum		
	Describe the functions of cerebro cerebellum		
	Discuss the functions of vestibule cerebellum		
	Explain the clinical features of cerebellar disease		
NS-P-019	Name the components of Basal ganglia		Basal Ganglia
	EXPLAIN the putamen and caudate circuits		
	Enlist the neurotransmitters in basal ganglia and enlist the functions of basal ganglia		
	Enumerate and explain the clinical abnormalities of putamen circuit		

	Explain the pathophysiology and features of Parkinson's disease.		
	Explain the pathophysiology and features of Huntington's disease		
	Explain the types of rigidity		
	Differentiate spasticity and rigidity		
	Define decerebrate rigidity		

NS-P-020	Enumerate the components of vestibular Apparatus	Medical Physiology	Vestibular apparatus
	Name the sensory organs of vestibular apparatus		
	Describe the role of vestibular Apparatus in maintenance of linear and angular equilibrium		
NS-P-021	Enlist the components of limbic system		Limbic system
	Describe the functions of amygdala		
	Explain the effects of bilateral ablation of the amygdala—The Klüver-Bucy Syndrome		
	Explain the functions of hippocampus		
	Explain the functions of Hypothalamus		
	Explain Functions of Thalamus		
	Discuss the Thalamic syndrome		
NS-P-022	define brain stem reticular formation (BRF), name the neurotransmitters of BRF, enlist functions of BRF, differentiate between the functions of Pontine and medullary reticular Formation	Medical Physiology	Brain stem reticular formation
NS-P-023	Enumerate and discuss the physiological basis of Electroencephalogram EEG waves	Medical Physiology	EEG
NS-P-024	Explain the types of sleep		Sleep
	Discuss the stages of slow wave sleep		
	Explain the changes in EEG during sleep wake cycle		
	Enumerate the areas and hormones/ neurotransmitters involved in sleep		

	Describe sleep disorders (narcolepsy, cataplexy, insomnia, somnolence, somnambulism, bruxism, nocturnal enuresis and sleep apnea)		
NS-P-025	Enumerate different types of epilepsy		Epilepsy

	Explain the features and physiological basis and EEG waves in different types of epilepsy		
NS-P-026	Define memory		Memory
	Classify memory on the basis of duration and information stored		
	Explain the Molecular Mechanism of Intermediate Memory		
	Enumerate the structural changes of long-term memory		
	Explain the higher intellectual functions of prefrontal association cortex	Medical Physiology	
	Explain the mechanism of consolidation of memory		
	Explain retrograde and anterograde amnesia		
	Explain the physiological basis and features of Alzheimer's disease		
NS-P-027	Enlist the areas of speech		Speech
	Explain the functions of motor and sensory areas of speech		
	Trace and explain the pathway of written and heard speech		
	Enlist the abnormalities of speech		
	Explain the features of motor aphasia		
	Elaborate the features of sensory aphasia		
	Define dyslexia, alexia, agraphia		
NS-P-028	Discuss the sites of CSF secretion, flow of CSF, and abnormalities of CSF production	Medical Physiology	CSF (Cerebrospinal Fluid)
	Discuss the formation, flow and absorption of CSF		
	Explain the functions of CSF		

	Explain the composition and flow of CSF and pathophysiology of hydrocephalus.		
	Explain the regulation of CSF pressure, increase in CSF pressure in pathological conditions of the brain, and measurement of CSF pressure.		
MEDICAL BIOCHEMISTRY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 20	
		DISCIPLINE	TOPIC
NS-B-001	Explain the digestion and absorption of lipids with enzymes involved in it. Discuss role of bile acids and salts in lipid digestion and absorption	Medical Biochemistry	Digestion and absorption of lipids
NS-B-002	Explain the concept of lipid transport and storage. Discuss the metabolism of cholesterol along with its regulations and associated disorders		Lipid transport and storage and cholesterol metabolism
NS-B-003	Discuss the reactions of beta-oxidation, alpha and omega oxidation of unsaturated and saturated fatty acids Calculate energy yield from palmitate in oxidation		Sphingolipidosis
NS-B-004	Discuss role of carnitine shuttle		Carnitine shuttle
NS-B-005	Discuss the role of citrate shuttle in fatty acid synthesis		Citrate shuttle
NS-B-006	Explain the pathway of fatty acid synthesis and its regulation Explain the steps of the reactions of hepatic ketogenesis and regulation		Fatty acid synthesis
NS-B-007	Describe utilization of ketone bodies by extrahepatic tissue. Describe the Synthesis and degradation of phospholipids and sphingolipids interpret the disorders related to enzyme deficiencies.		Metabolism of phosphor and sphingolipids

NS-B-008	Discuss the metabolism of glycolipids interpret the disorders related to enzyme deficiencies.		Glycolipid metabolism

NS-B-009	Explain fast feed cycle with reference to pathways activated and suppressed in each tissue in starved and fed state Discuss integration of metabolism	Medical Biochemistry	Fast feed cycle
NS-B-010	Explain fast. Discuss the structure, biochemical function and metabolism, dopamine, serotonin, histamine, GABA, Acetylcholine Correlate the biochemical functions of these neurotransmitters with their deficiency diseases		Neurotransmitters
NS-B-011	Explain proto-oncogene, oncogene and tumor suppressor genes concept.		Oncogene
NS-B-012	Discuss tumor markers and their significance.		Tumor markers
NS-B-013	Explain the role of genetics in cancers especially breast, ovary, lung and colon.		Cancer
NS-B-014	Discuss the metabolism of xenobiotics.		Xenobiotics

PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 05	
		DISCIPLINE	TOPIC
NS-Ph-001	Classify various CNS stimulants and depressants	Pharmacology	CNS stimulants & depressants
NS-Pa-001	Discuss the pathophysiology of cerebral vascular accident (CVA).	Pathology	CVA
NS-Pa-002	Define Meningitis Identify types of meningitis	Microbiology	Meningitis

DISEASE PREVENTION AND IMPACT		
CODE	COMMUNITY MEDICINE & BEHAVIORAL SCIENCE	TOTAL HOURS = 10

	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
NS-CM-001	Students should be able to depict the depth of problem in context of mental illnesses	Community Medicine and Public Health	Epidemiology of Mental Disorders
NS-CM-002	Able to learn the general approach to prevent mental illnesses at community level		Community based interventions for Mental Illnesses
NS-BhS-001	Explain the theoretical basis of classic conditioning, operant conditioning and observational learning with examples in medical practice Incorporate learning principles to help prepare people for medical interventions	Behavioral Sciences	Learning and Behavior
NS-BhS-002	Outline the structure of memory and explain the distinction between short- and long-term memory. Describe memory improvement techniques and how the appropriate ones will help patients recall long and complex explanations		Memory
NS-M-001	Identify various types of CVA (cerebrovascular accident) Describe various symptoms and signs Outline management strategies	Medicine	Stroke/CVA
NS-S-001	Discuss the role of surgery in stroke	Surgery	Stroke/CVA
NS-M-002	Define Epilepsy Enlist various types of epilepsy Identify various symptoms and signs Outline management strategies	Medicine	Epilepsy
NS-M-003	Enlist various types of meningitis Describe symptoms and signs Outline management strategies	Medicine/ Neurology	Meningitis
NS-S-002	Describe triage in ER Emergency Room	Surgery	Head injury
NS-S-003	Identify the various types of hematomas	Neurosurgery	Hematoma/ CVA
NS-Pe-001	Describe the clinical features of Cerebral Palsy	Pediatrics	Cerebral Palsy

AGING			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC
NS-Ag-001	Define dementia	Medicine	Dementia
	Discuss various causes for dementia		
	Discuss various risks for dementia		
	Outline management strategies		


Practicals

PRACTICAL

HISTOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 07	
		DISCIPLINE	TOPIC
NS-A-024	Identify draw & label light microscopic structure of Peripheral nerve sensory ganglia, autonomic ganglia	Histology	CNS
NS-A-025	Identify Draw & label the light microscopic structure of the spinal cord	Histology	Cerebrum
NS-A-026	Identify Draw & label the light microscopic structure of the Cerebrum	Histology	Cerebellum
NS-A-027	Identify Draw & label the light m structure of the Cerebellum	Histology	Spinal Cord

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 04	
		DISCIPLINE	TOPIC
NS-B-015	Interpret the lysosomal storage diseases on given data Neiman pick disease, Gaucher's disease etc.	Biochemistry Practical	Data Interpret
NS-B-016	Perform the estimation of serum triglycerides, cholesterol, HDL by kit method and calculate LDL and VLDL		Estimation of lipids

PHYSIOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 13	
		DISCIPLINE	TOPIC
NS-P-029	Examine the Sensory System	Physiology Practical	Sensory system
NS-P-030	Examine the Superficial Reflexes		Superficial Reflexes
NS-P-031	Examine the Deep Reflexes		Deep Reflexes

NS-P-032	Demonstrate Cerebellar Function Test		Cerebellar Tests
NS-P-033	Demonstrate the testing of Cranial Nerve (CN) VII		CN VII

NS-P-034	Demonstrate the Testing of Cranial Nerves (XI, XII)		CN X, XI, XII
NS-P-035	Examine the Motor system		Motor system

Assessment Matrix

The Assessment Matrix demonstrates the alignment of assessment methods with the intended learning outcomes and teaching–learning strategies employed throughout the **Neurosciences-I** module. A balanced combination of formative and summative assessment methods is utilized to evaluate students' knowledge, practical skills, clinical reasoning, communication, professionalism and competency development in accordance with PMDC standards and UHS assessment regulations.

Theme	Formative Assessment	Summative Assessment	Assessment Domain
Neurons, Nerve Fibres & Receptors	MCQs, Histology Practical, Practical Demonstration, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Cerebrum	MCQs, Neuroanatomy Practical, Clinical Case Discussion, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Spinal Cord & Tracts	MCQs, Practical Demonstration, Lesion Localization Exercises, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Cerebellum, Brainstem & Basal Ganglia	MCQs, Neurological Examination Demonstration, Case-Based Discussion	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor, Affective
Autonomic Nervous System (ANS)	MCQs, Clinical Scenario Discussion, Practical Assessment, Viva	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor

Block Assessment Summary

Assessment Component	Method
Formative Assessment	MCQs, Tutorials, Practical Exercises, Histology Practicals, Neuroanatomy Demonstrations, Case-Based Discussions, Viva Voce, Clinical Skill Demonstrations and Classroom Participation
Summative Assessment	Integrated Theory Examination (MCQ as per UHS regulations), Practical Examination (OSPE), Viva Voce (where applicable)
Feedback Mechanism	Immediate verbal feedback, written feedback, post-assessment review sessions and individualized academic guidance
Remediation	Conducted in accordance with institutional assessment policy and UHS promotion regulations

Assessment Alignment

Assessment within the **Neurosciences-I** module is constructively aligned with the intended learning outcomes and instructional strategies. Students are assessed on their understanding of neuroanatomy, neurophysiology, neural pathways and autonomic nervous system function. Practical assessments evaluate competencies in neuroanatomical identification, cranial nerve examination, motor and sensory system examination, cerebellar function testing, neurological localization and interpretation of basic neurological investigations. The integration of formative and summative assessments ensures evaluation across the cognitive, psychomotor and affective domains while supporting competency-based medical education.

References

1. **University of Health Sciences (UHS), Lahore.** *Integrated MBBS Curriculum 2K23.*
2. **University of Health Sciences (UHS), Lahore.** *Second Professional MBBS Study Guide – Module 10: Neurosciences-I.*
3. **Pakistan Medical & Dental Council (PMDC).** *Undergraduate Medical Education Standards* (latest applicable edition).
4. **World Federation for Medical Education (WFME).** *Global Standards for Quality Improvement in Medical Education.*
5. **Quaid-e-Azam Medical College, Bahawalpur.** *Department of Medical Education (DME) Curriculum and Assessment Guidelines.*
6. **Institutional Assessment Policy**, Quaid-e-Azam Medical College, Bahawalpur.

Modular Integrated Curriculum 2K23

Volume-02

MODULE 11

INFLAMMATION

MODULE RATIONALE

The objective of teaching inflammation to undergraduate students is to impart knowledge about cellular and molecular mechanisms of cell injury, inflammation, and repair. This understanding serves as the foundation for comprehending most disease processes within the body. It equips students to apply this knowledge in the clinical field when working with real-life patients.

MODULE OUTCOMES

- Define inflammation and describe its fundamental characteristics.
- Explain the cellular and molecular mechanisms that underlie the inflammatory response.
- Differentiate between acute and chronic inflammation
- Discuss the physiological role of inflammation in tissue repair and host defense.
- Identify how dysregulated inflammation contributes to the pathogenesis of various diseases.
- Describe the key inflammatory mediators, including cytokines, chemokines, and prostaglandins.
- Illustrate the signaling pathways involved in the initiation and resolution of inflammation.
- Recognize the roles of different immune cells (e.g., neutrophils, macrophages, lymphocytes) in the inflammatory response.
- Discuss the pharmacological aspects of steroidal and non-steroidal anti- inflammatory drugs Discuss the clinical aspects of inflammation.

THEMES

- Role of inflammation in embryology
- Inflammatory response and role of leukocytes
- Eicosanoids
- Acute inflammation
- Chronic inflammation
- Cell repair
- Prostaglandin analogues
- Anti-inflammatory drugs
- Steroidal anti-inflammatory drugs
- Non-steroidal anti-inflammatory drugs

- COX- inhibitors
- Histamines and antihistamines
- Communicable diseases and their prevention
- Psychological stress and inflammation
- Aging

CLINICAL RELEVANCE

- Inflammation, in medical terminology, refers to a collection of classical signs and symptoms, such as edema, erythema, increased warmth, pain, and loss of function.
- It represents a complex and dynamic series of responses to tissue injury, primarily triggered by toxic chemicals, environmental factors, trauma, overuse, or infection.
- Diseases in which inflammation plays a predominant pathological role are typically denoted by the suffix 'itis,' examples of which include encephalitis and meningitis.

BLOCK AT A GLANCE

Item	Details
Programme	MBBS
Academic Year	Second Professional MBBS
Block	Block 6
Module	Inflammation (Module 11)
Curriculum	UHS Integrated MBBS Curriculum 2K23
Educational Model	Integrated Competency-Based Curriculum
Duration	As per UHS Academic Calendar
Major Themes	Role of Inflammation in Embryology, Inflammatory Response & Leukocytes, Eicosanoids, Acute Inflammation, Chronic Inflammation, Cell Repair, Prostaglandin Analogues, Anti-inflammatory Drugs, Steroidal & Non-steroidal Anti-inflammatory Drugs, COX Inhibitors, Histamines & Antihistamines, Communicable Diseases & Their Prevention, Psychological Stress & Inflammation, Aging
Integrated Disciplines	Embryology, Histology, Pathology, Microbiology, Immunology, Pharmacology, Community Medicine, Behavioral Sciences, Biochemistry, General Medicine, General Surgery
Learning Domains	Cognitive, Psychomotor, Affective
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Laboratory Demonstrations, Small Group Discussions, Case-Based Learning (CBL), Self-Directed Learning (SDL), Clinical Correlation
Assessment	Formative Assessment, MCQs, SEQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Clinical Correlation	Acute and Chronic Inflammation, Tuberculosis, Leprosy, Wound Healing, Cell Injury, Communicable Diseases, Hypersensitivity, NSAIDs, Steroidal Anti-inflammatory Drugs
PMDC Competencies Addressed	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate

CURRICULUM DASHBOARD

Curriculum Indicator	Block 6 – Inflammation
Programme	MBBS
Academic Year	Second Professional
Module	Inflammation
Curriculum	UHS Integrated Curriculum 2K23
Major Themes	14
Module Outcomes	Explain the cellular and molecular mechanisms of inflammation, differentiate acute and chronic inflammation, understand tissue repair and inflammatory mediators, discuss pharmacological management of inflammation and relate inflammatory processes to common clinical diseases.
Integrated Disciplines	Embryology, Histology, Pathology, Microbiology, Immunology, Pharmacology, Community Medicine, Behavioral Sciences, Biochemistry, Medicine and Surgery
Teaching–Learning Methods	Interactive Lectures, Practical Sessions, Histology Practicals, Laboratory Demonstrations, Small Group Discussions, Case-Based Learning, Self-Directed Learning
Assessment Methods	MCQs, SEQs, Practical Examination (OSPE), Viva Voce, Continuous Assessment
Learning Domains	Cognitive, Psychomotor, Affective
PMDC Competencies	Medical Expert, Communicator, Collaborator, Leader, Professional, Scholar, Health Advocate
Horizontal Integration	Integration across Pathology, Microbiology, Pharmacology, Immunology, Community Medicine, Behavioral Sciences and Biochemistry
Vertical Integration	General Medicine, General Surgery, Infectious Diseases, Immunology
Clinical Correlation	Acute inflammation, chronic inflammation, tuberculosis, leprosy, wound healing, communicable diseases, NSAIDs, corticosteroids and inflammatory disorders
Quality Assurance	Continuous assessment, structured feedback, curriculum review, DME monitoring, PMDC and UHS guidelines

Theme-wise Curriculum Mapping Matrix

The Theme-wise Curriculum Mapping Matrix demonstrates the integration of basic and clinical sciences within the Inflammation module. Each theme aligns the intended learning outcomes with integrated disciplines, teaching–learning strategies, assessment methods, PMDC competencies, and horizontal and vertical integration to ensure constructive alignment throughout the module.

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
Role of Inflammation in Embryology	Explain the role of inflammatory processes during embryonic development and tissue differentiation.	Embryology, Pathology	Interactive lectures, SDL	MCQs, Viva	Medical Expert, Scholar	Embryology + Pathology	Medicine
Inflammatory Response & Leukocytes	Describe vascular and cellular events of inflammation and the role of leukocytes in host defense.	Pathology, Physiology, Immunology	Interactive lectures, practicals, CBL	MCQs, Practical, OSPE	Medical Expert, Scholar	Pathology + Immunology	Medicine
Eicosanoids	Explain the synthesis, functions and clinical importance of prostaglandins, leukotrienes and thromboxanes.	Biochemistry, Pharmacology, Pathology	Interactive lectures, demonstrations	MCQs, SEQs	Medical Expert	Biochemistry + Pharmacology	Pharmacology
Acute & Chronic Inflammation	Differentiate acute and chronic inflammation and correlate their pathological features with common diseases.	Pathology, Microbiology, Immunology	Interactive lectures, laboratory practicals, CBL	MCQs, Practical, Viva	Medical Expert, Scholar	Pathology + Microbiology	Medicine, Infectious Diseases
Cell Repair & Anti-inflammatory Pharmacology	Explain tissue repair, wound healing and the pharmacological basis of	Pathology, Pharmacology, Community Medicine,	Interactive lectures, demonstrations, CBL, SDL	MCQs, SEQs, Practical	Medical Expert, Professional, Health Advocate	Pathology + Pharmacology + Community Medicine	Medicine, Surgery

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
	steroidal and non-steroidal anti-inflammatory drugs, COX inhibitors and antihistamines.	Behavioral Sciences					

Theme Integration

The Inflammation module integrates Embryology, Histology, Pathology, Microbiology, Immunology, Pharmacology, Community Medicine, Behavioral Sciences, Biochemistry, Medicine and Surgery to provide students with a comprehensive understanding of inflammatory mechanisms, immune responses, tissue repair and pharmacological management. The module emphasizes clinical correlation with acute and chronic inflammation, tuberculosis, leprosy, wound healing, communicable diseases and anti-inflammatory therapy, thereby strengthening clinical reasoning and competency-based learning.

Theme-wise Curriculum Mapping Matrix

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Eicosanoids	Explain the synthesis, functions and clinical importance of prostaglandins, leukotrienes and thromboxanes.	Biochemistry, Pharmacology, Pathology	Interactive lectures, demonstrations	MCQs,	Medical Expert	Biochemistry + Pharmacology	Pharmacology
Acute & Chronic Inflammation	Differentiate acute and chronic inflammation and correlate their pathological features with common diseases.	Pathology, Microbiology, Immunology	Interactive lectures, laboratory practicals, CBL	MCQs, Practical, Viva	Medical Expert, Scholar	Pathology + Microbiology	Medicine, Infectious Diseases
Cell Repair & Anti-inflammatory Pharmacology	Explain tissue repair, wound healing and the pharmacological basis of steroidal and non-steroidal anti-	Pathology, Pharmacology, Community Medicine, Behavioral Sciences	Interactive lectures, demonstrations, CBL, SDL	MCQs, SEQs, Practical	Medical Expert, Professional, Health Advocate	Pathology + Pharmacology + Community Medicine	Medicine, Surgery

Theme	Module Learning Outcomes	Integrated Disciplines	Teaching & Learning Methods	Assessment Methods	PMDC Competencies	Horizontal Integration	Vertical Integration
	inflammatory drugs, COX inhibitors and antihistamines.						

Theme Integration

The Inflammation module integrates Embryology, Histology, Pathology, Microbiology, Immunology, Pharmacology, Community Medicine, Behavioral Sciences, Biochemistry, Medicine and Surgery to provide students with a comprehensive understanding of inflammatory mechanisms, immune responses, tissue repair and pharmacological management. The module emphasizes clinical correlation with acute and chronic inflammation, tuberculosis, leprosy, wound healing, communicable diseases and anti-inflammatory therapy, thereby strengthening clinical reasoning and competency-based learning.

Weekly Curriculum Map

The Weekly Curriculum Map outlines the logical sequence of learning activities throughout the Inflammation module. It demonstrates the progressive integration of basic medical sciences with clinical relevance, ensuring the achievement of the intended module learning outcomes through competency-based medical education.

Week	Major Theme	Integrated Disciplines	Teaching–Learning Methods	Assessment
Week 1	Role of Inflammation in Embryology & Inflammatory Response	Embryology, Pathology, Physiology	Interactive lectures, demonstrations, SDL	Formative MCQs, Tutorials
Week 2	Leukocytes, Acute Inflammation & Eicosanoids	Pathology, Immunology, Biochemistry, Pharmacology	Interactive lectures, laboratory practicals, CBL	MCQs, Practical Assessment
Week 3	Chronic Inflammation, Tuberculosis & Leprosy	Pathology, Microbiology, Immunology	Interactive lectures, practical sessions, CBL	MCQs
Week 4	Cell Repair, Wound Healing & Prostaglandin Analogues	Pathology, Pharmacology	Interactive lectures, demonstrations, practical sessions	MCQs, OSPE
Week 5	Anti-inflammatory Drugs, COX Inhibitors, Histamines, Communicable Diseases, Psychological Stress & Aging	Pharmacology, Community Medicine, Behavioral Sciences, Biochemistry	Interactive lectures, case discussions, SDL	Practical Assessment, Viva
Week 6	Integrated Revision & Block Assessment	All Integrated Disciplines	Revision sessions, practical revision, small-group discussions, feedback	Block Examination (Theory & Practical)

Weekly Progression

The Inflammation module follows a system-based integrated approach, beginning with the role of inflammation in embryology and the inflammatory response, progressing through acute and chronic inflammation, inflammatory mediators, tissue repair and pharmacological management, and concluding with disease prevention, psychological aspects of inflammation and aging. Clinical correlation, laboratory practicals, case-based learning and self-directed learning are integrated throughout the module to strengthen students' understanding of inflammatory diseases and their management, including tuberculosis, leprosy, wound healing, communicable diseases and anti-inflammatory therapy.

PMDC Competency Mapping

The PMDC Competency Mapping Matrix demonstrates the alignment of the Inflammation module with the PMDC Undergraduate Medical Education Competency Framework. Through an integrated systems-based approach, the module develops students' understanding of inflammatory mechanisms, immune responses, tissue repair and pharmacological management while fostering professionalism, communication, teamwork, leadership and lifelong learning in accordance with competency-based medical education.

Theme	Medical Expert	Communicator	Collaborator	Leader	Professional	Scholar	Health Advocate
Role of Inflammation in Embryology	✓	✓	✓		✓	✓	
Inflammatory Response & Leukocytes	✓	✓	✓		✓	✓	✓
Eicosanoids	✓	✓	✓		✓	✓	✓
Acute & Chronic Inflammation	✓	✓	✓	✓	✓	✓	✓
Cell Repair & Anti-inflammatory Pharmacology	✓	✓	✓	✓	✓	✓	✓

Competency Alignment

The Inflammation module primarily develops the Medical Expert competency by providing students with an integrated understanding of acute and chronic inflammation, inflammatory mediators, tissue repair and anti-inflammatory pharmacology. Through integration with Microbiology, Immunology, Pharmacology, Community Medicine, Behavioral Sciences, Medicine and Surgery, the module further strengthens competencies in communication, collaboration, professionalism, scholarship, leadership and health advocacy, particularly in the prevention, diagnosis and management of infectious diseases, inflammatory disorders, wound healing, tuberculosis, leprosy and communicable diseases.

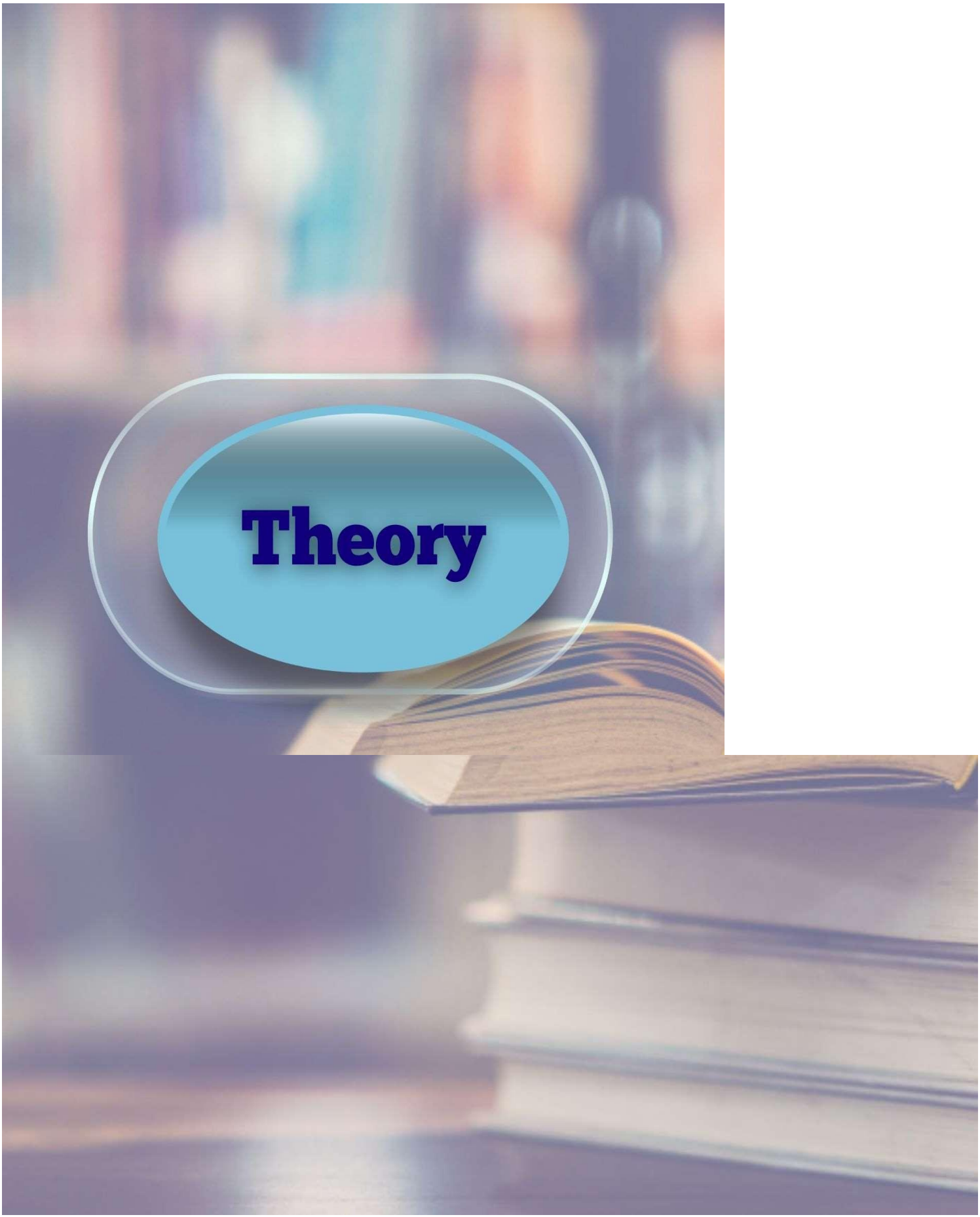
Teaching–Learning Matrix

The Teaching–Learning Matrix outlines the instructional strategies employed throughout the **Inflammation** module to facilitate achievement of the intended learning outcomes. The module adopts an integrated, learner-centred approach that combines basic medical sciences with clinical application through a variety of active learning strategies in accordance with the principles of competency-based medical education.

Theme	Interactive Lectures	Practical / Laboratory	Demonstration	Small Group Discussion (SGD)	Case-Based Learning (CBL)	Self-Directed Learning (SDL)	Early Clinical Exposure / Clinical Correlation
Role of Inflammation in Embryology	✓	✓	✓	✓	✓	✓	✓
Inflammatory Response & Leukocytes	✓	✓	✓	✓	✓	✓	✓
Eicosanoids	✓	✓	✓	✓	✓	✓	✓
Acute & Chronic Inflammation	✓	✓	✓	✓	✓	✓	✓
Cell Repair & Anti-inflammatory Pharmacology	✓	✓	✓	✓	✓	✓	✓

Teaching–Learning Strategy Summary

The **Inflammation** module adopts an integrated, student-centred teaching approach to facilitate the development of foundational knowledge, clinical reasoning, practical skills and professional attitudes. Interactive lectures provide the conceptual framework, while pathology practicals, histology sessions, microbiology laboratory demonstrations and pharmacology discussions reinforce understanding of inflammatory mechanisms and tissue repair. Small-group discussions and case-based learning promote critical thinking and clinical decision-making, whereas self-directed learning encourages lifelong learning. Continuous clinical correlation enables students to relate inflammatory processes to common infectious, immune-mediated and surgical condition


Theory

NORMAL STRUCTURE			
EMBRYOLOGY & POST-NATAL DEVELOPMENT			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 03	
		DISCIPLINE	TOPIC
IN-A-001	Development of integumentary system	Embryology	Development of Integumentary System
MICROSCOPIC STRUCTURE			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 02	
		DISCIPLINE	TOPIC
IN-A-002	Discuss the histology of integumentary system	Histology	Integumentary system
MEDICAL BIOCHEMISTRY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC
IN-B-001	Explain the biochemical and therapeutic roles of eicosanoids (prostaglandins, leukotrienes, thromboxane and prostacyclin	Medical Biochemistry	Eicosanoids
PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 06+12	
		DISCIPLINE	TOPIC
IN-Ph-001	Enumerate prostaglandin analogues. Discuss the clinical use and adverse effect of prostaglandin analogues.		Prostaglandin analogues

IN-Ph-002	Classify anti-inflammatory drugs. Discuss mechanism of action, clinical usage, and adverse effects of steroidal anti-inflammatory drugs.	Pharmacology & Therapeutics	Steroidal anti-Inflammatory drugs

IN-Ph-003	Discuss mechanism of action, pharmacological effects, clinical usage, and adverse effects of non-steroidal antiinflammatory drugs.		Non-steroidal anti-Inflammatory drugs (NSAIDs)
IN-Ph-004	Differentiate between selective and non-selective cyclooxygenase (COX) inhibitors. Differentiate between Aspirin and paracetamol.		COX inhibitors
IN-Pa-001	Define acute inflammation Enlist and describe the etiology of acute inflammation Define necrosis, necroptosis in relation with inflammation	Pathology	Acute inflammation
IN-Pa-002	Discuss the role of vascular and cellular events in acute inflammation Differentiate between transudate and exudate Classify chemical mediators Describe the different pathways of synthesis of chemical mediators and their role in clinical practice Discuss the role of different chemical mediators in acute inflammation Describe the different morphological patterns and outcomes of acute inflammation	Pathology	Process of acute inflammation
IN-Pa-003	Define chronic inflammation and its types Discuss the role of chronic inflammatory cells and mediators in chronic inflammation Discuss the causes, pathophysiology and morphology of granulomatous inflammation Classify mycobacteria Explain the pathogenesis and lab diagnosis of mycobacterium tuberculosis Discuss the Runyon classification of atypical mycobacteria Discuss pathogeneses and lab diagnosis of leprosy	Pathology Microbiology	Chronic Inflammation

IN-Pa-004	Discuss the concept of Cell Proliferation, the Cell Cycle and Stem Cells in tissue repair Discuss the role of Growth Factors, receptors, signal transduction and extracellular matrix Involved in Regeneration and Repair	Pathology	Cell Repair
	Explain the types of healing along with the steps in scar formation Identify the factors that influence the tissue repair Discuss the complications of wound healing.		
DISEASE PREVENTION AND IMPACT			
CODE	COMMUNITY MEDICINE & BEHAVIORAL SCIENCE	TOTAL HOURS = 03+01	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
IN-CM-001	Discuss the mode of transmission of communicable diseases Explain the general concept of prevention of communicable diseases Discuss the primary, secondary and tertiary prevention of acute and chronic diseases Discuss the role of immunoprophylaxis and chemoprophylaxis in prevention of communicable diseases	Community Medicine and Public Health	Communicable Diseases
IN-BhS-001	Understand the correlation between psychological stress and inflammation	Behavioral Sciences	Role of Psychological stress in Inflammation
AGING			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC
IN-Ag-001	Explain inflammatory changes and role of leukotriene and cytokines in old age	Biochemistry	Inflammatory changes & signaling molecules in Aging

PRACTICAL

HISTOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 02	
		DISCIPLINE	TOPIC
IN-A-003	Draw and identify microscopic structure of integumentary system	Histology	Integumentary System

PATHOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC
IN-Pa-005	Identify the pathological features of acute inflammation	Pathology	Inflammation
	Identify the pathological features of chronic inflammation & granulomatous inflammation		

PHARMACOLOGY

CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 01	
		DISCIPLINE	TOPIC

IN-Ph-005	Label the diagram/flow chart showing the site of drug actions (corticosteroids, leukotriene and cyclooxygenase inhibitors) Identify the drug group. Enlist its adverse effects.	Pharmacology	Prostaglandin analogues and anti-inflammatory drugs

Assessment Matrix

The Assessment Matrix demonstrates the alignment of assessment methods with the intended learning outcomes and teaching–learning strategies employed throughout the Inflammation module. A balanced combination of formative and summative assessment methods is utilized to evaluate students' knowledge, practical skills, clinical reasoning, communication, professionalism and competency development in accordance with PMDC standards and UHS assessment regulations.

Theme	Formative Assessment	Summative Assessment	Assessment Domain
Role of Inflammation in Embryology	MCQs, Tutorials, Embryology Discussion, Viva	Theory Paper, Viva Voce	Cognitive
Inflammatory Response & Leukocytes	MCQs, Histopathology Practical, Laboratory Demonstration, Case Discussion	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Eicosanoids	MCQs, Pharmacology Tutorials, Drug Classification Exercises	Theory Paper, , Viva	Cognitive
Acute & Chronic Inflammation	MCQs, Histopathology Slide Interpretation, Practical Demonstration, Case-Based Discussion	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor
Cell Repair & Anti-inflammatory Pharmacology	MCQs, Wound Healing Demonstration, Drug Prescription Exercises, Case Discussion	Theory Paper, Practical Examination (OSPE), Viva Voce	Cognitive, Psychomotor, Affective

Block Assessment Summary

Assessment Component	Method
Formative Assessment	MCQs, Tutorials, Histopathology Practicals, Laboratory Demonstrations, Pharmacology Exercises, Case-Based Discussions, Viva Voce and Classroom Participation
Summative Assessment	Integrated Theory Examination (MCQ as per UHS regulations), Practical Examination (OSPE), Viva Voce (where applicable)
Feedback Mechanism	Immediate verbal feedback, written feedback, post-assessment review sessions and individualized academic guidance
Remediation	Conducted in accordance with institutional assessment policy and UHS promotion regulations

Assessment Alignment

Assessment within the Inflammation module is constructively aligned with the intended learning outcomes and instructional strategies. Students are assessed on their understanding of inflammatory mechanisms, inflammatory mediators, immune responses, tissue repair, communicable diseases and anti-inflammatory pharmacology. Practical assessments evaluate competencies in histopathological slide interpretation, identification of inflammatory patterns, interpretation of laboratory findings and rational selection of anti-inflammatory drugs. The integration of formative and summative assessments ensures evaluation across the cognitive, psychomotor and affective domains while supporting competency-based medical education.

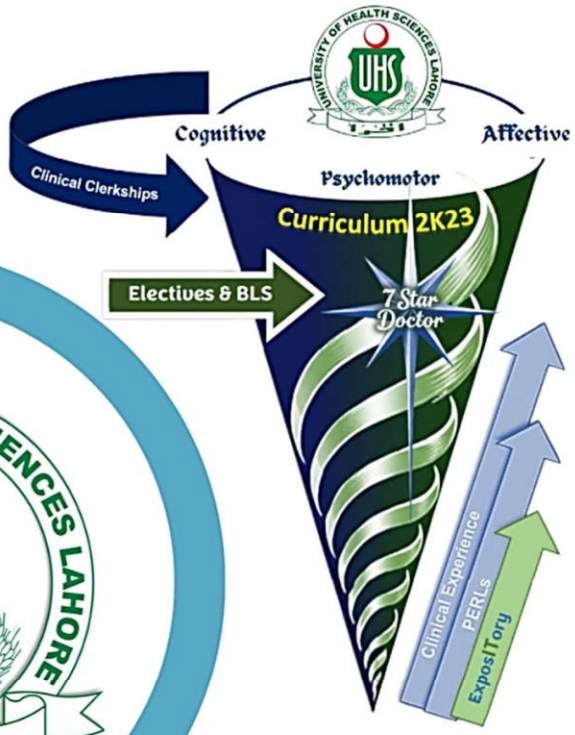
References

1. **University of Health Sciences (UHS), Lahore.** *Integrated MBBS Curriculum 2K23.*
2. **University of Health Sciences (UHS), Lahore.** *Second Professional MBBS Study Guide – Module 11: Inflammation.*
3. **Pakistan Medical & Dental Council (PMDC).** *Undergraduate Medical Education Standards* (latest applicable edition).
4. **World Federation for Medical Education (WFME).** *Global Standards for Quality Improvement in Medical Education.*
5. **Quaid-e-Azam Medical College, Bahawalpur.** *Department of Medical Education (DME) Curriculum and Assessment Guidelines.*
6. **Institutional Assessment Policy**, Quaid-e-Azam Medical College, Bahawalpur.


03
Section

Modular Integrated Curriculum 2K23

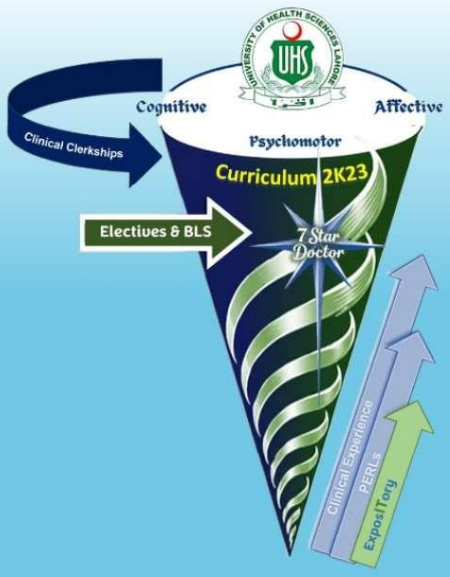
Year 1 & 2



The Holy Quran
Pakistan Studies
Islamiyat
Civics

Modular Integrated Curriculum 2K23

Year 1 & 2



The Holy Quran

MODULE RATIONALE

The Holy Quran provides wisdom and knowledge to be followed in every applied component of modern civilization covering Ethical, Social, Legal, Financial and Healthcare Domains. The complete Quran encompasses the guidelines, all full of 'Hikmah' (wisdom) to deal with all practical scenarios encountering patients and health professionals. As the Holy Quran is the guiding light for humanity and a way of life for all the believers of one true Allah, therefore, understanding the message of this Holy Book is mandatory for realizing the duties which one has towards other human beings in general and the profession in particular. Holy Quran is a guide for the modern society and scientific development therefore, orbiting around Quranic doctrines and axioms of Hadith, all challenges faced by modern healthcare can be solved. Therefore, this longitudinal curriculum is developed so that all health professionals can get, as enunciated by the Holy Quran itself, "the best of this world as well as the best of the Hereafter".

2. VISION & MISSION

2.1: Vision: Building the personality and character of health professionals in light of teachings of the Holy Quran and Sunnah, to alleviate human sufferings.

2.2: Mission: Teaching Holy Quran and Sunnah to undergraduate students of Health Sciences, building their personality and character, enabling them to apply these principles in patient care and innovative research.

3. CURRICULUM DESIGN AND ORGANIZATION

3.1: Course Aim: The Holy Quran course aims to imbibe Health profession students with professionalism, general and medical, based on Divine teachings. The professionals thus groomed shall be able to correlate religion with healthcare delivery and modern science with an understanding that evidence-based practice itself originated from the system by which the “Hadith” was preserved after centuries.

3.2: Mode of Delivery: The module will be taught in the form of interactive lectures.

3.3: Learning Experience: Classroom environment will be used.

3.4: Attendance: Eighty five percent (85%) attendance is mandatory to be eligible to sit in the professional examination.

3.5: Course Modules for Year 1 and Year 2

The curriculum will be taught under three Major Sections

- Faith
- Worship

- Specific Quranic Commandments

3.6: Module Credit hours & Contact hours: This will be a three (03) credit hour course where each credit hour will be equivalent to eighteen (18) contact hours distributed over two years.

3.7: Assessment Portfolio

The assessment will be done through student portfolios based on four written assignments and two quizzes per year. The portfolio submission to the Quran teacher will be mandatory for sending admission to the university and sitting in the professional examination. The assignments will be based on the topics discussed during the year. One will be given after first half of the course will be completed for the year and second will be given at the completion of the Quran course.

3.8: Reference Material

- Translations of the Holy Quran approved by the Quran Board
- Six Authentic Books of Hadith

3.9. Module Faculty

At least one full time faculty member (Lecturer or above) will be hired for running the Holy Quran course throughout four years. The qualifications of the faculty member will be certified by the academic council of the college/institution to be declared as the teacher of Holy Quran course.


Syllabus

Quran: Year-1

SECTION ONE: FAITH (AQAID)

LEARNING OUTCOMES

a. Oneness of Allah (SWT) (Tawheed)

i. Describe Unity of Allah in being
ii. Describe Unity of Allah in attributes
iii. Describe concept of Shirk
iv. Impact of Tawheed in human life

b. Prophethood (Risalat)

i. Explain Significance of Risalat
ii. Identify Prophets as role models
iii. Recognize finality of Prophethood - Prophet Muhammad (PBUH) c. Belief in Hereafter (Aakhirat)

i. Appraise continuity of life beyond material world
ii. Concept of Doomsday and its various stages
iii. Concept of Day of Judgment and accountability in the Hereafter
iv. Concept of "Meezan"

d. Divine Revelations (Holy Books)

i. Explain the divine decree in sending the Holy Books
ii. Identify the Holy Quran as the only preserved & authenticated divine revelation to date
iii. Interpret Quran as Furqan

e. Angels

uss belief in angels and its significance

ii. Describe the universal role of angels (their specific duties) f. Qadr

i. Identify Taqdeer as Knowledge of Allah ii. Explain the concept of Faith in Good and Evil

CONTENTS

1. Oneness of Allah subhan wa taala (Tawheed)
2. Prophethood (Risalat)
3. Belief in Hereafter (Akhirat)
4. Devine revelations (Holy Books)

SECTION TWO: WORSHIP (IBADAAT)

LEARNING OUTCOMES

a. Prayer (Namaz)

i. Recognize the importance of physical purity (Taharah)
ii. Discuss the philosophy of prayer and its role in purification of soul
iii. Recognize the importance of prayer in building personal character - sense of duty, patience, perseverance, punctuality and self/social discipline
iv. Spiritual, moral and social impact of prayer in building of righteous community
v. Role in creating brotherhood, equality and unity in ummah
vi. Identify the conditions in which relaxation in prayer is allowed e.g. during operation, travelling etc.

b. Obligatory Charity (Zakat)

i. Identify obligatory importance of Zakat and other items as outlined under fee-sabilillah'
ii. Categorize the people who can be the beneficiaries of Zakat
iii. Role of zakat in eradication of greed and love of material world
iv. Effect of Zakat and sadaqat in circulation of wealth and alleviation of po
v. Explain the essence of zakat and sadaqat in building just communities
vi. Describe the role of state in collection and disbursement of zakat

c. Fasting (Roza)

i. Discuss the importance and significance of fasting
ii. Relate the Holy Quran and the month of Ramadan
iii. Role of fasting in building personal qualities like self-control, piety and soft corner for the poor and needy persons
iv. Identify the applications of "Taqwa" through fasting

d. Pilgrimage (Hajj)

i. Discuss the importance and significance of Hajj
ii. Identify the conditions in which Hajj becomes an obligation
iii. Role of manasik-e-Hajj in producing discipline and complete submission
iv. Recognize the importance of Hajj in uniting the ummah
v. Sacrifice for Allah subhan wa taala (essence of qurbani)

TOPIC AREAS

1. Prayer (Salah/Namaz)
2. Obligatory charity (Zakat)
3. Fasting (Saum/Roza)
4. Pilgrimage (Hajj)

Quran: Year-2

SECTION THREE: SPECIFIC QURANIC COMMANDMENTS

LEARNING OUTCOMES

a. Importance of the protection of Human life

i. Concept of the sanctity of human life in Quran and Sunnah

ii. Importance and significance of a single human being even during war

iii. Concept of punishment in regard to the killing of a human being, voluntarily or involuntarily

b. Jihad

i. Concept of Jihad and its significance (hikmat)

ii. Different forms of Jihad and their importance

iii. Principles and preparation of Jihad

c. Heirship/Inheritence (Virasat)

i. Heirship and division of wealth in accordance with divine teachings

ii. Heirs and their shares

iii. Legal aspect of virasat (Hud-e-Illahi)

d. Amar-bil-maroof-wa-Nahi-anil-munkar

i. Differentiation between Maroof and Munkar

iv. Devine reward of Jihad ii. Importance and significance (effects of avoiding this principle)

iii. Necessary conditions of both amar-bil-maroof and nahi-anil-munkar

iv. The different stages and the necessary prerequisites

e. Hadood-e Illahee and taazeerat

i. Meaning and various types of hadood-e-Illahee

ii. Authority for fixation of limit (hudd)

iii. Criteria and permissible relaxation in fixing the limits
iv. Difference between ‘Hadood’, ‘Qisas’ and ‘Tazeerat’. Punishments which are left to the court of law
v. Benefits for the good of community

f. Justice (Adal-o-insaf)

i. Justice of Allah subhan wa taala
ii. Importance of justice for the survival of community
iii. Need of justice to be prevailed irrespective of religion
iv. Devine reward for fair justice

g. Business (Bay-o-tijarat)

i. Importance of fair business and its necessary constituents
ii. Permissible and impermissible conditions of businesses
iii. Concept of loan in businesses

h. Interest (Riba or Sudi karobar)

i. Meaning of Riba or interest and its different forms
ii. Impact of Riba on a society in general
iii. Devine declaration and its punishment both in this world and Hereafter

i. Nikah-o-talaq

i. Basic rulings regarding marriage and divorce
ii. Importance of Nikah and its constituents
iii. Conditions of Nikah and various forms of prohibited/impermissible nikah

iception of dowry

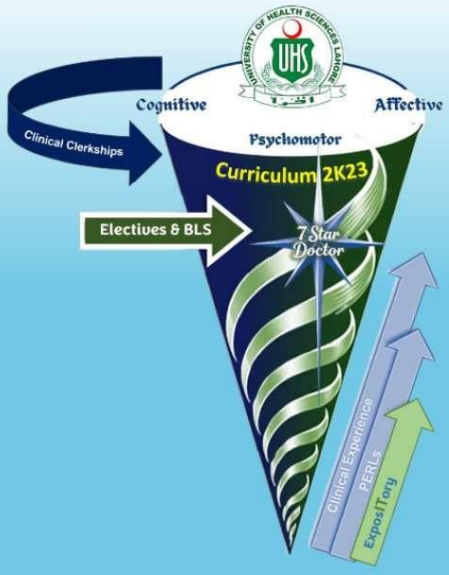
v. Talaq and its various forms vi. Meaning of Khula and its conditions

CONTENTS

1. Importance of the protection of Human life
2. Jihad
3. Heirship/Inheritence (Virasat)
4. Amar-bil-maroof-wa-Nahi-anil-munkar
5. Hadood-e Illahee and taazeerat
6. Justice (Adal-o-insaf)
7. Business (Bay-o-tijarat)
8. Interest (Riba or Sudi karobar)
9. Nikah-o-talaq

Modular Integrated Curriculum 2K23

Year 1 & 2



Islamiyat & Pakistan Studies

MODULE RATIONALE

This module comprises of Islamiyat & Pakistan Studies. All the medical or other curricula relate to our core context and internal fiber. The study of religion and country endorses all relevancy and competency acquisition for the purpose of service to humanity and community orientation.

ISLAMIYAT

A short course on Islamic Studies will be completed in First and Second year with an exam at the end of second year.

Course Content:

1. Understand the basic principles of Islam.
2. Explain the concept of the Islamic state.
3. Explain the Quran as a guide for modern society and scientific development.
4. Describe the life of the Holy Prophet Peace be upon him as an example to follow.
5. Explain ethics in the Islamic prospective.
6. Describe the rights of the individual in Islam.
7. Describe the rights of women and children in Islam.
8. Explain the contribution of Islamic scholars to science and medicine.
9. Understand Islam in terms of modern scientific development.
10. Explain the concept of Rizk-e-Hilal.
11. Explain the concept of Hukook-ul-Ibad.

PAKISTAN STUDIES

A short course on Pakistan Studies will be completed in First and Second year with an exam at the end of second year.

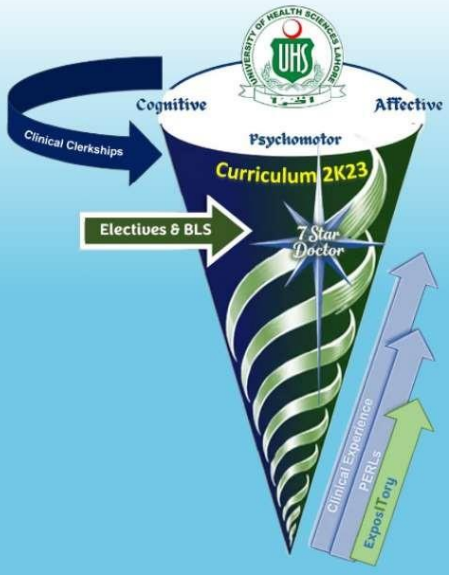
Course Content:

1. Describe brief the salient features of the Pakistan movement.
2. Explain the basis for the creation of Pakistan.
3. Give a brief account of the history of Pakistan.
4. Explain the ethnic and cultural distribution of the population of Pakistan.
5. Describe the Provinces and resources available in Pakistan.
6. Explain current problems faced by Pakistan.
7. Describe the social, economic and health problems of the rural population of Pakistan.

ISLAMIYAT AND PAKISTAN STUDIES BOOKS
• Standard Islamiyat (Compulsory) for B.A, B.Sc., M.A, M.Sc., MBBS by Prof. M.Sharif Islahi Ilmi Islamiyat (Compulsory) for B.A. B.Sc., & equivalent. • Pakistan studies (Compulsory) for B.A. B.Sc., B.Com., Medical/Engineering by Prof. Shah Jahan Kahlun • Pakistan studies (Compulsory) for B.A, B.Sc., B.Com., B.Ed., Medical/Engineering by Prof. Shah Jahan Kahlun

Modular Integrated Curriculum 2K23

Year 1 & 2



Civics

1. MODULE RATIONALE

Civics is part and parcel of life and the study of Civics has major thrust on improvement of the quality of life and welfare of human beings. This discipline enhances the approach towards rational behavior and daily life.

There is a need for us to know role of a citizen with specific reference to Global Village, the Citizen and Daily life issues, Citizenship, Rights and Responsibility, Role of Government and State, Implementation

Issues of Devolution plan, Social Welfare Institutions/ NGOs and their role at basic level, social interactions and the new discoveries in IT and mass media, relations with International Organizations and Pakistan and its neighbors. Civics goes beyond the cognitive level to deal with social values and attitudes. From the earliest stages of the course, it is important to respect students' opinions while helping them to develop a rationale for their opinions. This curriculum is adapted from Agha Khan University Examination Board curriculum for higher secondary examination.

2. VISION & MISSION

2.1: Vision: Building the personality and character of health professionals

2.2: Mission: Teaching Civics to undergraduate students of Health Sciences, building their personality and character, enabling them to apply these principles in patient care.

3. CURRICULUM DESIGN AND ORGANIZATION

3.1: Course Aim:

- To develop understanding of the social nature and significance of civics, its key concepts and civic life.
- To emphasize learning of related themes in a way that encourages creativity, curiosity, observation, exploration and questioning.
- To create awareness of the nature of civic life and the relationship between civics and other social sciences.
- To promote understanding about the ideology of Pakistan and the struggle of an independent state.
- To inculcate the behavior patterns of national character, and qualities of a good citizen, self-reliance, patriotism and leadership.
- To create a strong sense of national unity, integration and cohesion.

- To prepare students as future citizens, conscious of their positive role in a society and the world at large.

3.2: Mode of Delivery: The module will be taught in the form of interactive lectures.

3.3: Learning Experience: Classroom environment will be used.

3.4: Attendance: Eighty-five percent (85%) attendance is mandatory to be eligible to sit in the professional examination.

3.5: Assessment: The assessment will be done through two written assignments and two quizzes per year. The assignments will be based on the topics discussed during the year. One will be given after first half of the course will be completed for the year and second will be given at the completion of the course.

3.7: Module Faculty: At least one full time faculty member (Lecturer or above) will be hired to run the civics course throughout four years. The qualifications of the faculty member will be certified by the academic council of the college/institution to be declared as the teacher of civics.


Syllabus

LEARNING OUTCOMES	TOPICS
i. Define civics ii. Describe how civics can improve the citizenship iii. Illustrate the scope of civics iv. Discuss the nature of civics v. Give examples how civics can help in the national development	Civics-Meaning & Nature
i. Examine the significance of civics ii. Explain how civics is important to know the problems of daily life iii. Discuss how civics can help to bring improvements in the civics life of citizens iv. Evaluate how civics can improve the sense of love and respect for human relationship v. Discuss that studying civics can develop a sense of gratitude vi. Give examples how civics is important to develop the global unity	Significance and Utility
i. Compare civics with political science, history, economics, sociology and ethics	Relationship with Social Sciences
i. Describe the term harmonic relationship ii. Explain the harmonic relationship among different members of society. (Women, children and senior citizens) iii. Explain how harmonic relationship develop for respect of religion	Harmonic Relationship
i. Define the term individual in relation to civics ii. Define the term state iii. Explain the relation between an individual and a state iv. Describe the importance of an individual in a state v. Enlist the responsibilities of an individual in a state	Individual and state

i. Identify the basic unit of social institution Discuss and characterize the different types of family ii. Give the importance of basic unit of social institution in the development of a state Enlist the responsibilities of family in general iii. Analyze your role for the betterment of the family Compare and contrast the impact of the deterioration of family in the western society and give examples	Family

i. Define community ii. Explain the nature and significance of community iii. Discuss the role of a family in community iv. Analyze the role of an individual for the betterment of the community	Community
i. Define society ii. Elaborate the relation between an individual and society and society and state iii. Analyze the role of an individual for the betterment of society	Society
i. Define the term nation, nationality and ummah differentiate between nation and nationality distinguish between nation and ummah analyze the value, behavior and the pattern of society based on religions ii. Evaluate the characteristics of society developed by religions	Nation, Nationality
i. Trace the origin of state with reference to the theories of Divine Origin, Force and Social ii. Contract (Hobbs, Lock, Rousseau) iii. Describe the elements of a state (sovereignty, population, territory, Government) iv. Compare and distinguish the role of state, society and government	Origin and elements of State

i. Describe the functions of state ii. Describe the factors which are necessary for proper functioning of state iii. Analyze the situation when a state does not function properly iv. Describe the characteristics of a welfare state Analyze how a welfare state guarantees the equity and justice on the issues of gender, religion, and social classes	Functions of state. (Defense, law and order, welfare etc.)
i. Define the concept of sovereignty in west ii. Discuss different kinds of sovereignty iii. Explain Austin's concept of sovereignty iv. Analyze critically Austin's concept of sovereignty	Sovereignty


04
Section


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Table of Specifications (ToS)

MBBS 2nd Professional

Block-4

Theme	Subject	Written Exam		Oral/Practical/Clinical Exam			
		MCQ (1 mark)	Marks	OSPE (8 marks each observed)	OSCE (5 marks each observed)	OSVE (14 marks each observed)	Marks
Normal Structure	Anatomy applied/clinical	38	38	04	-	01	46
Normal Function	Physiology applied/clinical	28	28	03	-	01	38
	Biochemistry applied/clinical	37	37	02	-	01	30
Disease Burden & Prevention	Community Medicine & Public Health	06	06	-	-	-	-
	Behavioral Sciences	05	05	-	-	-	-
Pathophysiology & pharmacotherapeutics	Pathology	16	16	01	-	-	08
	Pharmacology	10	10	01	-	-	08
CFRC	CF-2	-	-	-	01	-	05
PERLs	PERLs-2	-	-	-	01	-	05
Total		140	140	11 stations x 08 = 88	02 stations x 05 = 10	03 stations x 14=42	140

MBBS 2nd Professional

Block-5

Theme	Subject	Written Exam		Oral/Practical/Clinical Exam			
		MCQ (1 mark)	Marks	OSPE (8 marks each observed)	OSCE (5 marks each observed)	OSVE (14 marks each observed)	Marks
Normal Structure	Anatomy applied/clinical	50	50	04	-	01	46
Normal Function	Physiology applied/clinical	40	40	03	-	01	38
	Biochemistry applied/clinical	19	19	01	-	01	22
Disease Burden & Prevention	Community Medicine & Public Health	07	07	-	-	-	0
	Behavioral Sciences	04	04	-	-	-	0
Pathophysiology & pharmacotherapeutics	Pathology	18	18	2	-	-	16

	Pharmacology	02	02	1	-	-	08
CFRC	CF-2	-	-	-	01	-	05
PERLs	PERLs-2	-	-	-	01	-	05
Total		140	140	11 stations x 08 = 88	02 stations x 05 = 10	03 stations x 14=42	140

MBBS 2nd Professional

Block-6

Theme	Subject	Written Exam		Oral/Practical/Clinical Exam			
		MCQ (1 mark)	Marks	OSPE (8 marks each observed)	OSCE (5 marks each observed)	OSVE (14 marks each observed)	Marks
Normal Structure	Anatomy applied/clinical	39	39	03	-	01	38
Normal Function	Physiology applied/clinical	47	47	04	-	01	46
	Biochemistry applied/clinical	22	22	01	-	01	22

Disease Burden & Prevention	Community Medicine & Public Health	04	04	-	-	-	-
	Behavioral Sciences	03	03	-	-	-	-
Pathophysiology & pharmacotherapeutics	Pathology	17	17	02	-	-	16
	Pharmacology	08	08	01	-	-	08
CFRC	CF-2	-	-	-	01	-	05
PERLs	PERLs-2	-	-	-	01	-	05
Total		140	140	11 stations x 08 = 88	02 stations x 05 = 10	03 stations x 14=42	140


05
Section

VOLUME:02

C-FRC

CLINICAL-FOUNDATION ROTATION CLERKSHIPS

UNIVERSITY OF HEALTH SCIENCES LAHORE

Modular Integrated Curriculum 2K23

YEAR-02


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Clerkships
Rotation
Foundation
Clinical Skills -FRC
C-FRC-02
YEAR-02
Clinical Foundation

Table of Contents

LIST OF ABBREVIATIONS

Abbreviations	Subjects
A	Anatomy
Ag	Aging
B	Biochemistry
BhS	Behavioral sciences
C	Civics
CM	Community Medicine
C-FRC	Clinical-Foundation Rotation Clerkship
CV	Cardiovascular
EnR	Endocrinology & Reproduction
ENT	Ear Nose Throat
F	Foundation
FM	Forensic Medicine
GIT	Gastrointestinal tract
GO	Gynecology and Obstetrics
HL	Hematopoietic & Lymphatic
HNSS	Head & Neck and Special Senses
IN	Inflammation
M	Medicine
MS	Musculoskeletal
NS	Neurosciences
O	Ophthalmology
Or	Orientation
P	Physiology
Pa	Pathology
Pe	Pediatrics
PERLs	Professionalism, Ethics, Research, Leadership
Ph	Pharmacology
Psy	Psychiatry
QI	Quran and Islamiyat
R	Renal
Ra	Radiology
	Respiratory
	Surgery

Re
S

PREAMBLE

The Aim of Medical training is to deliver the best possible patient care. This is not possible until medical students are holistically trained to deliver standardized patient care, with management and counselling skills. The competencies given by PMDC for a graduating physician include: 1. Skillful

2. Knowledgeable
3. Community Health Promoter
4. Critical Thinker
5. Professional
6. Scholar
7. Leader and Role Model

All the above cannot be accomplished without a robust Clinical clerkship program.

The purpose of this document is to provide an outline to the UHS clinical clerkship program which will serve as a vertically integrated module throughout the five years of medical college, transitioning from Clinical Foundation (CF) in the first two years to Clinical Rotations (CR) in the third and fourth year and finally to a complete clinical clerkship (CC) in final year of MBBS.

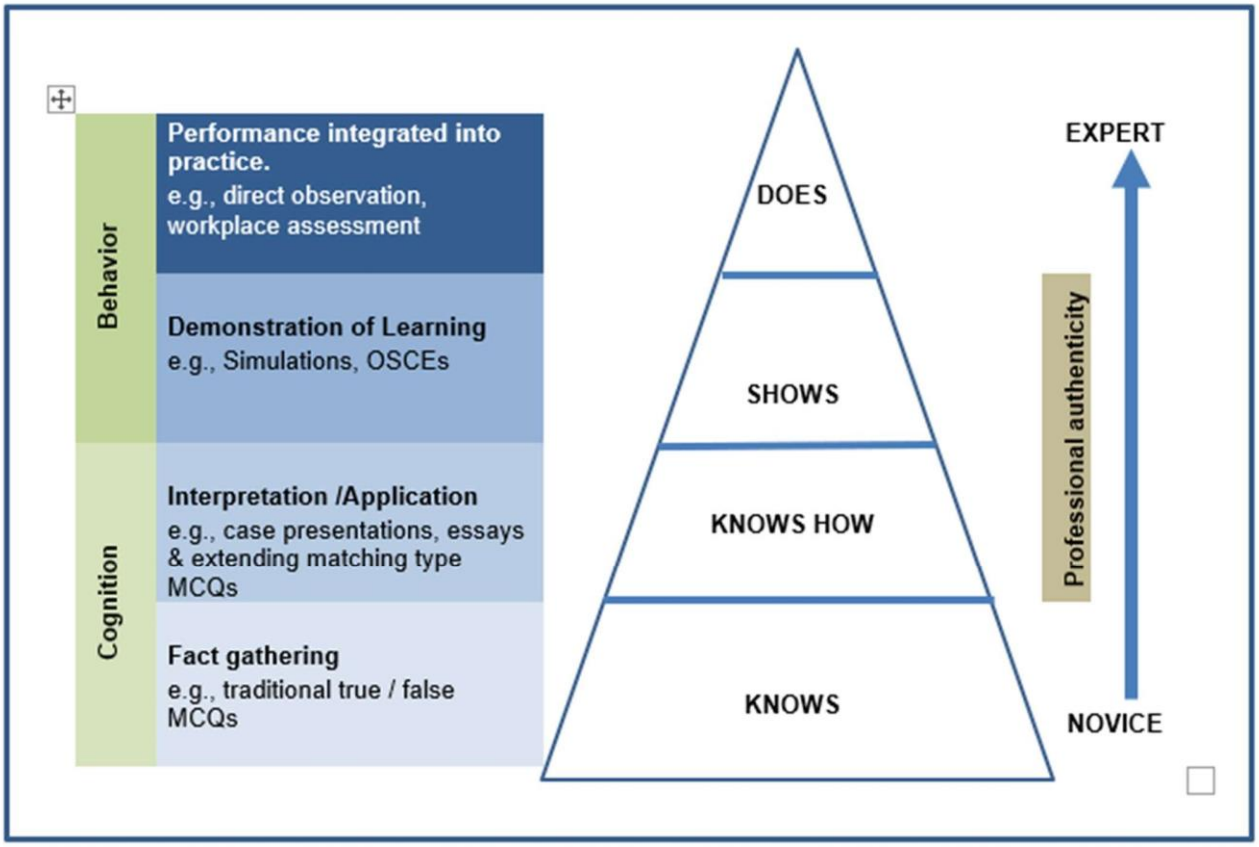
Keeping in view the 45 affiliated medical colleges under the umbrella of UHS, we have tried our best to devise a flexible program which colleges can tailor according to their capacities and resources. We are hopeful this innovative new step will lead to standardization of patient care for UHS lead colleges in the best possible way.

How to use this logbook:

- Each clinical skill has an entry in this logbook along with the checklist to be filled by the supervisor in the ward.
- Number of entries per skill is also mentioned in the modular study guides.
- The Clinical supervisor must tick all boxes deemed fulfilled and give feedback to the student regarding their performance.

MILLER'S PYRAMID

The basis to assess clinical skills is the Miller's pyramid. Different skills throughout the CFR-C module scale from Knows How (e.g., Interpretation of CXR) to does (administer IM injections etc.).



GIT AND NUTRITION-1 MODULE		
Objectives	Skill	Miller's Pyramid Level Reflected
Demonstrate steps of abdominal examination	Abdominal Examination	Shows
Demonstrate the procedure of shifting dullness	shifting dullness	Shows
Identify organs on X-ray abdomen	X-ray Abdomen	Shows
Assess dehydration in infant/young child and explain procedure of making home made ORS	Dehydration	Does

Place a "✓" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

Satisfactory: Performs the step or task according to the standard procedure or guidelines Unsatisfactory: Unable to perform the step or task according to the standard procedure or guidelines

Date Observed: _____

CHECKLIST FOR ABDOMINAL EXAMINATION (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 3 Entries)		
STEP/TASK			
GETTING READY:			
1 and washing			
2 lf/herself to patient			
3 ıre and Asks for consent			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
THE PROCEDURE:			
GENERAL EXAMINATION:			
Examine the following features to check for any pathology related to			

the GIT: i. Facies ii. Body build iii. Posture iv. Color of skin v. Vital signs vi. Head vii. Neck			

viii. Upper limbs ix. Lower limbs x. Chest and heart xi. Spine INSPECTION OF THE ABDOMEN 1. e supine position and drape the patient, exposing only the areas needed 2. Inspect the abdomen for shape/contour, symmetry, pigmentation/colour, ible . Examination was carried out in peristalsis 3 end of the bed from the side, ar 4. Looked for: i. shape (contour) ii. sub costal angle iii. epigastric pulsation iv. divarication of recti v. position of the umbilicus vi. hair distribution vii. skin(pigmentation, scars) viii. dilated veins ix. hernia orifices (ask pt to cough x. visible movements xi. genitalia xii. back (all back exam at the en 5. Type of breathing (ask the patie			
PALPATION:			

1	/ the right side of the patient			
2	e abdominal wall by asking the patient to flex his hip and knees, ‹ him to open the mouth and breathe quietly in and			
3	ıre that his/her hand is warm			
4	. If a painful area or mass is present, palpate that area at the end.			

5. Started by light palpation (superficial palpation): i. Tenderness: Ask the patient to locate the site of tenderness. If he/she is not able to; ask them to take a deep breath or to cough. Elicit Rebound tenderness ii. Differentiate rigidity from guarding: rigidity is generally a sign of peritoneal irritation, it is present throughout the abdominal wall, the wall feels stiff and board like to touch. Guarding is a protective mechanism usually triggered by touch or patient's anticipation to pain. iii. (Swelling: If there is a swelling; - Ask the patient to contract his/her abdominal wall muscles by raising his/her head (to determine if it is intra or extra abdominal swelling) Notice the swelling mobility with respiration iv. Hernia orifices: Examine the anatomical sites of hernia for swelling and any expansile impulse with cough. Elicit deep palpation: i. Start Palpation of normal solid viscera (the liver, the spleen and the kidneys): A. <u>Palpation of the liver:</u> i. Place hand in the right iliac fossa, (hand may either rest transversely and flat at right angle to the linea semilunaris and parallel to the costal margin, or placed with fingers pointing towards the head of the patient). The other hand is placed in the loin. ii. Ask the patient to take a deep breath. iii. Keep hand still during inspiration and during expiration slide the hand a little nearer to the right costal margin. When examining a hepatic swelling record: i. The degree of enlargement in a fingerbreadth below the costal margin. ii. The character of the edge (sharp or rounded). iii. The surface (smooth or nodular) iv. The consistency (soft, firm, hard or heterogeneous)			

v. The presence of tenderness vi. The degree of movement on respiration.

B. Palpation of the spleen

There are several clinical methods for the detection of an enlarged spleen:

a) The standard method or bimanual examination:

Start palpation from the right iliac fossa with the tips of the examining hand directed towards the left axilla. The left hand is placed over the lateral aspect of the left costal margin, exerting a certain amount of compression. Followed the rules of palpation moving toward the left hypochondrium until feeling the spleen.(If the spleen is not felt, lift the rib cage forwards as the patient inspired).

b) The hooking method:

If the spleen is not felt by the bimanual method, ask the patient to place the fist of the left hand under the lower ribs in order to push the spleen forward. Then stand on the left side of the patients head and place the fingers of both hands over the costal margin. The patient is instructed to take deep breath.

c)The right lateral position:

If the spleen is not felt by the ordinary method ask the patient to turn to his right side and palpate the spleen by insinuating hand below the costal margin and ask the patient to take deep breath till feeling the lower edge of the spleen .

d)Dipping method:

In the presence of tense ascites. Place hand in the left hypochondrium and push the abdominal wall downwards and wait for the return impulse to hand C). The kidneys:

a) The right kidney is examined by the left hand behind the patient's right loin (between the last rib and the iliac crest) lift the loin and the kidney forward. Put the right hand on the right lumbar region just above the anterior superior iliac spine and as the patient to take deep breath. During expiration push the right hand deeply but gently

and keep it still during inspiration and repeat as patient takes his breath. b) The left kidney is examined by the same procedure on the left side by either standing on the patient's left side or by leaning across the patient, putting the right hand in the left loin and feeling the kidney with the left hand. D). Palpation for other abdominal swellings: Parietal swellings: Swellings of the anterior abdominal wall are differentiated from the intra-abdominal swellings by three signs: i. Relation to the costal margin. ii. Behavior on contraction of the abdomen. iii. Movement with respiration. If abdomen was tense, started percussion before palpation			
PERCUSSION: i. Percuss over the whole abdomen and particularly over any masses.ii. light percussion is necessary. iii. Start from resonant to dull in the midline n of the liver (span of the liver): i. Determine the upper border of the liver by heavy percussion. (started from the 2nd intercostal space, opposite the sternocostal junction) ii. Percuss down along each interspace and when reaching the liver dullness of the upper border ask the patient to take a deep breath and hold it. Percuss again, and then asked him/her to exhale and re-percuss (tidal percussion). Percuss onto the abdomen until the liver dullness disappeared. iii. Mark the lower border of the liver. iv. Measure the distance between the upper and lower border in the right mid- clavicular line. B) Percussion of the spleen: thods for percussion of the spleen (a) n in the right lateral position.			

Start at the lower border of pulmonary resonance in the posterior axillary line and carry down obliquely towards the lowest mid- anterior costal margin. (b) Percussion in the supine position: start from the right iliac fossa towards the left costal margin then continue to the mid axillary line. (c) Percussion of the Traube`s space: Area defined by the left sixth rib superiorly, the left midaxillary line laterally, and the left costal margin inferiorly. C)Percussion of the kidney: Percuss the renal angle.			
AUSCULTATION: i. Intestinal ii. Bruits iii. Venous hum ion splash Examination of the ba : atient to sit ii. Inspect for any eformities or scars iii. Palpate for the sacrum for the tenderness in the renal angles, palpate for ess over vertebrae v. tate the renal angles for bruit			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
Signatures of Supervisor			

Place a "✓" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

Satisfactory: Performs the step or task according to the standard procedure or guidelines Unsatisfactory: Unable to perform the step or task according to the standard procedure or guidelines

Date Observed: _____

CHECKLIST FOR FLUID THRILL/SHIFTING DULLNESS (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 3 Entries)		
STEP/TASK			
GETTING READY:			
1 ls/sanitized hands			
2 ocedure to the patient and take consent			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
The Procedure:			
1. the umbilical region to the patient's left flank. If dullness in the flank. may suggest the presence of ascitic fluid			
2 g your fingers over the area at which the percussion note ask the patient to roll onto their right side (towards you			
3 ient on their right side for 30 seconds and then repeat ver the same area.			

4. If ascites is present, the area that was previously dull should now be resonant (i.e. the dullness has shifted).			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
Signatures of Supervisor			

Place a "✓" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

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Date Observed: _____

CHECKLIST FOR X-RAY ABDOMEN (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 2 Entries)	
STEP/TASK		
Patient Information		
1 entification (name, date of birth).		
2 and time of the X-ray.		
SKILL/ACTIVITY PERFORMED SATISFACTORILY		
Technical Factors		
1. Check the X- ay for proper exposure, focus, and positioning.		
2. age for any artifacts or technical errors.		
3 he correct orientation of the X-ray (anterior-posterior or posteroanterior vi		
SKILL/ACTIVITY PERFORMED SATISFACTORILY		
Procedure		
1. ify and evaluate the integrity of the bony structures, including the and pelvic bones.		
2. Assess the soft tissues, looking for any masses, swellings, or abnormalities.		

3. Identify the presence and distribution of gas throughout the abdomen and bowel loops. 4. Examine the diaphragm for any abnormalities, such as elevation or flattening.		
5. Evaluate the cardiac silhouette for size and shape.		
6. Identify abdominal organs: i. Liver: assess Assess the size, shape, and density of the liver ii. Spleen: Evaluate the size and contours of the spleen iii. Stomach: identify the gastric air bubble and its location iv. Pancreas: look for pancreatic shadow v. Kidneys: identify both kidneys, assess their size, shape and density vi. Bladder: check for presence of urine in bladder		
7. Small Bowel: Evaluate for normal loops and check for any signs of obstruction. 8. Colon: Assess the size and contour of the colon.		
9. Vascular structures: Aorta: evaluate the size and course of the abdominal aorta Inferior Vena cava: check the patency and size		
10. Muscles: examine abdominal wall muscles for symmetry and abnormalities. Fat: assess the distribution and amount of intraabdominal fat.		
11. Abnormalities: identify any abnormalities such as calcification, masses, abnormal densities.		
SKILL/ACTIVITY PERFORMED SATISFACTORILY		
Signatures of Supervisor		

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Date Observed: _____

CHECKLIST FOR ORS FORMULATION AND DEHYDRATION ASSESSMENT (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 2 Entries)	
STEP/TASK		
Introduction 1. ent from parent / child for examination after explaining procedure		
2 hands are washed and warm		
SKILL/ACTIVITY PERFORMED SATISFACTORILY		
Procedure: 3. out diarrhea/vomiting and any reduction in urine output		
4 about color of urine (darker indicates dehydration)		
5 dry cracked lips, dry mouth		
6 t eyes if they appear sunken (sign of dehydration)		
7 child is generally irritable/has an altered mental status		

8. Examine for absence of tears		
9. Check pulse (dehydration results in tachycardia)		
10. Skin pinch is assessed by pinching the skin of the abdomen between the thumb and forefinger without twisting. If the skin goes back in <1 second it is normal, if it takes more than that, dehydration is likely		
SKILL/ACTIVITY PERFORMED SATISFACTORILY		
Formulation of ORS at home 1. Counsel patient regarding rehyd		
2 ʒ 6 teaspoons levelled of sugar, ½ teaspoon r (Approx. 5 cups of 200 ml)		
3 ·ll and make sure the salt and sugar amount are exact		
SKILL/ACTIVITY PERFORMED SATISFACTORILY		
Signatures of Supervisor		

RENAL MODULE		
Objectives	Skill	Miller's Pyramid Level Reflected

Detail the steps of urinary catheterization in females	*Catheterization	Knows how
Detail the steps of urinary catheterization in males	*Catheterization	Knows how

- These skills are at the 'Knows how' level of the miller's pyramid, meaning thereby that students need not perform them themselves but may develop a perception regarding them by observing performance/working on simulated patients/facilitation with video.

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FEMALE CATHETERIZATION

Place a "✓" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

Satisfactory: Performs the step or task according to the standard procedure or guidelines Unsatisfactory: Unable to perform the step or task according to the standard procedure or guidelines

Date Observed: _____

CHECKLIST FOR FEMALE CATHETERIZATION (Some of the following steps/tasks should be performed simultaneously.)	(Minimum 1 Entry)

1. Identification of patient	
2. Washed hands/ sanitized hands	
3. Preparation: gloves, in place, Foley catheter kit, extra pair of sterile gloves, Velcro™ catheter securement device to secure Foley catheter to leg, wastebasket, and light source	
SKILL/ACTIVITY DESCRIBED SATISFACTORILY	
4. Explain procedure to the patient and obtain consent, and explain the need of a chaperone (for male students)	
5. Assess for latex/iodine allergies, GYN surgeries, joint limitations for positioning, and any history of previous difficulties with catheterization.	
6. Position the female patient in a dorsal recumbent position. Uncover the patient, exposing the patient's groin, legs, and feet for positioning and sterile field (female = dorsal recumbent; may need assistance to position patient and help support legs). Drape the patient with a bath blanket, exposing only the necessary area for patient privacy.	
7. Create a sterile field on the over-the-bed table.	

8. Open the outer package wrapping. Remove the sterile wrapped box with the paper label facing upward to avoid spilling contents and place it on the bedside table or, if possible, between the patient's legs. Place the plastic package wrapping at the end of the bed or on the side of the bed near you, with the opening facing you or facing upwards for waste.	
9. Open the kit to create and position a sterile field: a. Open the first flap away from you. b. Open the second flap toward you. c. Open side flaps. d. Only touch within the outer 1" edge to position the sterile field on the table.	

10. Carefully remove the sterile drape from the kit. Touching only the outermost edges of the drape, unfold and place the touched side of drape closest to linen, under the patient. Vertically position the drape between the patient's legs to allow space for the sterile box and sterile tray.	
11. Wash your hands and apply sterile gloves.	
12. Empty the lubricant syringe or package into the plastic tray. Place the empty syringe/package on the sterile outer package.	
Simulate application of iodine/antimicrobial cleanser to cotton balls.	
13. Carefully remove the plastic catheter covering, while keeping the catheter in the sterile box. Attach the syringe filled with sterile water to the balloon port of the catheter; keep the catheter sterile.	
14. Lubricate the tip of the catheter by dipping it in lubricant and place it in the box while maintaining sterility.	
15. Tell the patient that you are going to clean the catheterization area and they will feel a cold sensation.	
16. With your nondominant hand, gently spread the labia minora and visualize the urinary meatus. Your nondominant hand will now be nonsterile. This hand must remain in place throughout the procedure.	

17. With your dominant hand, use an antiseptic swab or pick up a sterile antiseptic soaked cotton ball with plastic forceps to clean the labia minora farthest from you using a downward stroke, then discard the swab or cotton ball. Repeat for the labia minora closest to you. Use another antiseptic swab or antiseptic soaked cotton ball to clean the area between the labia minora. Discard the cotton ball after use into the plastic bag, not crossing the sterile field. Repeat for a total of three times using a new cotton ball each time. Discard the forceps in the plastic bag without touching the sterile gloved hand to the bag	
18. Pick up the catheter with your sterile dominant hand. Instruct the patient to take a deep breath and exhale or "bear down" as if to void, as you steadily insert the catheter maintaining sterility of the catheter until urine is noted.	
19. Once urine is noted, continue inserting the catheter 2-3″ farther." Do not force the catheter.	
20. With your dominant hand, inflate the retention balloon with the waterfilled syringe to the level indicated on the balloon port of the catheter. With the plunger still pressed, remove the syringe and set it aside. Pull back on the catheter until resistance is met, confirming the balloon is in place.	
21. Remove your gloves and perform hand hygiene.	
22. Apply new gloves. Secure the catheter with securement device, allowing room as to not pull on the catheter.	
23. Place the drainage bag below the level of the bladder, attaching it to the bed frame.	
24. Remove your gloves and perform hand hygiene. Assist patient to a comfortable position.	
SKILL/ACTIVITY DESCRIBED SATISFACTORILY	
Signatures of Supervisor	

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Satisfactory: Performs the step or task according to the standard procedure or guidelines Unsatisfactory: Unable to perform the step or task according to the standard procedure or guidelines

Date Observed: _____

CHECKLIST FOR MALE CATHETHERIZATION (Some of the following steps/tasks should be performed simultaneously.)	(Minimum 1 Entry)
1. Identification of patient	
2. Collect the equipment required for the procedure and place it within reach on the clean trolley. Check the expiry date on the catheter, sterile water, normal saline and lidocaine gel. Ensure a clinical waste bin is placed nearby	
SKILL/ACTIVITY OBSERVED AND DESCRIBED SATISFACTORILY	
1. Wash hands	
2. Introduce yourself to the patient, explain the procedure and take consent	
3. Explain the need for a chaperone (for female students)	
4. Setup up the sterile field by first removing the outer packaging from the catheter pack and then opening the catheter pack from the corners without touching the inner surface of the field.	
5. Using aseptic non-touch technique (ANTT) empty the catheter, lidocaine gel syringe, sterile water syringe and sterile gloves onto the field.	
6. Pour the 0.9% sodium chloride solution over the cotton balls which should already be located within the gallipot of the catheter pack	

7. With the patient lying supine, ensure the bed is at an appropriate height for you to comfortably carry out the procedure	
8. Wash your hands again and don a pair of sterile gloves	
9. Ask your chaperone to remove the sheet covering the patient's genitals to allow you to maintain sterility	
10. Place a sterile absorbent pad underneath the patient's genital region,	

ensuring you maintain sterility

11. With your dominant hand pick up a cotton ball and use a single stroke moving away from the urethral meatus to clean an area of the glans. Dispose of the first cotton ball into the clinical waste bin and continue to repeat this process with a new cotton ball each time until all areas of the glans have been cleaned
12. Discard your used gloves, wash your hands again and don a new pair of sterile gloves
13. Place the sterile drape over the patient's penis, positioned such that the penis remains visible through the central aperture of the drape. Some drapes come with a hole already present for this purpose, whereas others will require you to create one
14. Place the sterile urine collection bowl below the penis but on top of the sterile drape
15. Warn the patient that the anesthetic gel might initially sting, but then should quickly cause things to become numb with your dominant hand place the nozzle of the syringe of anaesthetic gel into the urethral meatus. Empty the entire 10mls of anaesthetic gel into the urethra at a slow but steady pace . Continue to hold to the penis in the vertical position to ensure the gel remains within the urethra and allow 3 to 5 minutes for the lidocaine gel to reach its maximum effect
16. Pick up the catheter which should be on your sterile field in its wrapper. Remove the tear-away portion of the wrapper near the catheter tip, making sure not to touch the catheter. Clean away any urine spillage or excess lubricating gel and cover the patient with the sheet. Dispose of your equipment into a clinical waste bin 46 Provide the patient with privacy to get dressed
17. Hold the penis again using sterile gauze with your non-dominant hand
18. Warn the patient you are about to insert the catheter. Insert the exposed catheter tip into the urethral meatus using your dominant 'clean hand'
19. Advance the catheter slowly whilst gradually removing more of the wrapper to expose more of the catheter. You should continue to advance the catheter until it is fully inserted into the penis
20. Once the catheter is fully inserted, inflate the catheter balloon with the 10ml syringe of sterile water to secure it within the bladder
21. Once the balloon is fully inflated, remove the syringe and gently withdraw the catheter until resistance is noted, confirming the catheter is held securely within the bladder
22. Attach the catheter bag tubing to the end of the catheter securely. Position the catheter bag below the level of the patient to facilitate effective drainage of urine
23. Clean away any urine spillage or excess lubricating gel and cover the patient with the sheet Dispose of your equipment into a clinical waste bin. Provide the patient with privacy to get dressed

24. Dispose of your equipment into a clinical waste bin.	
25. Provide the patient with privacy to get dressed	
SKILL/ACTIVITY PERFORMED SATISFACTORILY	
Signatures of Supervisor	

ENDOCRINOLOGY & REPRODUCTION-1 MODULE		
Objectives	Skill	Miller's Pyramid Level Reflected
Examination of the thyroid gland	Thyroid examination	Shows
Examination for Acromegaly	Examination for acromegaly	Shows
Measurement of blood glucose levels	Blood sugar measurement	Shows

Suturing	Suturing	*Knows how

- These skills are at the ‘Knows how’ level of the miller’s pyramid, meaning thereby that students need not perform them themselves but may develop a perception regarding them by observing performance/working on simulated patients/facilitation with videos.

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Date Observed: _____

CHECKLIST FOR THYROID EXAMINATION (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 3 Entries)		
STEP/TASK			
GETTING READY:			
hands and don PPE if appropriate			
rself to the patient including your name and role			
1 nt to proceed with the examination			
2 tient to sit on a chair for the assessment			
3 pose the patient's neck and upper sternum			
4 atient has any pain before proceeding			
5			
6			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
THE PROCEDURE:			
7 ent whilst at rest, looking for clinical signs suggestive pathology			
8 ent's face for clinical signs suggestive of thyroid y skin, excessive sweating, eyebrow loss)			
9 ient's eyes for evidence of lid retraction, inflammation mos			
10 movement abnormalities			

11. Assess for lid lag			
12. Inspect the midline of the neck for evidence of thyroid enlargement, lumps or scars			
13. Ask the patient to protrude their tongue and repeat inspection			
14. Palpate the patient's thyroid gland assessing size, symmetry and consistency. Also note any masses present in the thyroid tissue.			
15. Ask the patient to protrude their tongue whilst you palpate			
16. Palpate local lymph nodes to assess for lymphadenopathy			
17. Inspect for tracheal deviation			
18. Percuss downwards from the sternal notch for evidence of retrosternal dullness			
19. Auscultate each lobe of the thyroid for a bruit			
20. Thank the patient			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
Signatures of Supervisor			

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Date Observed: _____

CHECKLIST FOR ACROMEGALY (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 3 Entries)		
STEP/TASK			
THE PROCEDURE:			
1. nds and gain consent from the patient			

2	if he/she has any pain in any region			
3. for	ef general inspection of the patient, looking clinical estive of acromegaly such as:			
	features: coarse features, such as prominent orbital ridges and prognathism, may be indicative of			
4.	egaly.			
	t: may be enlarged.			

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5.	Skin: may display thickening in the hands and face and excess sweating or oiliness in acromegaly.			
6.	Posture: patients with acromegaly can present with signs of osteoarthritis, especially in the weight-bearing joints (knees and hips).			
7.	Hair growth: hirsutism in women and hypertrichosis may occur.			
8.	Skin tags: acromegaly can cause an increase in the number of skin tags.			
9.	Gait: acromegaly can cause a rolling gait or varus deformity.			
10.	Clothes: clothes or jewellery may appear tight if significant weight gain has occurred.			
11.	Hands: Inspect for:			

a. Enlargement: grossly increased size of the hands may be assessed by comparing your hands to the patient are, accounting for natural size differences. b. Wasting: thenar wasting can indicate untreated carpal tunnel syndrome. c. Scars: carpal tunnel release scar may indicate previous median nerve compression. d. Skin changes: skin thickening and excess sweating can occur in acromegaly. e. Finger pricks: finger prick marks on the tips of the fingers may indicate diabetes, which is linked to acromegaly f. Palpation g. Assess for thickening of the patient's skin by pinching the skin overlaying the third metacarpophalangeal joint. This can be compared with your own hand's skin to detect any differences.			

12. Axillae: Whilst supporting the patient's arm, inspect each axilla for the following: a. Acanthosis nigricans: darkening (hyperpigmentation) and thickening (hyperkeratosis) of the axillary skin which can be benign (most commonly in dark-skinned individuals) or associated with insulin resistance (e.g., type 2 diabetes mellitus) as a complication of acromegaly. b. Hypertrichosis: increased hair growth can occur as a result of the effects of growth hormone.			
13. Palpate for thyroid gland			
14. Look for raised JVP			

15. Face: a. General features: b. Inspect the general appearance face for coarse features associated with acromegaly: c. Frontal bossing: a prominent or protruding brow can occur with excess GH. d. Large nose, ears, and lower lip: aspects of soft-tissue overgrowth. e. Prognathism: overgrowth of the jaw can lead to a mandibular protrusion			
16. Mouth: Inspect the inside of the mouth for the following: a. Macroglossia: tongue enlargement may cause the tongue to appear large for the mouth or even cause visible partial airway obstruction in extreme cases. b. Wide spaced teeth: growth of the soft palate may cause interdental separation of the lower jaw. c. Prognathism: overgrowth of the jaw may only be discernible on closer inspection.			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
Signatures of Supervisor			

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Date Observed: _____

CHECKLIST FOR EXAMINATION OF BLOOD GLUCOSE LEVELS (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 3 Entries)		
STEP/TASK			
THE PROCEDURE:			
1 e procedure to the patient and get a verbal consent to proceed.			
2 /ant equipment and place in a clean tray: i. terile gloves ii. glucose reader (a.k.a. glucometer): calibrate using ation fluid if required. iii. iv. g-loaded lancet: to obtain the blood sample. Testing make sure the expiry date is valid. v. Gauze vi. Tape			
3 ent's finger is cleaned prior to measuring capillary blood gl i. portant that the skin over the site being tested has leaned, as substances on the skin can affect the y of capillary blood glucose results (e.g. substances ing sugar). ii. patient to wash their own hands or alternatively you an the site with an alcohol swab (70% isopropyl).			

iii. Make sure the skin over the testing site has dried completely before performing capillary blood glucose measurement.			
4. Turn on the capillary blood glucose monitor and ensure it is calibrated.			
5. Load a test strip into the glucose monitor.			
6. Don a pair of non-sterile gloves.			

7. Pick up the lancet and carefully remove the protective cap.			
8. Prick the side of the patient's finger with the lancet and gently squeeze the finger from proximal to distal to produce a droplet of blood. Some guides advise cleaning away the first drop of blood, however, there is no evidence that this significantly impacts the reliability of blood glucose results.			
9. Gently touch the tip of the test strip against the droplet of blood to allow it to be absorbed into the strip.			
10. Apply gauze or cotton wool to the puncture site to stop the bleeding and ask the patient to maintain pressure over the site			
11. Safely dispose of the lancet into a sharps bin.			
12. Dispose of the test strip and the cotton wool/gauze into a clinical waste bin. If the patient's finger is still bleeding, keep the cotton wool or gauze in place and secure with some tape.			
POST PROCEDURE:			
1. ds, thank the patient'			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
Signatures of Supervisor			

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Date Observed: _____

CHECKLIST FOR SIMPLE INTERRUPTED SUTURE (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 2 Entries)		
STEP/TASK			
EQUIPMENT: edure trolley, and clean the top surface using an alcohol surface ɔe. Next obtain a plastic tray, and clean it in a similar manner. You will llect a number of items. For cleaning: ɔair of non-sterile gloves. i. 'e 10mL sachets of 0.9% sodium chloride (saline) solution. Gauze. ii. iii. For anaesthesia: ɔair of sterile gloves. :ohol wipe (2% chlorhexidine in 70% alcohol). mL 1% lidocaine solution (with or without adrenaline. i. ii. awing up needle (≤18 gauge). iii. ɔcutaneous needle (25-27 gauge) and syringe (20mL). Sharps bin. 20 iv. v. vi. ure pack (containing needle holder, scissors, toothed forceps, non- For suturing: thed forceps). ɔair of sterile gloves. ure material. i. rile drape. arps bin. ii. iii. iv. v.			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			

THE PROCEDURE: i. ·ocedure to the patient and take consent			
Inspection: ii. Assess the size and depth of the wound as well as the state of its border. Inspect for any pus inside which may suggest infection. Ensure that there are no foreign bodies present, such as glass. Finally, check the surrounding skin for any bruising or erythema which may suggest a cellulitis infection.			
Cleaning iii. To clean the wound, take the gauze and soak it in saline solution. Carefully wipe the area starting from the centre of the wound and continuing outwards.			
Anaesthesia iv. Before injecting the anaesthetic, confirm with the patient that they have had no previous reactions to local anaesthetic. Once this has been confirmed, clean the surrounding area using an alcohol wipe. Whilst waiting for the skin to dry, draw up the lidocaine solution into the syringe. a) Once ready to inject, switch the needle on the syringe and don some sterile gloves. Using proper technique, inject 2mL of lidocaine solution subcutaneously into the surrounding skin. After doing so, manoeuvre the needle and continue to inject small amounts of anaesthetic such that all of the surrounding skin is anaesthetised. For medium to large wounds, you will need to withdraw the needle and reinject at another area.			
v. Wash and dry both your hands and the distal third of your forearms and then put the sterile gloves on using correct sterile technique. Allow the anaesthesia at least 5 minutes to work.			
vi. Carefully position the part of the body with the wound and apply the sterile drape over it. At this point, explain to the patient that it is very important for them to keep still and not touch anything on the sterile field to avoid contamination.			
a) Using the toothed forceps, pinch the sides of the wound to test for numbness, and ask the patient whether they can feel any pain. Be sure to warn the patient before you do this. The patient may be able to feel a sense of pressure but should not feel any pain.			

vii.	Use the forceps to position the needle in the needle holder so that the needle holder is two-thirds of the way up from the tip of the needle.			
viii.	Hold the needle holder in your dominant hand and the toothed forceps in the other. Starting from the middle of the wound, use the forceps to pull the skin up on the wound side closest to your dominant hand. Insert the needle into the skin on the same side at a 90° angle, at least 5mm from the wound edge.			
ix.	Push the needle through the skin, supinating your forearm to follow the curvature of the needle as you do so. Remove the needle from the needle holder and pull the needle through that side of the wound using the forceps. a) Position the needle back into the needle holder and insert it into the dermis of the other side of the wound, around 5mm below the skin surface. Again, supinate your wrist such that the needle emerges to the skin surface. Pull the needle through such that only 15cm of thread remains on the other side.			
	To secure the suture in place, you will need to tie a surgical knot. This is			
x.	achieved by tying three smaller "throw" knots.			
xi.	1st throw: Hold the needle holder directly above and parallel to the wound.			
xii.	Wrap the longer end of the thread around the needle holder twice in a clockwise direction and then use the tip of the needle holder to grasp the shorter end of the thread and pull in opposite directions, tying the first throw.			
	2nd throw: Once again wrap the longer end of the thread around the needle holder, however this time, do so only once and in an anticlockwise direction. Then, as before, use the tip of the needle holder to grasp the shorter end of the thread. Pull the suture material through, tying another throw.			
xiii.	3rd throw: Tie this throw in a clockwise direction in a similar manner to the 1st. However, only wrap the thread once around the needle holder.			
xiv.	Once you have completed the three throws, you should have a strong surgical knot. Try to position the knot on one side of the wound. Next, cut both ends of the suture such that there is 5mm of thread on either side. This is so that it is easy to identify the suture. Insert more sutures as required about 5-10mm apart.			
xv.	Once you are finished, dispose of the needle in the sharps bin.			

xvi. Press lightly on the sides of the wound to stop any bleeding. Once satisfied, remove the drape and your gloves. Arrange for the wound to be dressed using a non-adherent dressing.			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
Signatures of Supervisor			

HEAD AND NECK, SPECIAL SENSES MODULE

Objectives	Skill	Miller's Pyramid Level Reflected
Examination of the nose	Nasal examination	Shows
Examination of neck lumps	Neck lump examination	Shows

- These skills are at the 'Knows how' level of the miller's pyramid, meaning thereby that students need not perform them themselves but may develop a perception regarding them by observing performance/working on simulated patients/facilitation with videos.

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Date Observed: _____

CHECKLIST FOR EXAMINATION OF THE NOSE (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 3 Entries)		
STEP/TASK			
THE PROCEDURE:			
1 he procedure to the patient and get a verbal consent to proceed.			
Inspection:			
2. Inspect the fro e external surface of the nose from and the patient to identify any abnormalities.			
3. Skin changes: ct for skin lesions: I. asal cell carcinoma: pearly lesions with telangiectasia i. id rolled edges. ii. quamous cell carcinoma: scaly lesions, sometimes iii. ith associated ulceration and hyperpigmentation. eratoacanthoma: raised lesions with a core of scaly eratin.			

II. Deformity i. Inspect for any deviation in the nasal bones or cartilage suggestive of a fracture. This is best performed by standing behind the patient with their head tilted slightly backwards. III. Palpation: i. Warn the patient that you will be applying some pressure to their nose and ask them to let you know if they experience any pain.			
4. Palpate the nasal bones assessing: i. Alignment ii. Tenderness iii. Irregularity (suggestive of fracture)			
5. Palpate the nasal cartilage assessing: i. Alignment ii. Tenderness			
6. Palpate the infraorbital ridges and assess eye movement if there is a history of trauma to screen for an orbital blowout fracture. *An orbital blowout fracture is a fracture of the orbital floor or medial wall resulting from blunt trauma to the eye socket (e.g., tennis ball). Typical findings on clinical examination include infraorbital tenderness, epistaxis and restricted eye movement (usually on vertical gaze).			
7. The correct method for using a nasal speculum is slightly counter-intuitive, however, it does allow the best visualization of the nasal mucosa: i. Insert your index finger into the bend of the speculum and support it above with the thumb. ii. The middle and ring fingers are used to manipulate the prongs of the speculum.			

iii. You will be aiming to look at the gap between these two fingers.			

iv. Press the prongs of the speculum together to allow them to be placed within the nostril and then reduce your grip on the speculum to widen the prongs until an optimal view of the nasal cavity is achieved.			
a) Nasal vestibule: inspect for inflammation, ulceration or oedema affecting the nasal mucosa. b) Nasal septum: note any polyps, deviation, perforation, haematoma, superficial vessels or areas of cautery. c) Inferior turbinates: note any asymmetry, inflammation or polyps.			
8. Place a cold shiny surface, such as a metal tongue depressor under the nose.			
9. Observe for misting of the metal surface as the patient breathes and compare the misting pattern of the two nostrils.			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			
Signatures of Supervisor			

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Date Observed: _____

CHECKLIST FOR EXAMINATION OF NECK LUMPS (Some of the following steps/tasks should be performed simultaneously.)	CASES (minimum 2 entries)		
STEP/TASK			
THE PROCEDURE:			
1 n the procedure to the patient and get a verbal consent to			

proceed. ıspect the patient, looking for clinical signs suggestive of

2

underlying pat

ıy indicate previous neck surgery (e.g. thyroidectomy,

i. Sc ɔde biopsy/excision, radiotherapy related scarring).

ıuscle loss that is not entirely reversed with

l supplementation. Cachexia is commonly associated with

Cachex ɜ malignancy. caused by compression of the larynx due

Hoarse v and enlargement (e.g. thyroid malignancy).

or stridor: may indicate compression of the upper

iv. y tract by a neck mass. anxiety and hyperactivity are

l with (due to sympathetic overactivity). Hypothyroidism

v. Beh ɛely to be associated with low mood. may be inappropriate

rent temperature.

hyperthyroi ith hyperthyroidism suffer from heat intolerance patients

Cl with hypothyroidism experience cold

bulging of the eye anteriorly out of the orbit

whilst l with Graves' disease.

intolerance.

vii. Exophthali

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3. Ask the patient to point out the neck lump's location if relevant.

   i. Inspect the neck lump from the front and side, noting its location (e.g. anterior triangle, posterior triangle, midline).

4. If a midline mass is identified during the initial inspection, perform some further assessments to try and further narrow the differential diagnosis.

Swallowing

Ask the patient to swallow some water and observe the movement of the mass:

   i. Thyroid gland masses (e.g. a goitre) and thyroglossal cysts typically move upwards with swallowing.
   ii. Lymph nodes will typically move very little with swallowing. iii. An invasive thyroid malignancy may not move with swallowing if tethered to surrounding tissue.

Tongue protrusion

Ask the patient to protrude their tongue: i. Thyroglossal cysts will move upwards noticeably during tongue protrusion. ii. Thyroid gland masses and lymph nodes will not move during tongue protrusion. Further Assessment i. If you identify a midline neck lump or systemic signs indicative of thyroid disease, ask the examiner if a full thyroid status examination should be performed. 5. Palpate the neck lump assessing the following: i. Site: assess the lump's location in relation to other anatomical structures (e.g. anterior triangle, posterior triangle, midline). ii. Size: assess the size of the lump. iii. Shape: assess the lump's borders to determine if they feel regular or irregular.			

iv. Consistency: determine if the lump feels soft (e.g. cyst), hard (e.g. malignancy) or rubbery (e.g. lymph node). v. Mobility: assess if the lump feels mobile or is tethered to other local structures. Asking the patient to turn their head as you palpate, the mass can reveal if it is tethered to the underlying muscle (e.g. malignant tumour). vi. Fluctuance: hold the lump by its sides and then apply pressure to the centre of the mass with another finger. If the mass is fluid-filled (e.g. cyst) then you should feel the sides bulging outwards. vii. Temperature: increased warmth may suggest an inflammatory or infective cause (e.g. infected epidermoid cyst). viii. Overlying skin changes: note any overlying skin changes such as erythema (e.g. inflammatory/infective aetiology) or a punctum (a pore in the epidermis indicative of an underlying epidermoid cyst). ix. Pulsatility: suggests vascular origin (e.g. carotid body tumour, aneurysm). x. Tenderness: may indicate infective and/or inflammatory aetiology (e.g. ruptured epidermoid cyst, infected cyst). Other characteristics of the lump may include: i. Transillumination: apply a light source to the lump, if it is illuminated it suggests the lump is fluid-filled (e.g. cystic hygroma). ii. Vascular bruit: auscultate the lump to listen for a bruit suggestive of vascular aetiology (e.g. carotid artery aneurysm). 6. Assess cervical lymph nodes and thyroid gland as explained in previous checklists 7. Assess the submandibular gland if a swelling is found in that area. Each submandibular gland can be palpated inferior and posterior to the body of the mandible. Move inwards from the inferior border of the mandible near its angle with the patient's head tilted forward. To assess the gland thoroughly, you should perform bimanual palpation with one gloved finger palpating the floor of the mouth whilst the other palpates externally underneath the mandible. Submandibular gland swellings are usually singular, whereas lymphadenopathy typically involves multiple nodes). Salivary duct calculi are relatively common and may be felt as a firm mass within the gland.			
SKILL/ACTIVITY PERFORMED SATISFACTORILY			

Signatures of Supervisor	

NEUROSCIENCES-1 MODULE		
Objectives	Skill	Miller's Pyramid Level Reflected
Assess Glasgow Coma Scale	GCS	Shows
Interpretation of Normal CT brain	CT scan interpretation	Knows how

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Date Observed: _____

CHECKLIST FOR GLASGOW COMA SCALE (Some of the following steps/tasks should be performed simultaneously)	CASES (Minimum 3 Entries)		
STEP/TASK			
THE PROCEDURE: :ale (GCS) allows healthcare professionals to consistently ısciousness of a patient. It is commonly used in the context s also useful in a wide variety of other non-trauma related ment of a patient's GCS can identify early signs of d spects of behaviour that are independently measured as part of an assessment o – motor responsiveness, verbal performance and eye-opening. The highest response from each category care professional is scored on the chart. ossible score is 15 (fully conscious) and the lowest possible score is 3 (coma or dead			

1. Eye Opening: To assess eye response, initially observe if the patient is opening their eyes spontaneously. i. If the patient is opening their eyes spontaneously, your assessment of this behaviour is complete, with the patient scoring 4 points. You would then move on to assessing verbal response, as shown in the next section. If, however, the patient is not opening their eyes spontaneously, you need to work through the following steps until a response is obtained.			
ii. If the patient doesn't open their eyes spontaneously, you need to speak to the patient "Hey Mrs Smith, are you ok?" iii. If the patient's eyes open in response to the sound of your voice, they score 3 points.			

iv. If the patient doesn't open their eyes in response to sound, you need to move on to assessing eye-opening to pain.
v. There are different ways of assessing response to pain, but the most common are:

a. Applying pressure to one of the patient's fingertips
b. Squeezing one of the patient's trapezius muscles (known as a trapezius squeeze)
c. Applying pressure to the patient's supraorbital notch
d. If the patient's eyes open in response to a painful stimulus, they score 2 points.

e. If the patient does not open their eyes to a painful stimulus, they score 1 point.

f. If the patient cannot open their eyes for some reason (e.g., oedema, trauma, dressings), you should document that eye response could not be assessed (NT).

2. Verbal responses:

i. If the patient is able to answer your questions appropriately, the assessment of verbal response is complete, with the patient scoring 5 points.

ii. If the patient is able to reply, but their responses don't seem quite right (e.g. they don't know where they are, or what the date is), this

would be classed as confused conversation and they would score 4 points.

iii. Sometimes confusion can be quite subtle, so pay close attention to their responses.

iv. If the patient responds with seemingly random words that are completely unrelated to the question you asked, this would be classed as inappropriate words and they would score 3 points.

v. If the patient is making sounds, rather than speaking words (e.g., groans) then this would be classed as incomprehensible sounds, with the patient scoring 2 points.

vi. If the patient has no response to your questions, they would score 1 point.

vii. If the patient is intubated or has other factors interfering with their ability to communicate verbally, their response cannot be tested, and for this, you would write NT (not testable).

3. Motor Response:

i. The final part of the GCS assessment involves assessing a patient's motor response.

ii. You should score the patient based on the highest scoring response you were able to elicit in any single limb (e.g., if they were unable to move their right arm, but able to obey commands with their left arm, they'd receive a score of 6 points).

iii. Ask the patient to perform a two-part request (e.g. "Lift your right arm off the bed and make a fist.").

a. If they are able to follow this command correctly, they would score 6 points and the assessment would be over.

iv. This assessment involves applying a painful stimulus and observing the patient for a response.

There are different ways of assessing response to pain, but the most common are:

a. Squeezing one of the patient's trapezius muscles (known as a trapezius squeeze)

b. Applying pressure to the patient's supraorbital notch

If the patient makes attempts to reach towards the site at which you are applying a painful stimulus (e.g. head, neck) and brings their hand above their clavicle, this would be classed as localising to pain, with the patient scoring 5 points.

This is another possible response to a painful stimulus, which involves the patient trying to withdraw from the pain (e.g. the patient tries to pull their arm away from you when applying a painful stimulus to their fingertip). This response is also referred to as a "normal flexion response" as the patient typically flexes their arm rapidly at their elbow to move away from the painful stimulus. It differs from the "abnormal flexion response to pain" shown below due to the absence of the other features mentioned (e.g., internal rotation of the shoulder, pronation of the forearm, wrist flexion). Withdrawal to pain scores 4 points on the Glasgow Coma Scale.			
Abnormal flexion to a painful stimulus typically involves adduction of the arm, internal rotation of the shoulder, flexion of the elbow, pronation of the forearm and wrist flexion (known as decorticate posturing). Decorticate posturing indicates that there may be significant damage to areas including the cerebral hemispheres, the internal capsule, and the thalamus.			
Abnormal extension to a painful stimulus is also known as decerebrate posturing. In decerebrate posturing, the head is extended, with the arms and legs also extended and internally rotated. The patient appears rigid with their teeth clenched. The signs can be on just one side of the body or on both sides (the signs may only be present in the upper limbs). Decerebrate posturing indicates brain stem damage. It is exhibited by people with lesions or compression in the midbrain and lesions in the cerebellum. Progression from decorticate posturing to decerebrate posturing is often indicative of uncal (transtentorial) or tonsilar brain herniation (often referred to as coning).			

The complete absence of a motor response to a painful stimulus scores 1 point. If the patient is unable to provide a motor response (e.g., paralysis), this should be documented as not testable (NT).			

SKILL/ACTIVITY PERFORMED SATISFACTORILY			
Signatures of Supervisor			

Place a "✓" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

Satisfactory: Performs the step or task according to the standard procedure or guidelines Unsatisfactory: Unable to perform the step or task according to the standard procedure or guidelines

Date Observed: _____

CHECKLIST FOR INTERPRETATION OF CT BRAIN (Some of the following steps/tasks should be performed simultaneously)	CASES (Minimum 2 Entries)	
STEP/TASK		
THE PROCEDURE:		
1 Windowing: a. Check the patient's information, including name, date. age, and b. Confirm that the images are properly oriented side). (anterior is at the top, and the left side corresponds to the patient's right c. Adjust window settings to optimize visualization of soft tissues and bone.		
2. Overall Assessı a. Begin by observing the overall appearance of the brain for symmetry and any obvious abnormalities. b. Look for signs of mass effect, midline shift, or other gross abnormalities.		
3. Ventricles: a. Assess the size and symmetry of the lateral ventricles. b. Look for any signs of ventricular enlargement or obstruction.		
4. Sulci and Gyri: a. Evaluate the sulci and gyri for normal patterns and symmetry. b. Ensure there are no signs of cortical atrophy or abnormal folding.		
5. Cisterns and Cisternal Spaces:		

a. Examine the major cisterns (e.g., suprasellar cistern, ambient cistern) for appearance. b. normal Check for any compression or effacement of cisternal spaces.		

6. Basal Ganglia and Thalamus: a. Evaluate the basal ganglia (caudate nucleus, putamen, and globus pallidus) and thalamus for symmetry and density. b. Look for any signs of calcification or hemorrhage		
7. Brainstem: a. Assess the midbrain, pons, and medulla for normal anatomy. b. Look for any signs of midline shift or compression.		
8. Pineal Gland: a. Check the size and symmetry of the pineal gland. b. Assess for calcification, which is a common finding. 9. Fourth Ventricle: a. Evaluate the size and symmetry of the fourth ventricle. b. Look for any signs of obstruction or enlargement.		
10. Subarachnoid Spaces: a. Assess the subarachnoid spaces for normal distribution and density of cerebrospinal fluid (CSF). b. Check for signs of subarachnoid hemorrhage.		
11. Skull and Scalp: a. Inspect the skull for fractures, abnormalities, or signs of trauma b. Assess the scalp for any soft tissue swelling or abnormalities.		
12. Sinuses and Mastoids: a. Check the paranasal sinuses and mastoid air cells for normal aeration. b. Look for signs of sinusitis or mastoiditis.		
13. Blood Vessels: a. Evaluate major intracranial blood vessels for patency and any signs of vascular abnormalities. b. Look for signs of intracranial hemorrhage. 14. Soft Tissue Structures: a. Soft tissue structures, including the eyes and extraocular muscles, for any abnormalities.		

SKILL/ACTIVITY PERFORMED SATISFACTORILY		

225

Signatures of Supervisor	

INFLAMMATION MOD LE		
Objectives	Skill	Miller's Pyramid Level Reflected
Learn how to do history taking	History Taking	Shows

Place a "✓" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

Satisfactory: Performs the step or task according to the standard procedure or guidelines

Unsatisfactory: Unable to perform the step or task according to the standard procedure or guidelines

Date Observed: _____

CHECKLIST FOR HISTORY TAKING (Some of the following steps/tasks should be performed simultaneously.)	CASES (Minimum 3 Entries)		
STEP/TASK			
INTRODUCTION (WIIPP) 1. Wash your hands 2. Introduce yourself: give your name and your job (e.g. Dr. Louise Gooch, ward doctor) 3. Identity: confirm you're speaking to the correct patient (name and date of birth) 4. Permission: confirm the reason for seeing the patient ("I'm going to ask you some questions about your cough, is that OK?") Positioning: patient sitting in chair approximately a metre away from you. Ensure you are sitting at the same level as them and ideally not behind a desk.			
PRESENTING COMPLAINT 1. Ask the patient to describe their problem using open questions (e.g. "What's brought you into hospital today?") 2. The presenting complaint should be expressed in the patient's own words (e.g. "I have a tightness in my chest.") 3. Do not interrupt the patient's first few sentences if possible 4. Try to elicit the patient's ideas, concerns and expectations (ICE) e.g. "I'm worried I might have cancer." or "I think I need some antibiotics."			

HISTORY OF PRESENTING COMPLAINT			
1. Ask the patient further questions about complaint 2. A useful mnemonic for pain is "SOCR i. Site ii. Onset iii. Character iv. Radiation v. Alleviating factors vi. Timing vii. Exacerbating factors viii. Severity (1-10)			

PAST MEDICAL HISTORY

1. Ask the patient about all previous medical problems.
2. They may know these medical problems very well or they may forget some. Top ensure none are missed ask about these important conditions specifically (mnemonic: "MJTHREADS Ca")

    i. Myocardiac infarction ii. Jaundice iii. Tuberculosis iv. Hypertension
    v. Rheumatic fever
    vi. Epilepsy vii. Asthma viii. Diabetes ix. Stroke
    x. Cancer (and treatment if so)

3. If the patient is unsure of their medical problems, ask them further clarifying questions, for example "What do you usually visit your doctor for?". Remember you can add to past medical history if any of the medication later mentioned don't match the medical problems listed.
4. Risk factors

    i. As part of medical history ask about specific risk factors related to their presenting complaint.
    ii. For example, if the patient presents with what maybe a myocardial infarction, you should ask about associated risk factors such as:

        a. Smoking, cholesterol, diabetes, hypertension, family history of ischemic heart disease.

5. Clarification of past medical history

    i. Some medical conditions require clarification of the severity. For example:

        a. COPD

    i. Ask about when the patient was diagnosed, their current and previous treatments, whether they have ever required noninvasive ventilation ("a tight-fitting face mask"), whether they have been to intensive care

        b. Myocardial infarction

ii. Ask about angina, previous heart attacks, any previous angiograms ("a wire put into your heart from your leg or from your arm"), previous stenting c. Diabetes iii. Duration of diagnosis, current management including insulin and usual control of diabetes i.e. well- or poorly-controlled			

DRUG HISTORY 1. All medications that they take for each medication ask them to specify: i. Dose, frequency, route and compliance (i.e whether they regularly take these medication). ii. If they take medication weekly ask what day of the week they take it. iii. If they take a medication with a variable dosing (e.g. Warfarin) ask what their current dosing regimen is 2. Recreational drugs 3. Intravenous drug use (current or previous) 4. Over the counter (OTC) medications			
ALLERGIES 1. i. the patient have any allergies? ii. If allergic to medications, clarify the type of medication and the exact reaction to that medication. Specifically ask about whether there's been a history of anaphylaxis e.g. "throat swelling, trouble breathing or puffy face"			
FAMILY HISTORY			

1. 2. i.	ent about any family diseases relevant to the presenting e.g. if the patient has presented with chest pain, ask about family art attacks). ut the patient's parents and sibling and, if they were deceased e cause of death vant and a pattern has emerged from previous history sketch a family tree			

SOCIAL HISTORY 3. Alcohol intake 4. Tobacco use i. smoking)ify the number of pack years (number of packs of 20 cigarettes d per day multiplied by the number of years 5. Employment hi i. ılarly relevant with exposure to certain pathogens e.g. asbestos, 6. Home situation you need to ask whether they have ever been exposed to any i. ii. Any carei iv. v. vi. or bungalow 7. Travel history 8. Further social hties of daily living (ability to wash, dress and cook) ity, and immobility aids /family support vii. viii. y think they're managing? maybe required depending on the type of omplaint for example: Respiratory enting complaint a. Ask about pets, dust exposure, asbestos, exposure to the farms, exposure to birds or if there are any hobbies ctious to disease related b. Ask for a full travel history including all occasions exposure to water, exposure to foreign food, tuberculosis risk factors, HIV risk factors, recent immunisations			

SYSTEMS REVIEW 1 2 3 4 5 6 7 8	a full list of symptoms from major systems: r: chest pain, palpitations, peripheral oedema, paroxysmal ɔnoea (PND), orthopnoea ɔugh, shortness of breath (and exercise tolerance), haemoptysis, ction, wheeze ıal: Abdominal pain, dysphagia, heartburn, vomiting, , diarrhea, constipation, rectal bleeding Dysuria, discharge, lower urinary tract symptoms Numbness, weakness, tingling, blackouts, visual change . ression, anxiety rashes, joint p Weight loss, appetite change, lumps or bumps (nodes),			
SUMMARY 1 2 3	le a short summary of the history including: a. Name and age of the patient, presenting complaint, relevant medical history ı differential diagnosis in a brief investigation and management plan			
SKILL/ACTIVITY PERFORMED SATISFACTORILY				
Signatures of Supervisor				

Developed by

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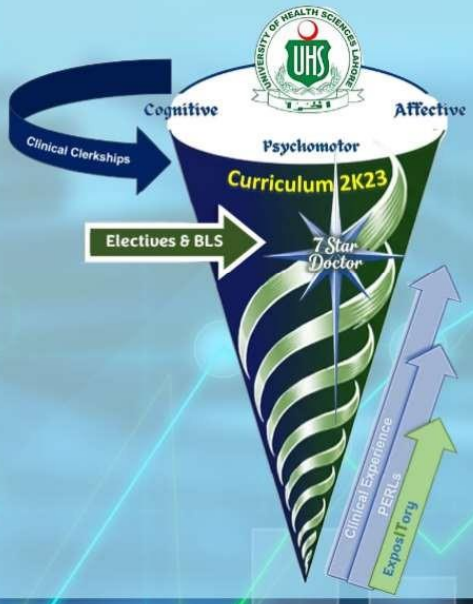
06
Section

YEAR-2

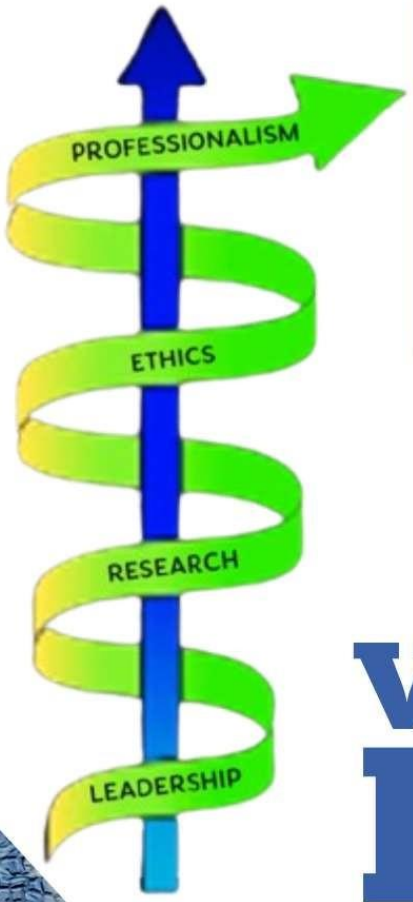
University of Health Sciences Lahore

Modular Integrated Curriculum 2K23

MBBS Year-02



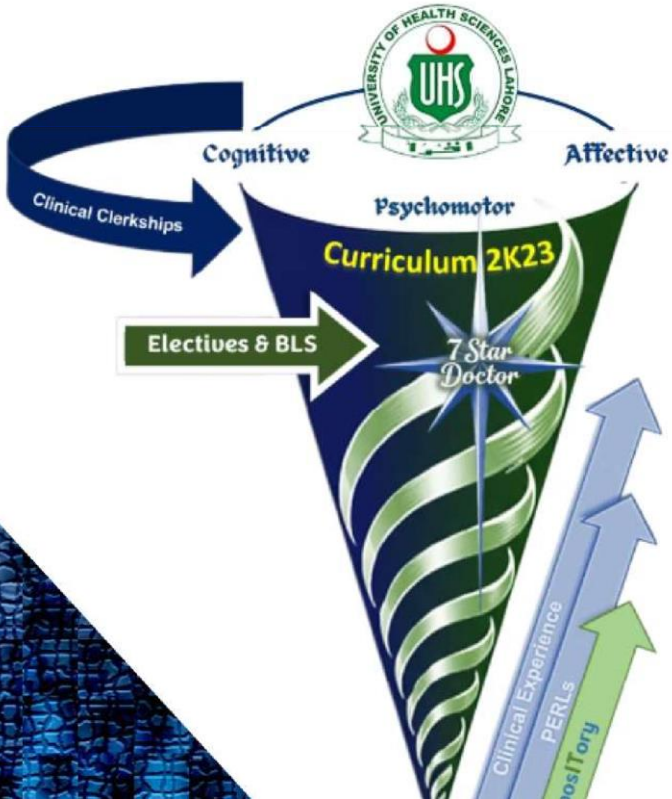
PERLs



Modular Integrated Curriculum 2K23

MBBS Year-2

Volume-2
PERLs-2



IMPLEMENTATION PLAN

This section includes the implementation strategy for the PERL Module. It is advised that the DME and facilitators from respective colleges involved in implementing PERLS should read this section carefully before initiating related instructional activities in respective colleges.

PORTFOLIO TEMPLATE

A portfolio template is hereby given with proposed activities for the colleges to use /modify as per their resources. Please note that Portfolio can be hard-bound or e-portfolio depending on the individual college's decision.


INTRODUCTION
PROFESSIONALISM
ETHICS
RESEARCH
LEADERSHIP

MODULE RATIONALE

The UHS PERL module is designed to equip medical students with essential competencies in Professionalism, Ethics, Research, and Leadership, aligning with the PMDC 7-Star Doctor (Professional, Ethical, Scholar, Leader, Communicator, Health Advocate, and Collaborator) framework. This framework emphasizes the multifaceted role of a physician, highlighting the need for a holistic approach to medical education. In an era where healthcare systems are constantly evolving, integrating these core areas is vital for developing well-rounded, responsible, and effective healthcare professionals.

1. Importance of Professionalism:
   Professionalism is the cornerstone of medical practice, influencing patient trust and the overall quality of care. This module emphasizes the significance of professional behavior, including accountability, integrity, and respect for diversity, ensuring that students cultivate a strong ethical foundation as they progress through their medical education.
2. Ethical Decision-Making:
   As future healthcare providers, students will face complex ethical dilemmas that require sound judgment and moral reasoning. This module focuses on key ethical principles, such as patient autonomy, equity, and justice in resource allocation, particularly in challenging areas like neoplasia and inflammation. Understanding these principles prepares students to advocate for their patients while navigating the intricate landscape of modern healthcare.
3. Research Competence:
   Research plays a critical role in advancing medical knowledge and improving patient outcomes. By emphasizing evidence-based practice, this module encourages students to engage with scientific literature, develop robust literature search strategies, conduct research projects and apply research findings to clinical decision-making. This skill set is essential for fostering a culture of inquiry and continuous improvement within the healthcare profession.
4. Leadership Development:
   Leadership is an integral part of effective healthcare delivery. This module prepares students to take on leadership roles, emphasizing teamwork, conflict resolution, and effective communication. By fostering leadership skills, we aim to empower students to influence positive changes in their future workplaces and advocate for patient-centered care.

In summary, the UHS PERL module is designed to create a comprehensive learning experience that prepares medical students for the challenges and responsibilities they will face in their careers. By integrating Professionalism, Ethics, Research, and Leadership, we aim to cultivate competent, compassionate, and ethical healthcare professionals who are equipped to make informed decisions and lead with integrity in an ever-changing medical landscape.

MODULE LEARNING OUTCOMES

- Exhibit accountability, integrity, and respect for diversity in all aspects of medical practice, embodying the principles of professionalism in clinical and academic settings.
- Analyze and apply ethical principles related to patient care, including autonomy, beneficence, non-maleficence, and justice, particularly in challenging situations such as end-of-life decisions and resource allocation.
- Develop and implement effective literature search strategies, critically evaluate scientific literature, and synthesize findings to inform clinical decision-making and practice.
- Participate in a comprehensive research project, from formulating a research question to data collection and analysis, culminating in the production of a publishable manuscript that meets academic and ethical standards.
- Demonstrate leadership skills through effective communication, conflict resolution, and teamwork, fostering a collaborative environment that enhances patient care and academic performance.
- Recognize and address the social determinants of health, advocating for equity in healthcare access and outcomes for diverse patient populations.
- Engage in self-assessment and reflective practices to identify strengths and areas for improvement, creating actionable plans for personal and professional growth throughout their medical education.
- Utilize effective verbal and non-verbal communication skills to engage with patients, families, and colleagues, ensuring clear and compassionate exchanges that enhance understanding and trust.

SUBJECTS INTEGRATED IN THE MODULE

1. Professionalism
2. Ethics
3. Research
4. Leadership

LEARNING RESOURCES

1. Professionalism:

- Azam, M. (2021). Mind maps for medicine. Scion Publishing. https://scionpublishing.com/product/mind-maps-for-medicine/
- Bin Abdulrahman, K. A., Khalaf, A. M., Bin Abbas, F. B., & Alanazi, O. T. (2021). Study habits of highly effective medical students. Advances in Medical Education and Practice, 12, 627–633. https://doi.org/10.2147/AMEP.S309535
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- American Board of Internal Medicine Foundation, American College of Physicians Foundation, & European Federation of Internal Medicine. (2005). Medical professionalism in the new millennium: A physician charter. Retrieved from https://www.abimfoundation.org/what-we-do/physiciancharter:contentReference[oaicite:0]{index=0}
- Barnhoorn, P. C., Houtlosser, M., Ottenhoff-de Jonge, M. W., Essers, G. T. J. M., Numans, M. E., & Kramer, A. W. M. (2019). A practical framework for remediating unprofessional behavior and for developing professionalism competencies and a professional identity. Medical Teacher, 41(3), 303–308. https://doi.org/10.1080/0142159X.2018.1464133:contentReference[oaicite:1]{index=1}
- Guraya, S. S., Guraya, S. Y., Harkin, D. W., Ryan, Á., Mat Nor, M. Z. B., & Yusoff, M. S. B. (2021). Medical Education e-Professionalism (MEeP) framework; From conception to development. Medical Education Online, 26(1), 1983926. https://doi.org/10.1080/10872981.2021.1983926:contentReference[oaicite:2]{index=2}
- Kirk, L. M. (2007). Professionalism in medicine: Definitions and considerations for teaching. Baylor University Medical Center Proceedings, 20(1), 13–16. https://doi.org/10.1080/08998280.2007.11928225:contentReference[oaicite:3]{index=3}

- Al-Eraky, M. M. (2015). Faculty development for medical professionalism in an Arabian context. [Doctoral Thesis, Maastricht University]. Maastricht University. https://doi.org/10.26481/dis.20150521ma:contentReference[oaicite:0]{index=0}
- Online Journals and Reading Materials through HEC Digital Library Facility

2. Ethics:

- World Health Organization. (2015). Global health ethics: Key issues. World Health Organization. https://apps.who.int/iris/handle/10665/164576
- World Health Organization. (2011). Standards and operational guidance for ethics review of health-related research with human participants. World Health Organization. https://www.who.int/publications/i/item/9789241502948
- World Health Organization. (2023). WHO Code of Ethics. World Health Organization.
- Harvey, J. C. (n.d.). Clinical ethics: The art of medicine. In Military Medical Ethics, Volume 1, Chapter 3.
- National Bioethics Committee. (2017). Guidelines and teachers handbook for introducing bioethics to medical and dental students. Healthcare Ethics Committee (HCEC).
- Varkey, B. (2021). Principles of clinical ethics and their application to practice. Medical Principles and Practice, 30(1), 17-28. https://doi.org/10.1159/000509119
- Pakistan Medical and Dental Council. (2018). Professional ethics and code of conduct.
- Online Journals and Reading Materials through HEC Digital Library Facility

3. Research

- Medical Statistics. 2nd Ed. by R. Turkwood.
- Biddle, K., Blundell, A., & Sofat, N. (2023). Understanding clinical research: An introduction. Scion Publishing. https://scionpublishing.com/product/understandingclinical-research/
- Harris, M., & Taylor, G. (2020). Medical Statistics Made Easy (4th ed.). Scion Publishing. https://scionpublishing.com/product/medical-statistics-made-easy-fourth-edition/
- Allen, A. K. (2012). Research skills for medical students. SAGE Publications, Inc. https://doi.org/10.4135/9781526436016
- Online Journals and Reading Materials through HEC Digital Library Facility

4. Leadership

- Wamboldt, R., & Loughran, N. (2017). Communication skills for OSCEs. Scion Publishing. https://scionpublishing.com/product/communication-skills-for-osces/
- Edmonstone, J. (2018). Leadership development in health care in low and middle-income countries: Is there another way? International Journal of Health Planning and Management, 33(4), e1193–e1199. https://doi.org/10.1002/hpm.2606:contentReference[oaicite:0]{index=0}

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FACILITATOR'S
GUIDE
PROFESSIONALISM
ETHICS
RESEARCH
LEADERSHIP

INTRODUCTION

The UHS PERL Module is designed to equip medical students with essential competencies in Professionalism, Ethics, Research, and Leadership. This guide provides facilitators with an overview of the module, instructional strategies, and resources to effectively engage students in their learning journey.

MODULE OVERVIEW

- Professionalism: Focus on developing professional behavior and attitudes.
- Ethics: Emphasis on understanding and applying ethical principles in healthcare.
- Research: Development of research skills and critical appraisal abilities.
- Leadership: Enhancement of leadership qualities and communication skills.

MODULE STRUCTURE

1. Professionalism
    a. Focus: Development of professional behavior and attitudes essential for medical practice.
    b. Key Topics:
        i. Professional identity formation
        ii. Accountability and integrity iii. Respect for diversity
2. Ethics
    a. Focus: Understanding and applying ethical principles in healthcare. b. Key Topics:
        i. Virtue ethics and moral character
        ii. Informed consent and patient autonomy iii. Bioethics and clinical ethics
3. Research
    a. Focus: Developing research skills and critical appraisal abilities. b. Key Topics:
        i. Basics of academic writing ii. Literature searches and reviews
        iii. Evidence-based medicine and research methodologies
4. Leadership
    a. Focus: Enhancing leadership qualities and communication skills. b. Key Topics:
        i. Team dynamics and conflict resolution
        ii. Patient counseling and informed consent iii. Work-life balance and management skills

MODULE IDEOLOGY

The UHS PERLs module is designed to provide a comprehensive and integrated approach to developing essential competencies in Professionalism, Ethics, Research, and Leadership for medical students throughout their undergraduate training.

Professionalism Module

The Professionalism module begins with the foundational attributes of a professional student or doctor, focusing on intrapersonal skills in the first year. As students progress to the second and third years, the emphasis shifts toward interpersonal skills relevant to various domains, culminating in the formation of a Professional Identity in the fourth year. This progression ensures that students develop not only self-awareness but also the ability to interact effectively and ethically with patients and colleagues.

Ethics Module

The Ethics module initiates discussions on virtue ethics, emphasizing the virtues and moral character expected of medical students and professionals. In the second year, students delve into bioethics, followed by clinical ethics and research ethics in the third and fourth years. This structure helps students navigate the complexities of ethical dilemmas in medical practice, ensuring they are prepared to make informed, compassionate decisions that respect patient autonomy and promote justice.

Research Module

The Research module begins with the basics of academic writing, introducing students to the structure of a manuscript and critical appraisal through Journal Club Meetings and presentations in the first year. In the second year, the focus shifts to literature searches, summarization, and reviews, incorporating the use of artificial intelligence to enhance research capabilities. The third year introduces evidence-based medicine as a treatment guide in disease management, followed by research design, methodology, clinical audits, and patient safety, culminating in the development of a draft ethical approval proposal. This systematic approach equips students with the skills to conduct meaningful research and contribute to the advancement of medical knowledge.

Leadership Module

The Leadership module starts with personal qualities and communication skills in the first year, emphasizing the importance of effective interaction in healthcare settings. In the second year, the focus expands to teamwork dynamics, patient counseling, informed consent, conflict resolution, and work-life balance. The third year emphasizes management skills, including project management (aligned with research projects), entrepreneurship, and the use of innovation, such as AI in research and team leadership in healthcare setups. Finally, the fourth-year centers on professional identity, self-evaluation, digital transformation in healthcare, public health initiatives, health reforms, and advocacy. Throughout this module, mentoring sessions are integrated to provide role modeling and support, reinforcing the development of a strong professional identity among undergraduate MBBS students.

MODULE DEVELOPMENT AND VALIDATION

The UHS PERL module was developed through a scientific approach, involving the systematic identification of content via extensive literature searches, national and international guidelines, and recommendations from content contributors. This initial framework was presented to a panel of 10 invited experts in a modified e-Delphi round for validation.

During this process, the experts evaluated the module's content and provided constructive feedback, identifying areas for improvement. In the second round, a consensus was reached

regarding the relevance of the module content, as well as its depth and scope tailored to the appropriate MBBS year.

Following the module development and validation, two independent reviewers were engaged to assess the sequencing and flow of the topics. Their review focused on ensuring logical coherence and identifying any additional revisions necessary to enhance the module's clarity and effectiveness. Further, the review was requested from an early career doctor who had recently graduated from an affiliated medical college in order to involve their suggestions for improvement. This rigorous development and validation process ensures that the UHS PERL module meets the highest educational standards and effectively prepares medical students for their professional journey.

LEARNING OBJECTIVES EXPLAINATION

The learning objectives for the UHS PERL module are crafted to enhance students' comprehension and practical application of core competencies in Professionalism, Ethics, Research, and Leadership. Each objective consists of an Initial Learning Objective and an Actionable Learning Objective, guiding both instructional methods and portfolio assignments. Example: Work-Life Balance (Leadership) Learning Objective:

- Understand the importance of maintaining a healthy work-life balance, focusing on strategies for managing personal well-being while fulfilling professional commitments to ensure optimal mental and physical health.

Actionable Learning Objective:

- "Students will create a personal plan that outlines strategies for achieving work-life balance, including time management, self-care practices, and setting boundaries between personal and professional life." Instructional Strategies:
- Use interactive discussions to explore the concept of work-life balance.
- Facilitate workshops where students can share experiences and strategies.
- Implement guided planning sessions where students can outline their personal plans with facilitator support.

- Encourage peer feedback sessions for students to share and refine their plans collaboratively.

Proposed Portfolio Entry:

- "Submit a reflection on your work-life balance plan. Include specific strategies you intend to implement to manage stress and maintain your well-being while meeting your academic and professional responsibilities." Portfolio Guidance:
- Ensure students understand the importance of documenting their plans and reflections as a means to monitor their progress and make adjustments as needed.
- Provide a rubric that emphasizes clarity, depth of reflection, and practical application in their submissions.

DIVERSE INSTRUCTIONAL STRATEGIES TO FOSTER STUDENT-CENTERED LEARNING

To enhance student engagement and promote a deeper understanding of the material, the following instructional strategies can (not limited to) be employed:

1. Active Learning: Incorporate activities that require students to actively participate, such as problem-solving exercises, team-based in learning, group discussions, and hands-on simulations.
2. Collaborative Learning: Utilize small group work to encourage peer interaction and knowledge sharing, fostering a sense of community and collaborative problem-solving.
3. Flipped Classroom: Assign readings or videos for students to review before class, allowing class time to focus on discussions and practical applications of the material.
4. Case-Based Learning: Present real-world scenarios for students to analyze, encouraging critical thinking and the application of theoretical knowledge to practical situations.
5. Technology Integration: Leverage digital tools and online platforms to facilitate interactive learning experiences, such as virtual simulations, discussion forums, and collaborative projects.
6. Mentoring and Peer Support: Encourage mentorship opportunities where students can receive guidance from peers or professionals, fostering a supportive learning environment.

PORTFOLIO ENTRY WITH PEEL CONCEPT

As part of the UHS PERL module, students will maintain a portfolio that incorporates the PEEL (Point, Evidence, Explanation, Link) concept for reflective entries:

1. Point: State the main idea or argument you want to discuss in your reflection or analysis.
2. Evidence: Provide supporting evidence or examples from your experiences, coursework, or relevant literature.
3. Explanation: Explain how the evidence supports your point, including its significance and implications for your learning.
4. Link: Connect your point to broader themes in the module or your overall personal and professional development.

Portfolio Guidance:

- Portfolio can be in hard bound or e-portfolio. A template for portfolio entry has been attached.
- Encourage students to use the PEEL framework to structure their reflections clearly and coherently. This will aid in their understanding of the material and enhance their ability to articulate their thoughts and learning experiences effectively.

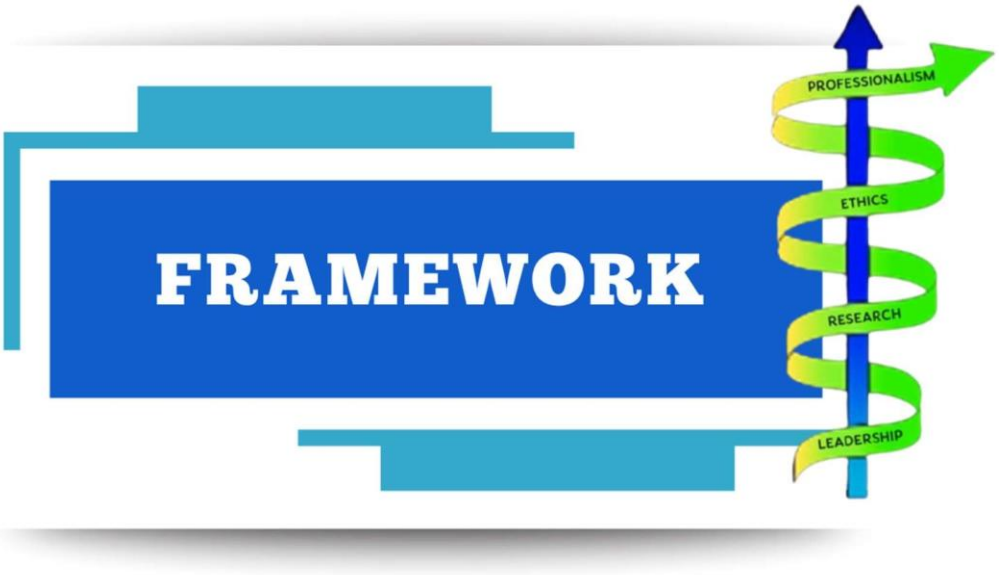
ROLE IN EVALUATION OF THE PERL MODULE

As a facilitator, your role in the evaluation of the UHS PERL module is crucial for ensuring its effectiveness and relevance. Key responsibilities include:

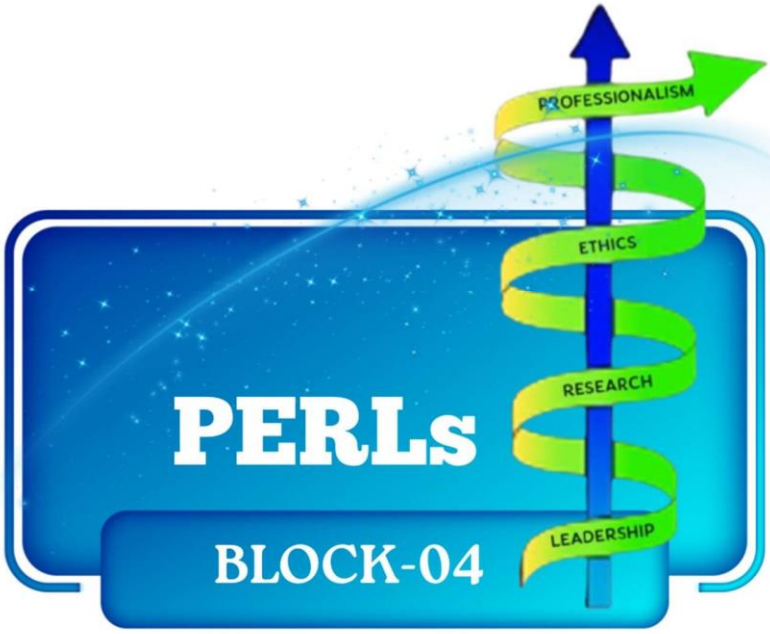
1. Monitoring Student Progress: Regularly assess student engagement and understanding through formative assessments, feedback, and participation in discussions and activities.
2. Collecting Feedback: Gather feedback from students regarding their learning experiences, instructional strategies, and the relevance of module content. This information is vital for continuous improvement.
3. Evaluating Learning Outcomes: Review the alignment of students' performances with the stated learning outcomes. Analyze assessment results to identify trends and areas needing improvement.
4. Reflecting on Teaching Practices: Engage in self-reflection and peer evaluation to assess your own teaching methods. Consider what strategies worked well and where adjustments may be needed to enhance student learning.
5. Implementing Changes: Based on evaluation findings, propose and implement changes to instructional methods, content delivery, or assessment strategies to better meet the needs of future cohorts.

CONCLUSION

As a facilitator of the UHS PERL module, your role is crucial in guiding students through the complexities of Professionalism, Ethics, Research, and Leadership. By utilizing diverse instructional strategies and fostering an engaging learning environment, you will help students develop the competencies necessary for their future roles as healthcare professionals.


FRAMEWORK
PROFESSIONALISM
ETHICS
RESEARCH
LEADERSHIP

C2K23 Year-02


PROFESSIONALISM
ETHICS
RESEARCH
LEADERSHIP
PERLs
BLOCK-04

GIT & NUTRITION-I				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 7.5
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	Domain	Topic	Specific Learning Objectives	Proposed Portfolio Entry
PERLs2-001	Professionalism	Self-awareness & Improvement Planning	• Appreciate the need to develop self-awareness by reflecting on personal strengths and areas for improvement, and create actionable improvement plans to enhance academic performance and professional development. • Conduct a self-assessment to identify their strengths and weaknesses in academic and clinical tasks, and create a detailed improvement plan to address areas where growth is needed.	Submit a self-assessment report outlining your strengths and weaknesses, along with a personalized improvement plan that includes specific strategies and goals for enhancing your skills and knowledge.
PERLs2-002	Leadership	Role Modelling via Mentoring Session III	Participate in a mentoring session where to discuss their strengths and weaknesses with their mentor, receive feedback, and collaboratively create an action plan for personal and professional development.	Submit a summary of your mentoring session, including feedback, areas identified for improvement, and the action plan you developed with your mentor to enhance your professional growth.

			Share self-Assessment report with mentors for further guidance.	
PERLs2-003	Ethics	Patient Confidentiality	• Discuss the ethical principles of patient confidentiality, including the importance of protecting patient information and the legal and professional consequences of breaching confidentiality. • Review a clinical scenario involving patient confidentiality and identify how the principles of confidentiality were maintained or breached, proposing strategies for improvement where necessary.	Submit a reflection on a case study involving patient confidentiality. Discuss the actions taken to protect patient information and reflect on the ethical responsibilities of healthcare professionals in maintaining confidentiality.
PERLs-2-004	Leadership	Basics of Teamwork	• Describe the roles and responsibilities of a team member in healthcare, including the importance of collegiality & effective information sharing • Describe the stages of team dynamics • Appraise how team dynamics influence performance and outcomes. • Self-assessment as a team member/leader using e.g. The Blake and Mouton Managerial Grid Leadership Self-Assessment Questionnaire	Submit results of leadership selfassessment.

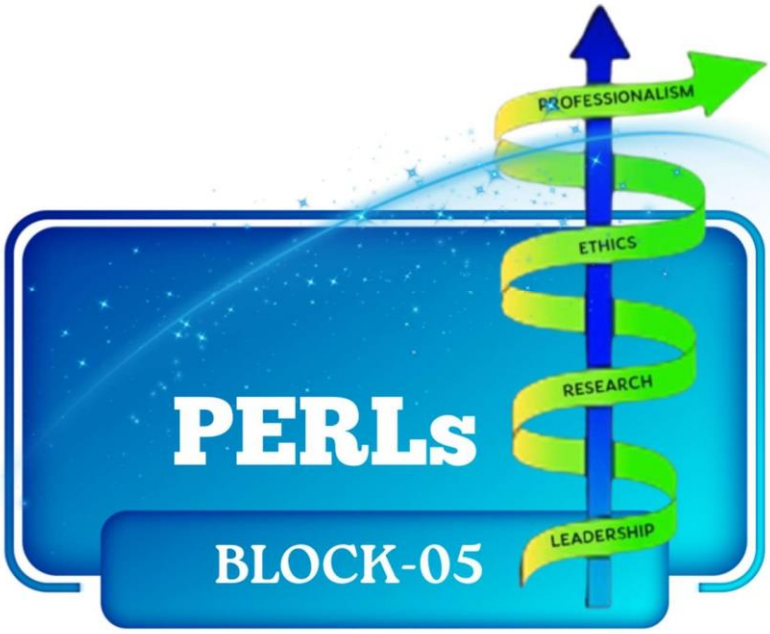
PERLs-2-005	Research	Research Question	Discuss how to select a suitable research topic.	
			Select a research title (based on public health relevance, innovation, feasibility, acceptability, and cost-effectiveness).	

RENAL-I				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 4.5
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	Domain	Topic	Specific Learning Objectives	Proposed Portfolio Entry
PERLs-2-006	Professionalism	Time Management	• Discuss the importance of effective time management in medical education and practice, and develop strategies to prioritize tasks, manage academic responsibilities, and maintain a healthy worklife balance. • Create a weekly schedule that prioritizes academic tasks, clinical work, and personal activities, demonstrating their ability to manage time effectively	Submit a time management plan outlining your weekly schedule, including study hours, clinical tasks, and personal time. Reflect on how this plan helps you balance your responsibilities and improve productivity.

PERLs2-007	Ethics	Informed Consent	• Discuss the ethical and legal principles of informed consent, including the patient's right to make autonomous decisions based on clear, accurate, and comprehensive information about their treatment options, risks, and benefits. • Review a case scenario and practice obtaining informed consent, ensuring they provide clear explanations of the risks, benefits, and	Submit a reflection on a case where you practiced or observed the informed consent process. Discuss how the information was communicated to the patient and how patient autonomy was respected.

			alternatives, and confirming patient understanding.	
PERLs-2-008	Leadership	Patient Counselling about disease	Discuss the principles of effective patient counseling, focusing on clear and empathetic communication to explain disease conditions, treatment options, and lifestyle modifications, ensuring patient understanding and engagement in their care. Practice counseling a simulated patient about a disease, using clear, empathetic communication to explain the diagnosis, treatment options, and necessary lifestyle changes, while ensuring the patient's understanding.	Create and submit a poster illustrating the key steps involved in patient counseling for a specific disease, including how to explain the diagnosis, treatment options, and lifestyle modifications. Highlight strategies to ensure patient comprehension and engagement in the decision-making process.
PERLs-2-009	Research	Research questions	Discuss the principles of constructing an evidence-based argument, including developing a clear research question. Formulate research questions using PICO/PEO format.	

C2K23 Year-02


PROFESSIONALISM
ETHICS
RESEARCH
LEADERSHIP
PERLs
BLOCK-05

ENDOCRINOLOGY & REPRODUCTION-I				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 09
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	Domain	Topic	Specific Learning Objectives	Proposed Portfolio Entry
PERLs2-010	Professionalism	Task Management & Productivity	• Discuss the principles of effective task management and productivity, focusing on setting priorities, managing workloads, and maintaining efficiency in both academic and clinical settings. • Create a task list for an academic week, prioritizing tasks based on deadlines and importance, and reflecting on strategies to enhance productivity and efficiency.	Submit a weekly task management plan, detailing how you organized and prioritized your tasks to maximize productivity. Reflect on how this approach helped improve your efficiency and ability to meet academic or clinical deadlines.

PERLs2-011	Research	Literature Review	• Discuss the principles of developing a literature search strategy, including identifying relevant databases, using appropriate keywords, and refining search criteria to gather evidence for research purposes. • Design a literature search strategy for the selected research topic and conduct literature search using appropriate databases,	

			search engines, and refined search terms to find relevant articles.	
PERLs2-012	Leadership	Taking Evidence based Informed Consent	• Discuss principles of taking informed consent in a manner that incorporates evidencebased information, ensuring patients are fully informed about their treatment options, risks, and benefits. • Practice taking informed consent from a simulated patient, using evidence-based information to explain the procedure, risks, benefits, and alternatives, ensuring the patient's understanding and comfort	Submit a reflection on a simulated informed consent session. Discuss how you communicated evidence-based information to the patient, how you ensured their understanding, and the importance of respecting their autonomy in the decision-making process
PERLs2-013	Professionalism	for Respect Diversity	Appreciate the importance of respecting diversity in healthcare, including sensitivity and responsiveness to patients' culture, age, gender, and disabilities, while applying principles of inclusion and equity.	Create a simple poster or a one-page reflection outlining key strategies for respecting diversity in patient care. Include examples of how to communicate effectively with patients from different backgrounds and ensure that care is inclusive and equitable.

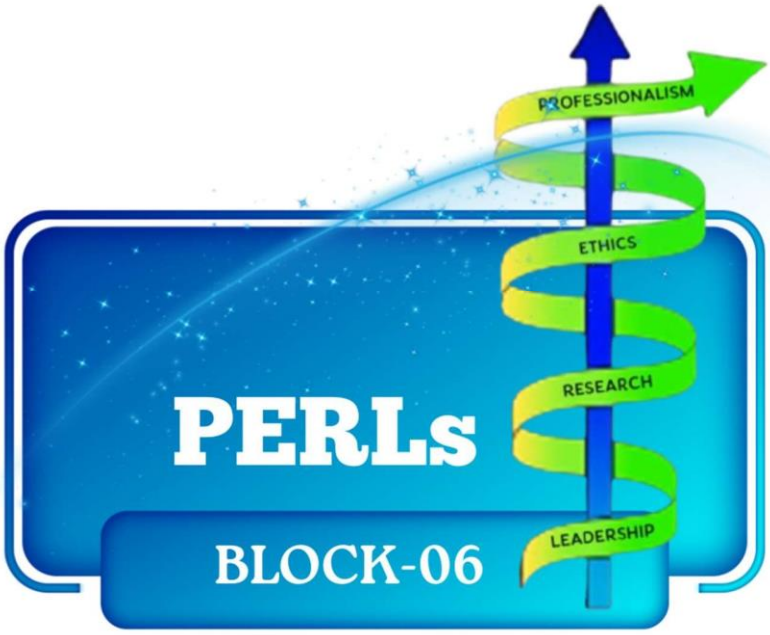
PERLs2-014	Leadership	Conflict Resolution	Discuss the principles and strategies of effective conflict resolution focusing on communication, negotiation, and	Submit a reflection on the conflict resolution exercise. Discuss the strategies you used, how effective communication
			collaboration to achieve positive outcomes. Participate in a roleplaying exercise to navigate a conflict scenario, practicing conflict resolution techniques such as active listening, empathy, and problemsolving.	played a role, and what you learned about resolving conflicts in a healthcare environment.

HEAD AND NECK & SPECIAL SENSES				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 06
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	Domain	Topic	Specific Learning Objectives	Proposed Portfolio Entry
PERLs2-015	Research	Literature Review	• Discuss the purpose and methodology of conducting a literature review, including how to synthesize existing research, identify gaps in the literature, and establish a framework for future research. • Create a literature matrix for a selected topic, summarizing key findings, methodologies, and conclusions from relevant articles to facilitate analysis and comparison.	

PERLs2-016	Leadership	Work-Life Balance	• Appreciate the importance of maintaining a healthy work-life balance, focusing on strategies for managing personal wellbeing while fulfilling professional commitments to ensure optimal mental and physical health. • Create a personal plan that outlines strategies for achieving work-life balance, including time management, self-care practices, and setting boundaries between	Submit a reflection on your work-life balance plan. Include specific strategies you intend to implement to manage stress and maintain your wellbeing while meeting your academic and professional responsibilities.

			personal and professional life	
PERLs2-016	Professionalism	Digital representation	• Discuss principles of digital representation in a professional context, focusing on how to effectively present an eportfolio, wiki page, or blog page that reflects one's skills, experiences, and professional identity. • Create and present a digital representation of their professional achievements, utilizing platforms such as e-portfolios, wiki pages, or blogs to showcase their skills, projects, and reflections.	Submit a link to your e-portfolio, wiki page, or blog page along with a brief reflection on the choices you made in its design and content. Discuss how this digital representation aligns with your professional goals and identity.

PERLs2-017	Ethics	Patient autonomy in sensory disabilities	Discuss the ethical principles surrounding patient autonomy, particularly in the context of individuals with sensory disabilities, focusing on their right to make informed decisions about their healthcare. Analyze a case study involving a patient with sensory disabilities, discussing how healthcare providers can support and respect the patient's autonomy while ensuring they have access to the necessary information to make informed choices.	Create a presentation or infographic that highlights key strategies for supporting patient autonomy in individuals with sensory disabilities. Include information on effective communication techniques, adaptations to enhance understanding, and ways to ensure informed consent.


PROFESSIONALISM
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LEADERSHIP
PERLs
BLOCK-06

NEUROSCIENCES I				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 7.5
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	Domain	Topic	Specific Learning Objectives	Proposed Portfolio Entry
PERLs2-018	Professionalism	Professional Accountability	Discuss the concept of professional accountability, emphasizing the importance of taking ownership of one's actions in patient care, academic responsibilities, and interactions with colleagues, including adherence to protocols and deadlines.	Submit a reflective journal entry discussing a situation where you failed to demonstrate professional accountability. Include details on how you took ownership of your actions, met deadlines, followed protocols, and engaged with colleagues to ensure the highest standards of care and professionalism.
PERLs2-019	Research	Literature Review	• Review and critically appraise relevant original articles on the selected topic. • Draft literature review of the selected topic and submit for peer/teachers' feedback.	

PERLs-2-020	Ethics	End of Life Decision	Discuss the ethical principles surrounding end-of-life decisions, particularly the criteria for brain death, and the implications for patient care,family decisions, and organ donation.	Submit a case analysis of a scenario involving brain death. Discuss the ethical challenges faced by healthcare providers and families, the

			Analyze a case involving a patient diagnosed with brain death, discussing the ethical considerations of end-of-life decisions, including family dynamics, communication, and the implications for organ donation.	decision-making process, and how these decisions align with ethical principles in medicine.
PERLs2-021	Leadership	Evidence-Based Decision making	• Discuss the principles of evidence-based decision making, focusing on how to integrate the best available research evidence with clinical expertise and patient values to make informed decisions in healthcare settings. • Apply evidence-based decision-making principles to a clinical case scenario, evaluating relevant research studies and integrating findings with clinical expertise and patient preferences to recommend a course of action.	Submit a written analysis of a clinical case where you applied evidencebased decisionmaking principles. Discuss the research you reviewed, how you integrated it with clinical expertise, and how you considered patient values in your decision-making process.

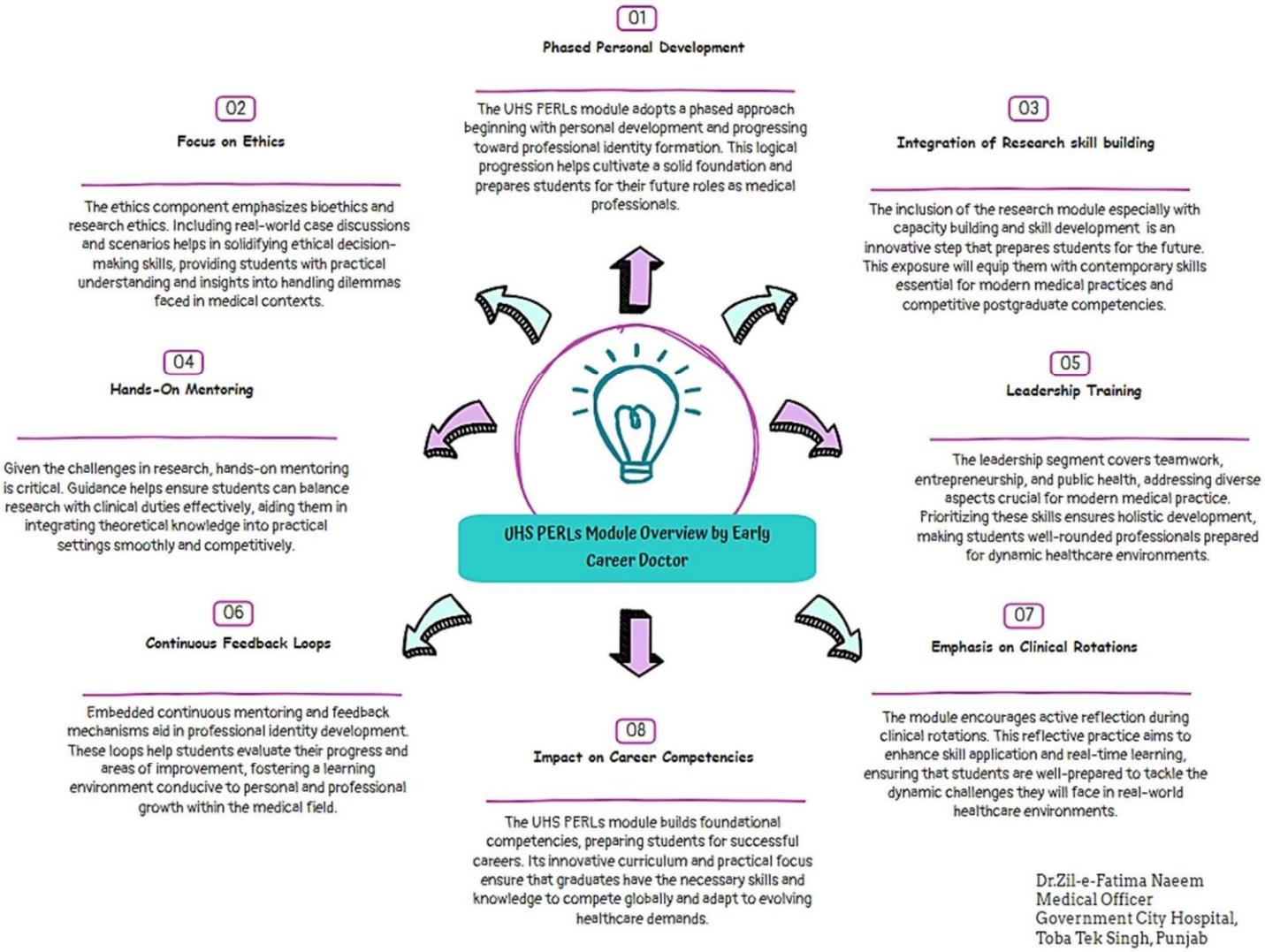
PERLs2-022	Leadership	Role Modelling via Mentoring Session IV	Participate in a mentoring session where they will discuss their strengths and weaknesses with their mentor, receive feedback, and collaboratively create an action plan for personal and professional development	Submit a summary of your mentoring session, including feedback, areas identified for improvement, and the action plan you developed with your mentor to enhance your professional growth.

INFLAMMATION				
*Proposed Sequence of Topics Men oned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block				Total Hours = 1.5
*Research (R) in the PERL curriculum will be delivered by the Department of Community Medicine as a longitudinal component from the first to the fourth year of the MBBS program. At the end of the fourth year, students' research projects will be assessed through a dedicated PERL station.				
Code	Domain	Topic	Specific Learning Objectives	Proposed Portfolio Entry
PERLs2-023	Ethics	Equity Resource Allocation	• Discuss ethical principles of equity in resource allocation, particularly concerning patients with neoplasia (cancer) and inflammation-related conditions, and how these principles impact access to care and treatment options. • Analyze a case involving resource allocation for patients with neoplasia or inflammation, discussing how equity principles were applied or challenged in determining access to treatments and interventions.	Submit a case study analysis addressing the ethical challenges of resource allocation for patients with neoplasia and inflammation. Discuss the implications of equity in access to care, how decisions were made, and reflect on potential improvements to ensure fair distribution of resources.

PERLs-2-024	Research	Literature Review	☐ Refine literature review on the selected topic in light of the given feedback.	


STUDENT'S
GUIDE
PROFESSIONALISM
ETHICS
RESEARCH
LEADERSHIP

What your Seniors say



Dr.Zil-e-Fatima Naeem
Medical Officer
Government City Hospital,
Toba Tek Singh, Punjab

INTRODUCTION

The UHS PERL Module is designed to equip medical students with essential competencies in Professionalism, Ethics, Research, and Leadership. This guide provides facilitators with an overview of the module, instructional strategies, and resources to effectively engage students in their learning journey.

MODULE STRUCTURE

5. Professionalism
    a. Focus: Development of professional behavior and attitudes essential for medical practice.
    b. Key Topics:
        i. Professional identity formation
        ii. Accountability and integrity iii. Respect for diversity
6. Ethics
    a. Focus: Understanding and applying ethical principles in healthcare. b. Key Topics:
        i. Virtue ethics and moral character
        ii. Informed consent and patient autonomy iii. Bioethics and clinical ethics
7. Research
    a. Focus: Developing research skills and critical appraisal abilities. b. Key Topics:
        i. Basics of academic writing
        ii. Literature searches and reviews iii. Evidence-based medicine and research methodologies
8. Leadership
    a. Focus: Enhancing leadership qualities and communication skills. b. Key Topics:
        i. Team dynamics and conflict resolution

ii. Patient counseling and informed consent iii. Work-life balance and management skills

MODULE IDEOLOGY

The UHS PERLs module is designed to provide a comprehensive and integrated approach to developing essential competencies in Professionalism, Ethics, Research, and Leadership for medical students throughout their undergraduate training.

Professionalism Module

The Professionalism module begins with the foundational attributes of a professional student or doctor, focusing on intrapersonal skills in the first year. As students progress to the second and third years, the emphasis shifts toward interpersonal skills relevant to various domains, culminating in the formation of a Professional Identity in the fourth year. This progression ensures that students develop not only self-awareness but also the ability to interact effectively and ethically with patients and colleagues.

Ethics Module

The Ethics module initiates discussions on virtue ethics, emphasizing the virtues and moral character expected of medical students and professionals. In the second year, students delve into bioethics, followed by clinical ethics and research ethics in the third and fourth years. This structure helps students navigate the complexities of ethical dilemmas in medical practice, ensuring they are prepared to make informed, compassionate decisions that respect patient autonomy and promote justice.

Research Module

The Research module begins with the basics of academic writing, introducing students to the structure of a manuscript and critical appraisal through Journal Club Meetings and presentations in the first year. In the second year, the focus shifts to literature searches, summarization, and reviews, incorporating the use of artificial intelligence to enhance research capabilities. The third year introduces evidence-based medicine as a treatment guide in disease management, followed

by research design, methodology, clinical audits, and patient safety, culminating in the development of a draft ethical approval proposal. This systematic approach equips students with the skills to conduct meaningful research and contribute to the advancement of medical knowledge.

Leadership Module

The Leadership module starts with personal qualities and communication skills in the first year, emphasizing the importance of effective interaction in healthcare settings. In the second year, the focus expands to teamwork dynamics, patient counseling, informed consent, conflict resolution, and work-life balance. The third year emphasizes management skills, including project management (aligned with research projects), entrepreneurship, and the use of innovation, such as AI in research and team leadership in healthcare setups. Finally, the fourth-year centers on professional identity, self-evaluation, digital transformation in healthcare, public health initiatives, health reforms, and advocacy. Throughout this module, mentoring sessions are integrated to provide role modeling and support, reinforcing the development of a strong professional identity among undergraduate MBBS students.

MODULE DEVELOPMENT AND VALIDATION

The UHS PERL module was developed through a scientific approach, involving the systematic identification of content via extensive literature searches, national and international guidelines, and recommendations from content contributors. This initial framework was presented to a panel of 10 invited experts in a modified e-Delphi round for validation.

During this process, the experts evaluated the module's content and provided constructive feedback, identifying areas for improvement. In the second round, a consensus was reached regarding the relevance of the module content, as well as its depth and scope tailored to the appropriate MBBS year.

Following the module development and validation, two independent reviewers were engaged to assess the sequencing and flow of the topics. Their review focused on ensuring logical coherence and identifying any additional revisions necessary to enhance the module's clarity and

effectiveness. Further, the review was requested from an early career doctor who had recently graduated from an affiliated medical college in order to involve their suggestions for improvement. This rigorous development and validation process ensures that the UHS PERL module meets the highest educational standards and effectively prepares medical students for their professional journey.

ASSESSMENT AND EVALUATION

- Portfolio: Throughout the module, you will be required to maintain a portfolio that includes reflections, case analyses, and evidence of your learning experiences. This portfolio will serve as a demonstration of your growth and understanding of the module content.
- Participation: Engage actively in discussions, group work, and role-playing exercises to enhance your learning and application of the concepts.
- OSCE Exam: At the end of the module, you will participate in an Objective Structured Clinical Examination (OSCE) as a summative assessment. This exam will evaluate your practical skills, including communication, clinical reasoning, and the application of professionalism and ethical principles in simulated patient scenarios along with leadership and research skills.

EVALUATION: YOUR FEEDBACK

As part of the UHS PERL module, we value your feedback to continually improve the learning experience. Your insights will help us understand the effectiveness of the module and identify areas for enhancement.

FEEDBACK AREAS:

1. Module Content:
    a. Was the content relevant and appropriate for your learning needs?
    b. Were the topics covered comprehensively?
2. Teaching Methods:
    a. Did the teaching methods (lectures, discussions, practical exercises) support your learning?

b. How effective were the mentoring sessions in reinforcing your understanding?

3. Assessments:
    a. Did the assessments (portfolio, OSCE exam) accurately reflect your knowledge and skills?
    b. Were the expectations for the assessments clear and achievable?
4. Resources:
    a. Were the provided resources (reading materials, online tools) helpful for your learning?
    b. Is there any additional resource you would suggest?
5. Overall Experience:
    a. What aspects of the module did you find most beneficial?
    b. What suggestions do you have for improving the module in the future?

FEEDBACK SUBMISSION:

Please provide your feedback using the following format to the Department of Medical Education in your College:

- Strengths: What worked well?
- Areas for Improvement: What could be improved?
- Additional Comments: Any other thoughts or suggestions?

Your feedback is essential for refining the UHS PERL module and ensuring it meets the needs of future students. Thank you for your participation.

PEEL PORTFOLIO TEMPLATE

At the end of this guide, you will find the PEEL (Point, Evidence, Explanation, Link) portfolio template, which will help you structure your reflections and analyses effectively.

1. Point: State the main idea or point you want to discuss.
2. Evidence: Provide evidence or examples to support your point.
3. Explanation: Explain how the evidence relates to your point and its significance.
4. Link: Connect your point to broader themes in the module or your personal development.

CONCLUSION

The UHS PERL Module aims to equip you with the essential competencies needed to thrive as a future healthcare professional. Your engagement, critical thinking, and commitment to learning will be key to your success in this module. Embrace the challenges and opportunities for growth and make the most of the available resources and support.

Developed by

Dr. Noor-i-Kiran Naeem
Head of Department of Medical Education
ABWA Medical College, Faisalabad

Lt. Col. (R) Dr. Khalid Rahim Khan TI (M)
Ex-Director Medical Education
University of Health Sciences Lahore


07
Section


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Modular Integrated Curriculum 2K23
MBBS Year-02
EXPOSITORY
Volume: 02
Modular Integrated
Curriculum 2K23


YEAR-02
Modular Integrated
Curriculum 2K23
EXPOSITORY

Module Rationale

To integrate Expository Writing with an Introduction to Information Technology (IT) course for undergraduate medical students, we can align the IT skills taught each year with the writing tasks and objectives. The aim is to enhance students' digital literacy and writing skills, which is crucial for modern medical practice.

This integrated spiral of Expository Writing and IT ensures that as students advance in their medical education, they also develop digital literacy skills. These skills complement their writing abilities and prepare them for modern medical practice, where digital communication, research, and data management are essential. By the end of the 4-year program, students will be proficient in writing and using technology to support their work as healthcare professionals.

Developed by

Dr. Ambreen Khalid
Associate Professor of Physiology
Central Park Medical College, Lahore

Lt. Col. (R) Dr. Khalid Rahim Khan TI (M)
Ex-Director Medical Education
University of Health Sciences Lahore

Year 2: Expository Writing II – Advanced Argumentation and Critical Thinking + IT: Digital Research and Collaboration Tools

THEORY		
Code	Subject: Expository writing & IT	Total Hours =10

	Specific Learning Outcome	Integrating Disciplines	Topics
EXP-02	Expository Writing Focus: 1. To evaluate the strengths and weaknesses of the written arguments& discern bias. 2. To create a poster to present the critical appraisal of research articles. IT Integration: 3. IT Skills: To use PowerPoint and other poster-making tools. 4. To perform advanced internet research, use online collaboration tools (Google Docs for teamwork, Google Drive for file sharing), and learn management systems (LMS). Writing Application: 5. To use critical appraisal templates and poster making tools.	PERLS, Anatomy, Physiology & Biochemistry	• Critical appraisal of research articles • Poster preparation and presentation skills. • Use of online collaboration tools (Google Docs, LMS) • Basic plagiarism checks (free AI Tools for plagiarism checks)

	6. To collaborate on writing tasks in groups using shared online platforms (e.g., editing documents in teams). 7. To use plagiarism detection software (free AI Plagiarism detection tools) to maintain academic integrity in writing.		

Developed by

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Central Park Medical College, Lahore

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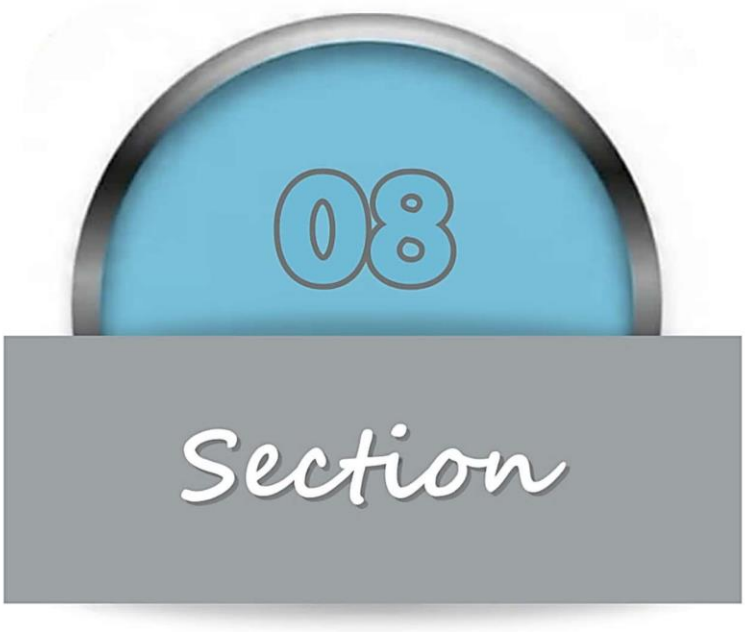
Ex- Director Medical Education
University of Health Sciences Lahore


08
Section

Department of Medical Education

Innovating & Strategizing Healthcare Academia

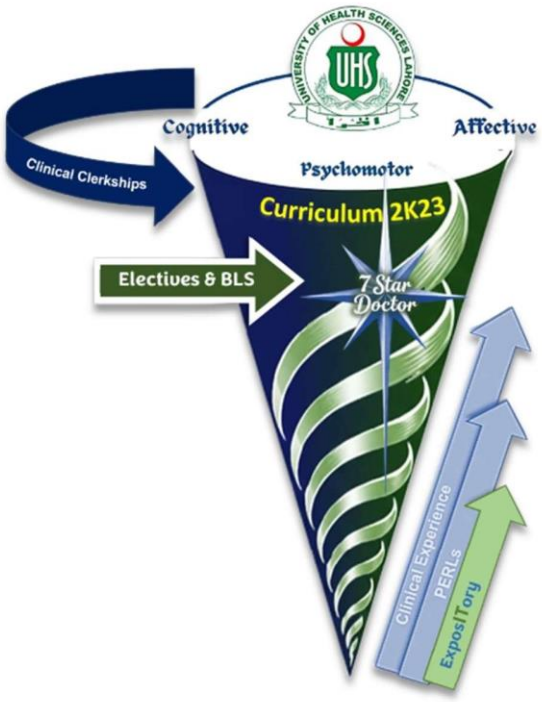
Volume-02

STUDENT PORTFOLIO

YEAR-02


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS

Curriculum 2K23 (MBBS Year-2)



GASTROINTESTINAL AND NUTRITION I

DATE FROM: _____

DATE TO: _____

CHECKED BY: _____

Roll No:	
Assignment Topic:	
Date:	

Submit a self-assessment report outlining your strengths and weaknesses, along with a personalized improvement plan that includes specific strategies and goals for enhancing your skills and knowledge.

Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Submit a summary of your mentoring session, including feedback, areas identified for improvement, and the action plan you developed with your mentor to enhance your professional growth.	

Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	

Submit a reflection on a case study involving patient confidentiality. Discuss the actions taken to protect patient information and reflect on the ethical responsibilities of healthcare professionals in maintaining confidentiality.

Facilitator Remarks:	

Roll No:	

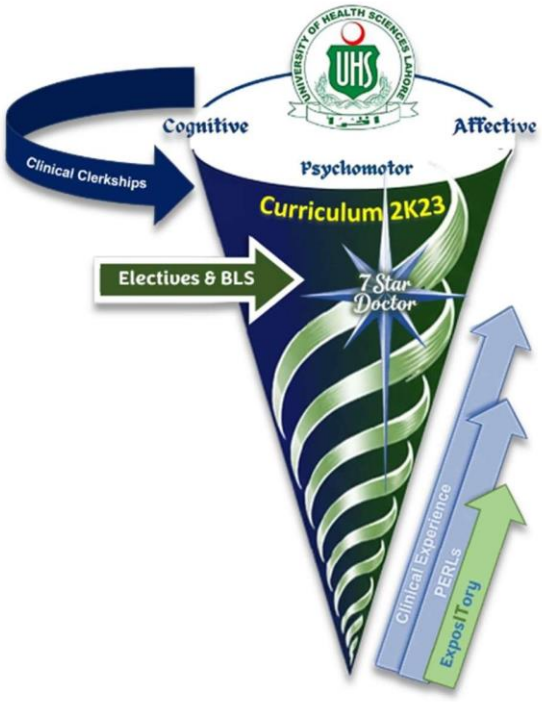
Assignment Topic:	
Date:	
Submit results of leadership self-assessment.	
Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Submit a written argument on a medical topic, demonstrating how you structured your argument and incorporated evidence from scientific literature to support your claims.	

Facilitator Remarks:	


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS

Curriculum 2K23 (MBBS Year-2)



MODULE:

RENAL-I

DATE FROM: _____

DATE TO: _____

293

CHECKED BY: _____

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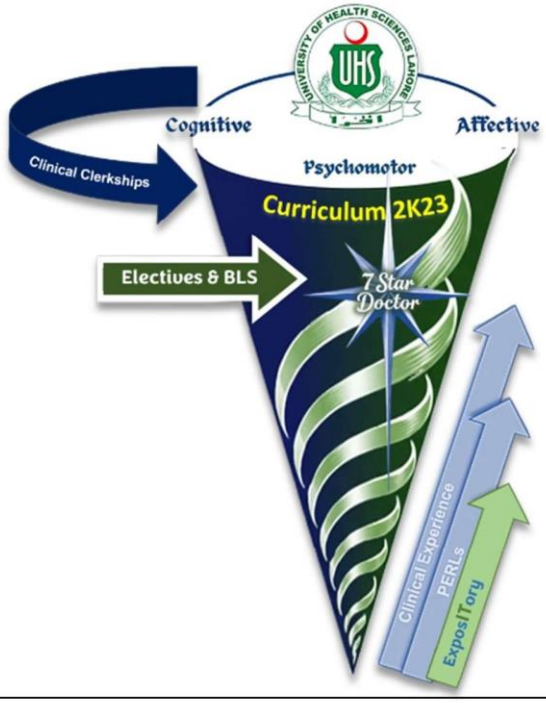
Roll No:	
Assignment Topic:	
Date:	
Submit a time management plan outlining your weekly schedule, including study hours, clinical tasks, and personal time. Reflect on how this plan helps you balance your responsibilities and improve productivity.	
Facilitator Remarks:	

Roll No:	

Assignment Topic:	
Date:	
Submit a reflection on a case where you practiced or observed the informed consent process. Discuss how the information was communicated to the patient and how patient autonomy was respected.	
Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Create and submit a poster illustrating the key steps involved in patient counseling for a specific disease, including how to explain the diagnosis, treatment options, and lifestyle modifications. Highlight strategies to ensure patient comprehension and engagement in the decision-making process.	
Facilitator Remarks:	

Curriculum 2K23 (MBBS Year-2)



MODULE: ENDOCRINOLOGY & REPRODUCTION-I

DATE FROM: _____

DATE TO: _____

CHECKED BY: _____

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Roll No:	
Assignment Topic:	
Date:	
Submit a weekly task management plan, detailing how you organized and prioritized your tasks to maximize productivity. Reflect on how this approach helped improve your efficiency and ability to meet academic or clinical deadlines.	
Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Submit a summary of your literature search strategy, including the databases used, search terms, and filters applied. Reflect on how you refined your search to gather the most relevant and highquality articles for your research. Submit a summary of your literature search strategy, including the databases used, search terms, and filters applied. Reflect on how you refined your search to gather the most relevant and high-quality articles for your research.	
Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Submit a completed literature matrix that includes a summary of key studies related to your chosen topic. Include columns for author, year, study design, findings, and relevance.	

Facilitator Remarks:	
Roll No:	
Assignment Topic:	
Date:	
Submit a reflection on a simulated informed consent session. Discuss how you communicated evidence-based information to the patient, how you ensured their understanding, and the importance of respecting their autonomy in the decision-making process	
Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Create a simple poster or a one-page reflection outlining key strategies for respecting diversity in patient care. Include examples of how to communicate effectively with patients from different backgrounds and ensure that care is inclusive and equitable.	

Facilitator Remarks:	
Roll No:	
Assignment Topic:	
Date:	

the conflict resolution exercise. Discuss the strategies you used, how effective communication played a role, and what you learned about resolving conflicts in a healthcare environment.

Facilitator Remarks:	

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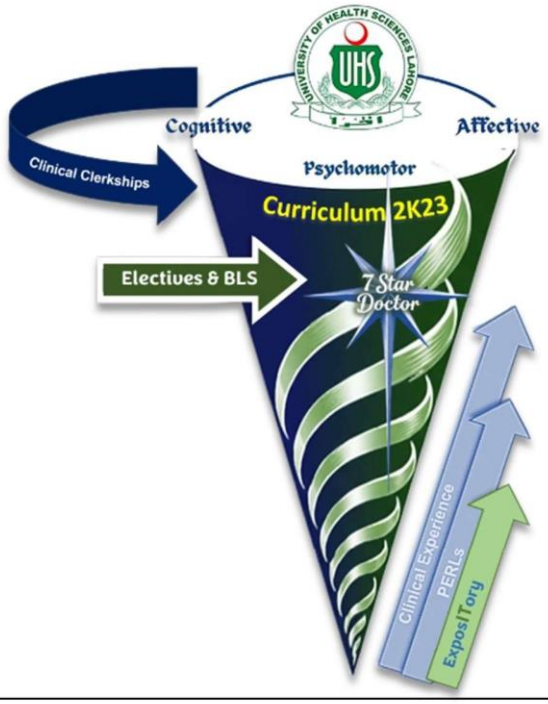


MODULE: HEAD AND NECK & SPECIAL SENSES

DATE FROM: _____ DATE TO: _____

CHECKED BY: _____ 304

Roll No:	
Assignment Topic:	
Date:	
Submit a poster showing steps in conducting literature review.	

Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Submit a reflection on your work-life balance plan. Include specific strategies you intend to implement to manage stress and maintain your well-being while meeting your academic and professional responsibilities.	

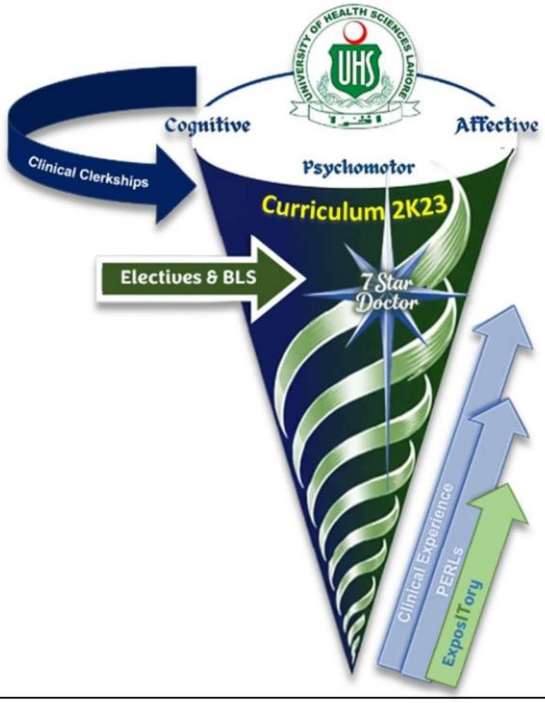
Facilitator Remarks:	
Roll No:	
Assignment Topic:	
Date:	
Submit a link to your e-portfolio, wiki page, or blog page along with a brief reflection on the choices you made in its design and content. Discuss how this digital representation aligns with your professional goals and identity.	

Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Create a presentation or infographic that highlights key strategies for supporting patient autonomy in individuals with sensory disabilities. Include information on effective communication techniques, adaptations to enhance understanding, and ways to ensure informed consent.	

Facilitator Remarks:	

Curriculum 2K23 (MBBS Year-2)



MODULE: NEUROSCIENCES-I

DATE FROM: _____

DATE TO: _____

CHECKED BY: _____

Roll No:	
Assignment Topic:	
Date:	
Submit a reflective journal entry discussing a situation where you failed to demonstrate professional accountability. Include details on how you took ownership of your actions, met deadlines, followed protocols, and engaged with colleagues to ensure the highest standards of care and professionalism.	

Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Submit a structured literature review that includes an introduction to the topic, a summary of key studies, an analysis of trends, and identification of research gaps. Reflect on the process of conducting the review and how it informs future research directions.	

Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	
Submit a case analysis of a scenario involving brain death. Discuss the ethical challenges faced by healthcare providers and families, the decision-making process, and how these decisions align with ethical principles in medicine.	

Facilitator Remarks:	

Roll No:	
Assignment Topic:	
Date:	

Submit a written analysis of a clinical case where you applied evidence-based decision-making principles. Discuss the research you reviewed, how you integrated it with clinical expertise, and how you considered patient values in your decision-making process.

Facilitator Remarks:	
Roll No:	
Assignment Topic:	
Date:	

Submit a summary of your mentoring session, including feedback, areas identified for improvement, and the action plan you developed with your mentor to enhance your professional growth.	
Facilitator Remarks:	

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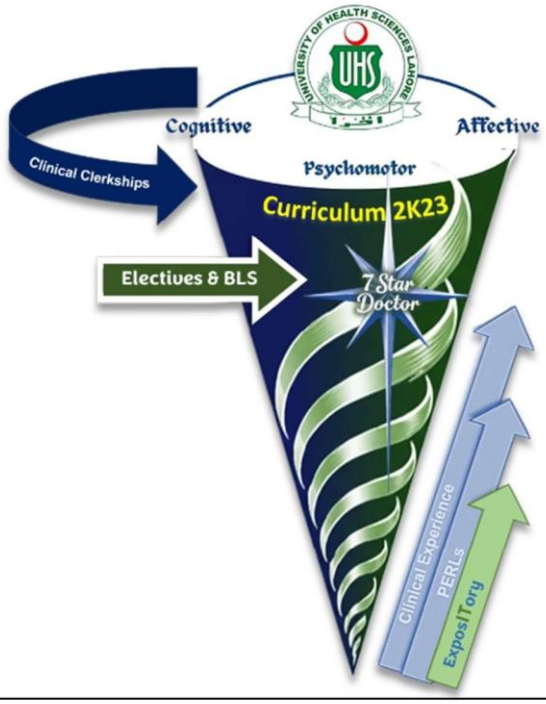

MODULE: INFLAMMATION

DATE FROM: _____ DATE TO: _____

CHECKED BY: _____ 315

Roll No:	
Assignment Topic:	
Date:	
Submit a case study analysis addressing the ethical challenges of resource allocation for patients with neoplasia and inflammation. Discuss the implications of equity in access to care, how decisions were made, and reflect on potential improvements to ensure fair distribution of resources.	

Facilitator Remarks:	
Roll No:	
Assignment Topic:	
Date:	
Write a case analysis on end-of-life decisions, particularly regarding ventilator use, and propose an ethically sound approach to decision-making.	

Facilitator Remarks:	

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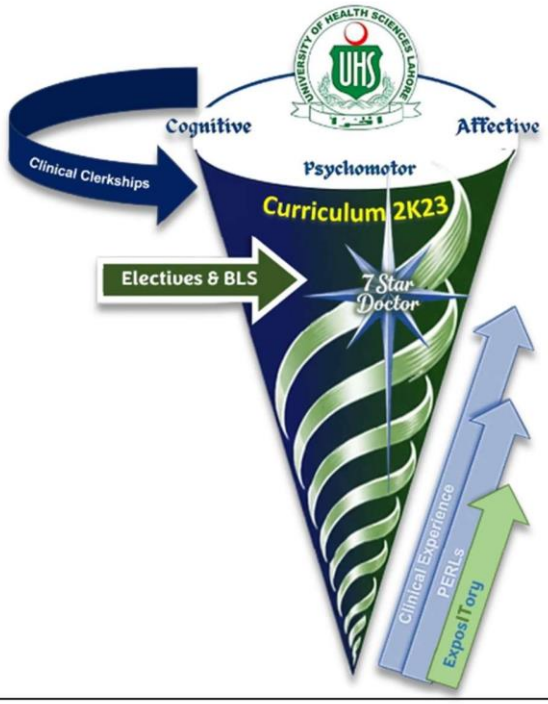

MODULE: Expository Wri ng II Advanced Wri ng Skills, Cri cal Thinking, and Use of Digital Collabora on Tools.

DATE FROM:

DATE TO:

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Roll No:	
Assignment Topic:	Critical Appraisal
Date:	
Write a report of critical appraisals of selected research articles, evaluating their strengths, weaknesses, and biases using a structured template.	

Facilitator Remarks:	
Roll No:	
Assignment Topic:	Poster Creation for Research Appraisal
Date:	
Reflect on the design process and tools used (e.g., PowerPoint, Canva) to make your poster.	

Facilitator Remarks:	

Roll No:	
Assignment Topic:	Collaborative Project Documentation
Date:	

Collaboratively write and submit an essay using an online platform, documenting the process of group editing and discussions held within the document.

Facilitator Remarks:	

Roll No:	
Assignment Topic:	Internet Research Exercise

Date:	
Submit a brief report documenting an advanced internet research activity, showcasing gathered information from reliable sources and citing these sources using citation software.	
Facilitator Remarks:	

SKILL ACQUISITION WORKSHOPS

Workshop Schedule for MBBS students

The Following Skill Acquisition Workshops are included in the "Modular Integrated Curriculum 2K23 Final version":

Sr. No.	Course Name	Academic Year	Duration	Eligibility
1.	Basic Life Support	1st Year / 2nd Year	2 days	Eligibility requirement for appearing in the 4th Professional Examination
2.	Advanced Life Support	3rd Year / 4th Year	1 day	Eligibility requirement for appearing in the Surgical Clerkship examination
3.	Cardiac First Response	3rd Year / 4th Year	1 day	Eligibility requirement for appearing in the Medicine Clerkship examination
4.	Trauma first responders	3rd Year / 4th Year	1 day	Eligibility requirement for appearing in the Surgical Clerkship examination
5.	Emergency Neonatal Resuscitation	3rd Year / 4th Year	1 day	Eligibility requirement for appearing in the Pediatrics Clerkship examination

6.	Emergency Obstetrics Resuscitation	3rd Year / 4th Year	1 day	Eligibility requirement for appearing in the Gynecology / Obstetrics Clerkship Examination

University of Health Sciences Lahore

Department of Medical Education

Innovating & Strategizing Healthcare Academia