



Second Grade

Second Year Curriculum: Building the Foundations of Medical Knowledge
College of Medicine – University of Al-Ameed

Second year curriculum map (30 weeks)				
code	Subject	Theory	Practice	Units
PHYS 201	Physiology	150	60	12
ANAT 202	Anatomy	60	120	8
BIOC 203	Biochemistry	90	60	8
HIST 204	Histology	45	90	6
EMBR 205	Embryology	30		2
ALCr 206	Al-Ba'ath party crime	30		2
	Extracurricular Activity	30		
		435	330	38

Physiology



Second Grade

Academic Program Description

This academic program description provides a concise summary of the program's key characteristics and the learning outcomes expected from students, demonstrating whether they have maximized the available opportunities. It is accompanied by a description of each course within the program.

1) Educational Establishment	University of Al-Ameed
2) Academic Department / Center	Faculty of Medicine / Department of Physiology and Medical Physics
3) Name of the Professional Academic Program	Modified Traditional Curriculum
4) Final Graduation Certificate	M.B.Ch.B
5) Educational system: Annual/courses/other	Annual
6) Approved accreditation program	Iraqi National Guideline on Standards for Established and Accrediting Medical School
7) Other External Influences	• Availability of relevant scientific research in the field of specialization • Access to global electronic networks • Access to traditional and digital libraries □ Teaching aids such as data shows and PowerPoint presentations • Availability of equipped classrooms • Use of free online communication platforms (e.g., Free Conference Call)
8) Date the description was Standardized Short Answer Questions	15\9\2024
9) Academic Program Objectives It seeks to develop students' knowledge and skills in the fundamental principles and mechanisms of the human body's functions. The program also intends to relate physiological principles to clinical conditions and applications. Providing students with comprehensive medical scientific information about the various body systems, such as cardiovascular system, and nervous system, and providing them with the knowledge to understand other medical fields.	
10) The most reliable resources for program information are:	

1. Kim E. Barrett, Susan M. Barman, Scott Boitano and Heddwen L. Brooks, Ganong's of Review of Medical Physiology.
John E. Hall, Guyton and Hall Textbook for medical physiology

Physiology \ Grade 2
Code: PHYS 201 Credits 12

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Cell Physiology				
PHYS1.1	Describe the structure and functions of the plasma membrane, glycocalyx, and ions channels.	K	large group lecture	Short Answer Questions, MCQ
PHYS1.2	Expound the functions of cilia and flagella.	K	large group lecture	Short Answer Questions, MCQ
PHYS1.3	Explain the means of cell-to-cell adhesion.	K	large group lecture	Short Answer Questions, MCQ
PHYS1.4	Describe how the cells communicate with each other (signal transduction or cell signaling).	K	large group lecture	Short Answer Questions, MCQ
PHYS1.5	Expound the ways by which the cell regulates the intracellular $[Ca^{2+}]$ and $[H^+]$.	K	large group lecture	Short Answer Questions, MCQ
Excitable tissues I- Nerve & Synapse				
PHYS2.1	Explain the basic structure and function of a neuron, including the cell body, dendrites, axon, and myelin sheath.	K	large group lecture	MCQ
PHYS2.2	Explain the notion of resting membrane potential, action potential, and propagation of impulse.	K	large group lecture	MCQ
PHYS2.3	Discuss the properties of synaptic transmission, including the release of neurotransmitters, their binding to receptors, the resulting postsynaptic potentials, and the synaptic circuits.	K	large group lecture	MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS2.4	Describe the nerve conduction study and its use in determining the speed and amplitude of electrical signals of sensory and motor nerve fibers.	K	large group lecture	MCQ
Excitable tissues II- Muscles				
PHYS3.1	Describe the different types of muscle tissue (skeletal, cardiac, and smooth) and their respective structural and functional characteristics.	K	large group lecture	MCQ
PHYS3.2	Explain the sliding filament theory of muscle contraction, detailing the roles of actin, myosin, calcium, and ATP.	K	large group lecture	MCQ
PHYS3.3	Relate the physiological principles of muscle function to clinical conditions and neuromuscular disorders.	K	large group lecture	MCQ
PHYS3.4	Describe the use of surface and needle electromyography (EMG) in the identification of neuromuscular diseases and disorders of motor control.	K	large group lecture	MCQ
Autonomic nervous system I- Organization of Nervous system				
PHYS4.1	A. Describe the overall organization of the nervous system. B. Differentiate between the central nervous system (CNS) and the peripheral nervous system (PNS).	K	large group lecture	Short Answer Questions, MCQ
PHYS4.2	Compare and contrast the anatomical differences between the sympathetic and parasympathetic nervous systems.	K	large group lecture	Short Answer Questions, MCQ
Autonomic nervous system II- Receptors and Neurotransmitter				
PHYS5.1	Identify and describe the major neurotransmitters of the autonomic nervous system, including acetylcholine and norepinephrine.	K	large group lecture	Short Answer Questions, MCQ
PHYS5.2	Differentiate between the various types of autonomic receptors (e.g., cholinergic: nicotinic, muscarinic; adrenergic: alpha, beta) and their locations on target organs.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS5.3	Explain the clinical relevance of understanding neurotransmitter and receptor interactions within the autonomic nervous system.	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology I- Functions and structure of the heart				
PHYS6.1	A. Describe the anatomical structure of the heart, including the chambers, valves, and major blood vessels. B. Explain the function of each heart component in the circulation of blood.	K	large group lecture	Short Answer Questions, MCQ
PHYS6.2	Describe the histological structure of the heart wall, including the endocardium, myocardium, and epicardium.	K	large group lecture	Short Answer Questions, MCQ
PHYS6.3	Describe the components and function of the cardiac conduction system, including the sinoatrial (SA) node, atrioventricular (AV) node, and Purkinje fibers	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology II- The cardiac cycle: part one (electrical events in cardiac cycle)				
PHYS7.1	A. Describe the phases of the cardiac cycle, focusing on the electrical events. B. Explain the generation and propagation of the action potential within the heart, starting at the sinoatrial (SA) node.	K	large group lecture	Short Answer Questions, MCQ
PHYS7.2	Correlate the electrical events of the cardiac cycle with the corresponding waves of the electrocardiogram (ECG): P wave, QRS complex, and T wave.	K	large group lecture	Short Answer Questions, MCQ
PHYS7.3	A. Relate the electrical events of the cardiac cycle to the mechanical events that follow B. Analyze how alterations in the electrical events of the cardiac cycle can lead to arrhythmias.	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology III- The cardiac cycle part 2: mechanical events in the heart				
PHYS8.1	A. Describe the mechanical events that occur during each phase of the cardiac cycle: systole and diastole. B. Correlate the mechanical events of the cardiac cycle with the electrical events shown on an ECG.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS8.2	Discuss the physiological significance of the heart sounds (S1, S2, S3, S4) and their relationship to the mechanical events of the cardiac cycle.	K	large group lecture	Short Answer Questions, MCQ
PHYS8.3	A. Describe the physiological basis of jugular venous pressure (JVP) and its clinical significance. B. Demonstrate the proper technique for measuring JVP.	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology IV- cardiac output				
PHYS9.1	A. Define cardiac output and its importance in cardiovascular physiology. B. Describe the physiological determinants of cardiac output.	K	large group lecture	Short Answer Questions, MCQ
PHYS9.2	A. Discuss the clinical implications of changes in cardiac output. B. Relate cardiac output to overall cardiovascular function.	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology V- The electrocardiogram				
PHYS10.1	Explain the electrical basis of the electrocardiogram (ECG) and its relationship to the cardiac cycle.	K	large group lecture	Short Answer Questions, MCQ
PHYS10.2	Describe the standard 12-lead ECG and the anatomical information provided by each lead.	K	large group lecture	Short Answer Questions, MCQ
PHYS10.3	A. Explain how to differentiate between normal and abnormal ECG findings B. Relate ECG findings to the underlying pathophysiology of cardiac disorders.	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology VI- Calibration of the electrocardiograph				
PHYS11.1	Identify and describe the components of normal ECG tracing, including the P wave, QRS complex, T wave, and intervals (PR, QT, ST).	K	large group lecture	Short Answer Questions, MCQ
PHYS11.2	Relate the ECG waveforms to the underlying electrical events in the heart.	K	large group lecture	Short Answer Questions,

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
				MCQ
PHYS11.3	Explain the importance of proper calibration in obtaining accurate electrocardiogram (ECG) recordings.	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology VII- Calculation of the electrical axis				
PHYS12.1	Explain the concept of the electrical axis of the heart and its clinical significance.	K	large group lecture	Short Answer Questions, MCQ
PHYS12.2	Describe the relationship between the electrical axis and the direction of ventricular depolarization.	K	large group lecture	Short Answer Questions, MCQ
PHYS12.3	Identify the leads used for electrical axis determination (primarily leads I and aVF).	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology VIII- Physiology of the circulatory system				
PHYS13.1	Describe the overall organization and function of the circulatory system, including the systemic and pulmonary circulations.	K	large group lecture	Short Answer Questions, MCQ
PHYS13.2	Explain the role of the autonomic nervous system and hormones in regulating blood pressure and blood flow.	K	large group lecture	Short Answer Questions, MCQ
PHYS13.3	Relate the physiological principles of the circulatory system to common cardiovascular diseases.	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology IX- The cardiovascular center				
PHYS14.1	Identify and describe the location and major components of the cardiovascular center in the brainstem.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS14.2	Explain the role of the cardiovascular center in regulating blood flow during exercise, stress, and other physiological states.	K	large group lecture	Short Answer Questions, MCQ
PHYS14.3	Discuss the effects of neurological disorders and drugs on the function of the cardiovascular center.	K	large group lecture	Short Answer Questions, MCQ
CVS Physiology X- Circulation through special regions and circulatory shock				
PHYS15.1	Describe the unique characteristics of blood flow and regulation in specific regions of the body, including the coronary, cerebral, pulmonary, and cutaneous circulations.	K	large group lecture	Short Answer Questions, MCQ
PHYS15.2	Describe the pathophysiological mechanisms underlying each type of circulatory shock.	K	large group lecture	Short Answer Questions, MCQ
Body fluids				
PHYS16.1	Describe the major fluid compartments of the body (intracellular fluid, interstitial fluid, plasma).	K	large group lecture	Short Answer Questions, MCQ
PHYS16.2	Explain the role of hydrostatic and osmotic pressures in fluid movement across capillary membranes.	K	large group lecture	Short Answer Questions, MCQ
PHYS16.3	Discuss the role of body fluid analysis in clinical diagnosis.	K	large group lecture	Short Answer Questions, MCQ
Blood physiology I – Introduction and Red blood cells				
PHYS17.1	A. Describe the composition of blood, including plasma and formed elements. B. Explain the functions of blood, including transport, regulation, and protection.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS17.2	Explain the structure and function of red blood cells (erythrocytes).	K	large group lecture	Short Answer Questions, MCQ
PHYS17.3	Relate the physiology of red blood cells to common clinical conditions like anemia and polycythemia.	K	large group lecture	Short Answer Questions, MCQ
Blood physiology II – White blood cells				
PHYS18.1	Describe the different types of white blood cells (leukocytes) and their respective functions.	K	large group lecture	Short Answer Questions, MCQ
PHYS18.2	Relate the physiology of white blood cells to common clinical conditions like leukocytosis, leukopenia, and leukemia.	K	large group lecture	Short Answer Questions, MCQ
Blood physiology III – Hemostasis and blood types				
PHYS19.1	Describe the process of hemostasis, including vascular spasm, platelet plug formation, and coagulation.	K	large group lecture	Short Answer Questions, MCQ
PHYS19.2	A. Describe the ABO and Rh blood group systems and their clinical significance. B. Explain the principles of blood typing and crossmatching.	K	large group lecture	Short Answer Questions, MCQ
Physiology of the respiratory system I - Functions of the Respiratory System				
PHYS20.1	Describe the primary functions of the respiratory system, including gas exchange, pH regulation, and protection.	K	large group lecture	Short Answer Questions, MCQ
PHYS20.2	Describe the different cell types that make up the alveolar wall.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Physiology of the respiratory system II - Pleura				
PHYS21.1	Describe the anatomy and function of the pleura, including the parietal and visceral layers.	K	large group lecture	Short Answer Questions, MCQ
PHYS21.2	Discuss the clinical implications of pleural disorders, such as pneumothorax and pleural effusion.	K	large group lecture	Short Answer Questions, MCQ
Physiology of the respiratory system III - Lung Volumes & Capacities				
PHYS22.1	Define and describe the various lung volumes and define and describe the various lung capacities	K	large group lecture	Short Answer Questions, MCQ
PHYS22.2	Explain the physiological significance of each lung volume and capacity.	K	large group lecture	Short Answer Questions, MCQ
PHYS22.3	Discuss the clinical applications of lung volume and capacity measurements in assessing respiratory function.	K	large group lecture	Short Answer Questions, MCQ
Physiology of the respiratory system III - Lung Volumes & Capacities				
PHYS23.1	Define airway resistance and explain its impact on ventilation.	K	large group lecture	Short Answer Questions, MCQ
PHYS23.2	Discuss the clinical significance of increased airway resistance in respiratory diseases like asthma and COPD	K	large group lecture	Short Answer Questions, MCQ
Physiology of the respiratory system V - VENTILATION/ PERFUSION (V/Q) RATIO				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS24.1	A. Define ventilation (V) and perfusion (Q). B. Explain their physiological significance in gas exchange.	K	large group lecture	Short Answer Questions, MCQ
PHYS24.2	Discuss the clinical significance of V/Q mismatch in various respiratory diseases, such as pulmonary embolism and chronic obstructive pulmonary disease (COPD).	K	large group lecture	Short Answer Questions, MCQ
Physiology of the respiratory system VI - regulation of respiration				
PHYS25.1	Describe the neural control of respiration, including the respiratory centers in the brainstem.	K	large group lecture	Short Answer Questions, MCQ
PHYS25.2	Relate the physiological principles of respiratory regulation to clinical conditions such as sleep apnea and chronic obstructive pulmonary disease.	K	large group lecture	Short Answer Questions, MCQ
CNS physiology I				
PHYS26.1	A. Explain the organization of the central nervous system—including its three functional levels (spinal, subcortical, and cortical) B. Numerate the roles of neuronal pools and their mechanisms (serial, parallel, divergent, convergent, and after-discharge) in signal processing.	K	large group lecture	MCQ
PHYS26.2	A. Define the inhibitory mechanisms (both presynaptic and postsynaptic). B. Divine the basic properties of sensory receptors (sensitivity, specificity, adaptation) that transform external stimuli into receptor potentials.	K	large group lecture	MCQ
CNS physiology II				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS27.1	A. Explain the layered organization of the cerebral cortex. B. Numerate the roles of primary sensory areas, sensory association areas, and Wernicke's area in interpreting and integrating somatic sensory inputs. C. Describe the brain waves and Electroencephalogram (EEG).	K	large group lecture	MCQ
PHYS27.2	A. Define the principles behind spatial and temporal summation in sensory signal processing. B. Divine the clinical implications of lesions affecting these cortical regions on perception and sensory discrimination.	K	large group lecture	MCQ
CNS physiology III				
PHYS28.1	A. Explain the organization of the motor system by detailing both lateral (corticospinal, rubrospinal, reticulospinal, vestibulospinal) and ventromedial descending pathways. B. Numerate their contributions to voluntary movement, posture, and balance.	K	large group lecture	MCQ
PHYS28.2	A. Define the structure and function of key reflex arcs: including the stretch reflex and Golgi tendon reflex. B. Divine how integration of feedback from muscle spindles and Golgi tendon organs modulates muscle tone and coordinated motor responses.	K	large group lecture	MCQ
CNS physiology IV				
PHYS29.1	A. Explain the advanced mechanisms of motor integration and reflex modulation by examining phenomena such as reciprocal inhibition, damping of motor signals, and the gamma loop servo system. B. Numerate their roles in fine-tuning motor output and maintaining muscle tone.	K	large group lecture	MCQ
PHYS29.2	A. Define the clinical scenarios arising from disruptions in descending pathways and reflex circuits—such as spinal shock and hypertonicity. B. Divine how understanding these	K	large group lecture	MCQ

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	mechanisms informs the diagnosis and management of motor disorders in clinical practice.			
Gastrointestinal Tract Physiology I – Introduction				
PHYS30.1	Explain the overall function and the anatomical structure of the gastrointestinal tract	K	large group lecture	Short Answer Questions, MCQ
PHYS30.2	Explain the neural control mechanisms of the GIT by highlighting the roles of the intrinsic enteric nervous system along with parasympathetic and sympathetic influences.	K	large group lecture	Short Answer Questions, MCQ
PHYS30.3	A. Explain the different patterns of gastrointestinal motility. B. Discuss the coordination of phasic and tonic smooth muscle contractions, as well as the clinical implications in disorders like paralytic ileus.	K	large group lecture	Short Answer Questions, MCQ
Gastrointestinal Tract Physiology II				
PHYS31.1	A. Explain the process of mastication. B. Describe the anatomical structures involved in chewing, including the role of incisors and molars, and the neural control mechanisms that facilitate the chewing reflex.	K	large group lecture	Short Answer Questions, MCQ
PHYS31.2	A. Analyze the physiological responses to food intake. B. Explain how sensory signals from the mouth and gastrointestinal tract influence salivary secretion and the swallowing reflex, highlighting the roles of the sympathetic and parasympathetic nervous systems.	K	large group lecture	Short Answer Questions, MCQ
PHYS31.3	A. Discuss disorders associated with swallowing. B. Identify and explain various conditions such as dysphagia and achalasia, including their causes, symptoms, and implications for patient management.	K	large group lecture	Short Answer Questions, MCQ
Gastrointestinal Tract Physiology III				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS32.1	A. Explain the anatomy and regions of the stomach, including the fundus, body, and antrum. B. Explain the physiological role of the lower esophageal sphincter and pyloric sphincter in gastric function.	K	large group lecture	Short Answer Questions, MCQ
PHYS32.2	Describe the composition and functions of gastric secretions, including hydrochloric acid (HCl) and pepsinogen, and the impact of various hormones and neurotransmitters on gastric acid secretion.	K	large group lecture	Short Answer Questions, MCQ
PHYS32.3	A. Analyze the effects of pathological conditions such as gastroparesis and erosive gastritis on gastric function and emptying. B. Analyze the role of non-steroidal anti-inflammatory drugs (NSAIDs) in gastric mucosal injury and the physiological consequences.	K	large group lecture	Short Answer Questions, MCQ
Gastrointestinal Tract Physiology IV				
PHYS33.1	A. Describe the components of the gastric mucosal barrier and how they protect the stomach from self-digestion. B. Explain the mechanisms by which gastric mucosal cells prevent HCl from penetrating into the cells.	K	large group lecture	Short Answer Questions, MCQ
PHYS33.2	A. Explain the three phases of gastric secretion: cephalic, gastric, and intestinal phases. B. Discuss the physiological mechanisms involved in each phase and their contributions to digestion.	K	large group lecture	Short Answer Questions, MCQ
PHYS33.3	A. Investigate the causes and mechanisms behind gastric and duodenal ulcers, including the role of <i>Helicobacter pylori</i> . B. Discuss treatment options for peptic ulcers and the implications of NSAID use.	K	large group lecture	Short Answer Questions, MCQ
Gastrointestinal Tract Physiology V				
PHYS34.1	Explain the complex neural and physiological pathways involved in the vomiting reflex, detailing the roles of the chemoreceptor trigger zone, vagus nerve, and brainstem.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS34.2	Explain how the pancreas regulates digestion and glucose homeostasis through the secretion of these substances, emphasizing the interplay between neural and hormonal control mechanisms.	K	large group lecture	Short Answer Questions, MCQ
Gastrointestinal Tract Physiology VI				
PHYS35.1	A. Understand the role of bile in fat digestion and excretion of cholesterol and bilirubin. B. Explain the composition of bile.	K	large group lecture	Short Answer Questions, MCQ
PHYS35.2	A. Explain the enterohepatic circulation of bile salts and its significance in maintaining an adequate bile acid pool. B. Discuss the consequences of ileal resection on bile salt reabsorption and its impact on fat digestion and water content in feces.	K	large group lecture	Short Answer Questions, MCQ
PHYS35.3	A. Describe the formation and metabolism of bilirubin, including the difference between conjugated and unconjugated bilirubin. B. Explain the causes and consequences of jaundice related to bilirubin metabolism.	K	large group lecture	Short Answer Questions, MCQ
Gastrointestinal Tract Physiology VII				
PHYS36.1	A. Explain the processes of carbohydrate, fat, and protein digestion and absorption in the gastrointestinal tract. B. Explain the causes and consequences of common malabsorption syndromes.	K	large group lecture	Short Answer Questions, MCQ
PHYS36.2	Explain the mechanisms of electrolyte and water absorption and secretion in the gastrointestinal tract.	K	large group lecture	Short Answer Questions, MCQ
PHYS36.3	Discuss the diagnostic and therapeutic approaches to managing malabsorption and other gastrointestinal conditions.	K	large group lecture	Short Answer Questions, MCQ
Endocrine Physiology I - Introduction				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS37.1	Describe the general functions of the endocrine system in maintaining homeostasis.	K	large group lecture	Short Answer Questions, MCQ
PHYS37.2	Describe the major endocrine glands and their respective hormones.	K	large group lecture	Short Answer Questions, MCQ
Endocrine Physiology II - Anterior Pituitary Gland				
PHYS38.1	Describe the anatomical relationship between the hypothalamus and the anterior pituitary gland.	K	large group lecture	Short Answer Questions, MCQ
PHYS38.2	Identify and describe the hormones secreted by the anterior pituitary gland and their function.	K	large group lecture	Short Answer Questions, MCQ
PHYS38.3	Relate anterior pituitary hormone imbalances to specific clinical conditions.	K	large group lecture	Short Answer Questions, MCQ
Endocrine Physiology III - Thyroid Gland				
PHYS39.1	Describe the anatomy and histology of the thyroid gland.	K	large group lecture	Short Answer Questions, MCQ
PHYS39.2	Describe the physiological effects of thyroid hormones on metabolism, growth, and development.	K	large group lecture	Short Answer Questions, MCQ
Endocrine Physiology IV - The Adrenal Gland				
PHYS40.1	Describe the anatomical structure of the adrenal gland, including the cortex and medulla.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS40.2	Explain the physiological effects of epinephrine and norepinephrine on the cardiovascular and nervous systems.	K	large group lecture	Short Answer Questions, MCQ
PHYS40.3	A. Explain the diagnostic tests used to assess adrenal gland function. B. Relate adrenal hormone imbalances to specific clinical conditions and their treatments.	K	large group lecture	Short Answer Questions, MCQ
Endocrine Physiology V - The Pancreas				
PHYS41.1	Describe the anatomical location and histological structure of the endocrine pancreas	K	large group lecture	Short Answer Questions, MCQ
PHYS41.2	Describe the physiological effects of pancreas secretion.	K	large group lecture	Short Answer Questions, MCQ
PHYS41.3	A. Explain the diagnostic tests used to assess pancreatic endocrine function. B. Relate pancreatic hormone imbalances to specific clinical conditions and their treatments.	K	large group lecture	Short Answer Questions, MCQ
Endocrine Physiology VI - Calcium Metabolism				
PHYS42.1	Describe the physiological importance of calcium in various bodily functions, including muscle contraction, nerve transmission, and bone formation.	K	large group lecture	Short Answer Questions, MCQ
PHYS42.2	Discuss the feedback loops involved in regulating calcium levels.	K	large group lecture	Short Answer Questions, MCQ
PHYS42.3	Relate calcium imbalances to specific clinical conditions	K	large group lecture	Short Answer Questions, MCQ
Physiology of Reproduction I - Male Reproductive Physiology				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS43.1	Describe the anatomy and histology of the male reproductive system	K	large group lecture	Short Answer Questions, MCQ
PHYS43.2	Describe the hormonal regulation of spermatogenesis, including the roles of GnRH, FSH, LH, and testosterone.	K	large group lecture	Short Answer Questions, MCQ
PHYS43.3	Describe the physiological mechanisms involved in erection and ejaculation.	K	large group lecture	Short Answer Questions, MCQ
Physiology of Reproduction II - Female Reproductive Physiology				
PHYS44.1	Describe the anatomy and histology of the female reproductive system, including the ovaries, fallopian tubes, uterus, cervix, and vagina.	K	large group lecture	Short Answer Questions, MCQ
PHYS44.2	Explain the hormonal changes that occur during pregnancy and lactation.	K	large group lecture	Short Answer Questions, MCQ
PHYS44.3	Relate the physiological principles of female reproduction to fertility, contraception, and common reproductive disorders.	K	large group lecture	Short Answer Questions, MCQ
Renal physiology I -Introduction				
PHYS45.1	Explain the multiple functions of the kidneys, including waste excretion and regulation of body fluids.	K	large group lecture	Short Answer Questions, MCQ
PHYS45.2	Illustrate the blood supply to the kidneys and its importance for renal function.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS45.3	Identify the hormonal functions of the kidneys, including the secretion of erythropoietin and renin.	K	large group lecture	Short Answer Questions, MCQ
Renal physiology II - Glomerular Filtration Rate and Regulation of Renal Blood Flow				
PHYS46.1	Explain the fundamental processes of renal physiology, including filtration, reabsorption, and secretion, and their roles in maintaining homeostasis.	K	large group lecture	Short Answer Questions, MCQ
PHYS46.2	Discuss the factors that regulate glomerular filtration rate (GFR) and renal blood flow (RBF), such as neural, hormonal, and autoregulatory mechanisms.	K	large group lecture	Short Answer Questions, MCQ
PHYS46.3	Illustrate the importance of renal physiology in maintaining fluid, electrolyte, and acid-base balance in the body.	K	large group lecture	Short Answer Questions, MCQ
Renal physiology III - Reabsorption in Different Parts of Nephron				
PHYS47.1	Explain the mechanisms of sodium reabsorption in different parts of the nephron and their physiological significance.	K	large group lecture	Short Answer Questions, MCQ
PHYS47.2	Describe the differences in transport mechanisms across various segments of the nephron and their impact on urine concentration.	K	large group lecture	Short Answer Questions, MCQ
PHYS47.3	Illustrate the processes of active and passive transport within the nephron, highlighting the energy requirements and outcomes of these processes.	K	large group lecture	Short Answer Questions, MCQ
Renal physiology IV - The Countercurrent Mechanism				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS48.1	Explain the renal mechanisms for excreting concentrated and diluted urine, focusing on the countercurrent mechanism.	K	large group lecture	Short Answer Questions, MCQ
PHYS48.2	Define the role of antidiuretic hormone (ADH) in regulating water permeability in the renal collecting ducts.	K	large group lecture	Short Answer Questions, MCQ
PHYS48.3	Analyze the factors affecting tubular reabsorption and the hormonal controls involved in urine output regulation.	K	large group lecture	Short Answer Questions, MCQ
acid-base balance				
PHYS49.1	Define pH and explain its relationship to hydrogen ion concentration.	K	large group lecture	Short Answer Questions, MCQ
PHYS49.2	Explain the role of the respiratory system and the kidneys in regulating acid-base balance.	K	large group lecture	Short Answer Questions, MCQ
PHYS49.3	Relate acid-base balance to electrolyte balance and other physiological processes.	K	large group lecture	Short Answer Questions, MCQ
Special Senses I - Vision				
PHYS50.1	A. Describe the anatomical structures of the eye and their respective functions in vision. Explain the process of light refraction and accommodation by the lens.	K	large group lecture	Short Answer Questions, MCQ
PHYS50.2	Discuss the physiological mechanisms of pupillary reflexes and their role in regulating light entry into the eye.	K	large group lecture	Short Answer Questions, MCQ
PHYS50.3	Relate the physiology of vision to the clinical assessment of visual acuity and visual field testing.	K	large group lecture	Short Answer Questions, MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Special Senses II - Audition				
PHYS51.1	Describe the anatomical structures of the external, middle, and inner ear, and their respective functions in hearing.	K	large group lecture	Short Answer Questions, MCQ
PHYS51.2	Discuss the physiological mechanisms of the vestibular system and its role in balance and equilibrium.	K	large group lecture	Short Answer Questions, MCQ
PHYS51.3	Relate the physiology of audition to the clinical assessment of hearing acuity and audiometry.	K	large group lecture	Short Answer Questions, MCQ

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Body temperature				
PHYS1.1	Describe the physiological mechanisms of heat production and heat loss in the human body.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS1.2	Identify and explain the physiological factors that can influence body temperature measurements.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS1.3	Demonstrate the proper techniques for measuring body temperature using different methods.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Introduction of Physiology blood				
PHYS2.1	Describe the overall composition of blood and the major functions of blood.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS2.2	A. Demonstrate proper hand hygiene and aseptic techniques for blood collection. B. Explain the importance of proper labeling and handling of blood samples.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS2.3	Explain the principles behind different blood collection methods.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Packed cell volume (Hematocrit)				
PHYS3.1	Demonstrate the proper technique for manual hematocrit determination using capillary tubes.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS3.2	A. Explain the clinical significance of variations in hematocrit values. B. Relate manual capillary tube hematocrit findings to specific disease states.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
ABO blood grouping				
PHYS4.1	Explain the principles of ABO blood grouping, including the presence of antigens (A and B) on red blood cells and antibodies (anti-A and anti-B) in plasma.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS4.2	A. Perform ABO blood grouping using the slide or tile method. B. Interpret agglutination reactions to determine blood type and Properly document and record results.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Hemoglobin Measurement				
PHYS5.1	A. Explain the physiological significance of hemoglobin, its role in oxygen transport, and the clinical importance of its measurement. B. Describe the different types of hemoglobin.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS5.2	Perform hemoglobin measurement using Sahli's (acid hematin) method, following the standard protocol.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS5.3	Explain the clinical significance of elevated and decreased hemoglobin levels in various disease states.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Coagulation and Bleeding Time				
PHYS6.1	Define hemostasis and its importance in maintaining blood within damaged vessels.	K, S	Small group , Practical Sessions, integrated seminar	Short Answer Questions, OSPE, and VIVA
PHYS6.2	Perform methods for measuring bleeding time, and understand the clinical significance of prolonged bleeding time and coagulation time.	K, S	Small group , Practical Sessions, integrated seminar	Short Answer Questions, OSPE, and VIVA
Red Blood Cell Indices (MCV, MCH, MCHC)				
PHYS7.1	Define RBC indices and explain their clinical applications.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS7.2	Identify and calculate the three main RBC indices: Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), and Mean Corpuscular Hemoglobin Concentration (MCHC).	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Blood Pressure				
PHYS8.1	A. Define systolic arterial pressure and diastolic arterial pressure. B. Explain the relationship between blood flow, blood vessel diameter, and blood pressure.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS8.2	Demonstrate and perform the proper procedure for measuring arterial blood pressure.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
The arterial pulses				
PHYS9.1	Define the arterial pulse and explain its physiological origin in the cardiac cycle.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS9.2	A. Identify the main peripheral arterial pulse sites. B. Describe the correct technique to palpate arterial pulses.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS9.3	Describe the use of a pulse oximeter for automatic pulse measurement.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
The normal electrocardiogram (ECG)				
PHYS10.1	A. Identify the key components of a normal ECG waveform. B. Describe the relationship between cardiac electrical activity and ECG waveforms.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS10.2	Outline a systematic approach to ECG reading and analysis.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Examination of cranial nerves I				
PHYS11.1	List the names and numbers of the first six cranial nerves (I-VI) and describe the main functions of each of the cranial nerves I-VI.	K, S	Small group , Practical Sessions, integrated seminars.	Short Answer Questions, OSPE, and VIVA
PHYS11.2	Perform test to examine the first six cranial nerves (I-VI)	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
				VIVA
PHYS11.3	Recognize common abnormalities associated with dysfunction of cranial nerves.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Examination of cranial nerves II				
PHYS12.1	List the names and numbers of the last six cranial nerves (VII - XII) and describe the main functions of each one.	K, S	Small group , Practical Sessions, integrated seminars.	Short Answer Questions, OSPE, and VIVA
PHYS12.2	Perform test to examine the first six cranial nerves (VII - XII).	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS12.3	Recognize common abnormalities associated with dysfunction of cranial nerves.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Examination of motor nervous system				
PHYS13.1	Examine the integrity of motor nervous system (tone, power and reflexes) and to detect the level of lesion if present whether upper or lower motor neuron.	K, S	Small group , Practical Sessions, integrated seminars.	Short Answer Questions, OSPE, and VIVA
PHYS13.2	Recognize common clinical signs associated with motor system dysfunction.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Cerebellar Function Tests (Coordination of movement)				
PHYS14.1	Describe the anatomical divisions of the cerebellum and their respective functions in motor control.	K, S	Small group , Practical Sessions, integrated seminars.	Short Answer Questions, OSPE, and VIVA
PHYS14.2	Demonstrate the proper techniques for performing common cerebellar function tests	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS14.3	Identify and interpret abnormal findings in cerebellar function tests.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Examination of Sensory Nervous System				
PHYS15.1	Explain the physiological basis of sensory deficits and their clinical significance.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS15.2	Check the following sensations in the given subject: 1. Tactile sensibility—touch (fine and crude). 2. Pain sensation. 3. Temperature (hot and cold) sensation 4. Joint position sense and vibration sense 5. Two-point discrimination 6. Stereognosis and graphesthesia.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Cardiopulmonary Resuscitation				
PHYS16.1	Describe the physiological mechanisms underlying cardiac arrest and respiratory arrest.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
PHYS16.2	Demonstrate the proper techniques for performing high-quality chest compressions, including rate, depth, and recoil.	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
Visual field				
PHYS17.1	Understand the anatomical and functional principles of visual field and pathway, including clinical significance of nasal and temporal field, scotomas, and hemianopia	K, S	Small group , Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS17.2	Develop proficiency in performing and interpreting visual field assessments, such as confrontational tests and perimetry, to diagnose retinal, optic pathway, and cortical disorders.	K, S	Small group, Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS17.3	Correlate visual field defects with specific lesions in the optic pathway to enhance diagnostic accuracy.	K, S	Small group, Practical Sessions	Short Answer Questions, OSPE, and VIVA
Visual acuity				
PHYS18.1	Explain the physiological basis of visual acuity and its relationship to refractive errors, through an understanding of ocular anatomy and optical principles.	K, S	Small group, Practical Sessions	Short Answer Questions, OSPE, and VIVA
PHYS18.2	A. Develop competency in administering and interpreting Snellen chart assessments, including calculating visual acuity scores. B. Identifying abnormal results and correlating findings with corrective measures.	K, S	Small group, Practical Sessions	Short Answer Questions, OSPE, and VIVA

Skills Lab

Practical: 60 hours / year (2 hr. / week for 30 weeks)

Total units per year: 8 units

First Semester

Number of weeks	Learning Objectives	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Peripheral pulses				
2 weeks	Definition, surface anatomy and measurement technique of (Radial a., Brachial a., Carotid a., Femoral a., Popliteal a., Posterior tibial a., Dorsalis pedis a.)	K, S	Practical Sessions	OSCE
Blood Pressure				
2 weeks	(Definition, Causes, Methods of measuring bp, Anatomical Landmark of cubital fossa, Sequences to measure the bp, The Korotkoff sounds, Classifications of bp, Physiological variations.)	K, S	Practical Sessions	OSCE
Body Temperature & Pulse Oximeter & BMI				
1 week	A. Body Temperature (Definition of temp., Types of Thermometers and measurement technique) B. O ₂ Saturation (Definition, Indication, Oxygen Saturation Levels.) C. BMI (Definition, Examination Method, Values of BMI.)	K, S	Practical Sessions	OSCE
Surface Anatomy				

Number of weeks	Learning Objectives	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
2 weeks	A. Surface anatomy of the heart (Borders, Apex, coronary groove and valves) B. Surface anatomy of lungs (an overview of surface anatomy, specific landmarks of the chest, clinical notes, definition of the respiratory track and borders of the lungs)	K, S	Practical Sessions	OSCE
CPR and AED				
1 week	A. Cardiopulmonary resuscitation (Definition and its components (compressions technique and giving breath technique) B. Automated external defibrillator (Definition and AED using technique)	K, S	Practical Sessions	OSCE
ECG				
2 weeks	Normal electrocardiography (Definition, types, placement of electrodes technique and reading the steps for basic ECG evaluation)	K, S	Practical Sessions	OSCE
IV + IM + SC injection				
1 week	Definition, Purpose, advantage and disadvantage and procedures of different types of injections.	K, S	Practical Sessions	OSCE
Review				
2 weeks	Students Based Review	K, S	Practical Sessions	OSCE

Second Semester

Number of weeks	Learning Objectives	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
GCS.				
1 week	Definition, Purpose, eye score, verbal score and motor score)	K, S	Practical Sessions	OSCE
Neurological Examination				
7 weeks	A. Preparation: Wash hands, introduce yourself, Purpose and Permission, Expose the patient and Position of the patient B. Normal neurological examination 1) Cranial nerve examination technique 2) Upper and lower motor examination technique (inspection, tone, power, reflexes examination)	K, S	Practical Sessions	OSCE
Surface Anatomy				
1 week	Surface anatomy of GIT system (an overview of surface anatomy, specific landmarks of the Abd. clinical notes, definition of the abdominopelvic cavity, borders, abdominal planes, quadrants regions and its content)	K, S	Practical Sessions	OSCE
Review of Vital Signs				
1 week	General Review of vital signs 1) Blood pressure measurement 2) Pulse examination (Pulse rate, rhythm, volume) 3) Respiratory rate and patterns. 4) Temperature 5) Spo2	K, S	Practical Sessions	OSCE
Review of ECG				
1 week	General Review of normal ECG (Definition, types, placement of electrodes technique and reading the steps for basic ECG evaluation)	K, S	Practical Sessions	OSCE
Review of CPR. + IV + IM + SC injection				
1 week	General Review (Definition, Purpose, advantage and disadvantage and procedures)	K, S	Practical Sessions	OSCE

Anatomy



Second Grade

Academic program discretion

This academic program description provides a brief overview of the key features of the program and the expected learning outcomes for the student, demonstrating whether the student has made the most of the available opportunities. It is accompanied by a description of each course within the program.

1 Educational Establishment	University of al-ameed
2-Scientific Department	College of medicine
3-Name of the Professional Academic Program.	Modified traditional curriculum
4-Final Graduation Certificate	M.B.Ch.B
5- Educational system: Annual/courses/other	Annual
6-Approved accreditation program	Applied for Iraqi National Guideline on Standards for Established and Accrediting Medical School
7-Other external factors	• Availability of relevant scientific research in the field of specialization • Access to global electronic networks • Access to traditional and digital libraries • Teaching aids such as data show and PowerPoint presentations • Availability of equipped classrooms • Use of free online communication platforms (e.g., Free Conference Call)
8-Date the description was written	2024/9/15

9- Objective of the Academic Program

The Anatomy course (Second Stage) aims to provide students with a comprehensive understanding of the structural organization of the abdomen, neuroanatomy, and head & neck regions, integrating foundational knowledge with clinical applications. The course aligns with the college's mission to produce competent graduates by fostering:

- Mastery of anatomical principles essential for clinical practice.
- Integration of basic sciences with clinical scenarios.
- Ethical and professional attitudes in medical learning.

10- Resources:

- a. Textbooks: Gray's Anatomy, Netter's Atlas.
- b. Labs: Cadaveric specimens, skill labs with prosected models.
- c. Digital: Moodle, Anatomage tables.

ANATOMY \ Grade 2	
Code: ANAT 202	8 Credits

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
Skull 1				
ANAT1.1	List the major bones of the skull and identify which ones form the cranium and the face.	K	Large group teaching	MCQ & Short answer question
ANAT1.2	Describe the main features and functions of the anterior, middle, and posterior cranial fossae	K	Large group teaching	MCQ & Short answer question
ANAT1.3	Locate important skull landmarks such as sutures, foramina, and processes on anatomical models or diagrams.	K	Large group teaching	MCQ & Short answer question
ANAT1.4	Compare the structure and clinical importance of different regions of the skull, including thin and thick bone areas, and explain their role in trauma-related injuries.	K	Large group teaching	MCQ & Short answer question
skull 2				
ANAT2.1	Identify the major bones of the skull, including the maxilla, palatine bone, mandible, and cervical vertebrae, and describe their main anatomical features.	K	Large group teaching	MCQ & Short answer question
ANAT2.2	Explain the functions and articulations of the maxillary and mandibular bones, and describe how the atlas and axis support head movement.	K	Large group teaching	MCQ & Short answer question
ANAT2.3	Compare and contrast the male and female skull, and discuss how age, sex, and race can be determined using skull features.	K	Large group teaching	MCQ & Short answer question
ANAT2.4	Evaluate clinical conditions like craniosynostosis and atlas fractures, and discuss how these abnormalities affect skull structure and function.	K	Large group teaching	MCQ & Short answer question
Face and scalp				

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
ANTA3.1	Identify the Layers and Muscles of the Face and Scalp	K	Large group teaching	MCQ & Short answer question
ANAT3.2	Understand the Nerve Supply of the Face and Scalp	K	Large group teaching	MCQ & Short answer question
ANAT3.3	Explain the Blood Supply and Venous Drainage of the Face and Scalp	K	Large group teaching	MCQ & Short answer question
ANAT3.4	Recognize the Clinical Importance of Lymphatic Drainage and Common Pathologies	K	Large group teaching	MCQ & Short answer question
Neck				
ANAT4.1	Describe the Boundaries and Contents of the Cervical Triangles .	K	Large group teaching	MCQ & Short answer question
ANAT4.2	Explain the Neurovascular Structures of the Neck	K	Large group teaching	MCQ & Short answer question
ANAT4.3	Summarize the Muscular and Fascial Organization of the Neck	K	Large group teaching	MCQ & Short answer question
ANAT4.4	Relate Neck Anatomy to Clinical Conditions	K	Large group teaching	MCQ & Short answer question
Root of neck				
ANAT5.1	Identify the Key Nerves and Their Pathways in the Root of the Neck	K	Large group teaching	MCQ & Short answer question
ANAT5.2	Explain the Vascular Anatomy of the Thyroid Gland and Surrounding Structures	K	Large group teaching	MCQ & Short answer question
ANAT5.3	Describe the Anatomy of the Trachea and Esophagus in the Cervical Region	K	Large group teaching	MCQ & Short answer question
ANAT5.4	Relate Anatomical Structures to Clinical Procedures and Pathologies	K	Large group teaching	MCQ & Short answer question
Temporal and Infra Temporal Fossa and TMJ				
ANAT6.1	Describe the Boundaries and Contents of the Infratemporal Fossa	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
ANAT6.2	Explain the Functions and Innervation of the Muscles of Mastication	K	Large group teaching	MCQ & Short answer question
ANAT6.3	Outline the Branches of the Maxillary Artery and Mandibular Nerve	K	Large group teaching	MCQ & Short answer question
ANAT6.4	Describe the structure, movements (e.g., gliding, rotation), and ligaments of the TMJ, and discuss pathologies such as dislocation or arthritis, including their anatomical basis	K	Large group teaching	MCQ & Short answer question
Oral cavity and Tongue				
ANAT7.1	Describe the Structure and Function of the Oral Cavity	K	Large group teaching	MCQ & Short answer question
ANAT7.2	Explain the Muscular and Innervation Anatomy of the Tongue	K	Large group teaching	MCQ & Short answer question
ANAT7.3	Outline the Sensory and Vascular Supply of the Tongue	K	Large group teaching	MCQ & Short answer question
ANAT7.4	Describe the hard and soft palate structures, their nerve/vascular supply, and the function of palatal muscles	K	Large group teaching	MCQ & Short answer question
Salivary gland			Number of learning Objectives: (2)	
ANAT8.1	Describe the Anatomy and Location of the Major Salivary Glands	K	Large group teaching	MCQ & Short answer question
ANAT8.2	Explain the Duct Systems and Secretory Functions of Salivary Glands	K	Large group teaching	MCQ & Short answer question
ANAT8.3	Outline the Neurovascular Supply and Lymphatic Drainage of Salivary Glands	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
ANAT8.4	Discuss common pathologies (e.g., sialolithiasis, parotitis) and procedural considerations	K	Large group teaching	MCQ & Short answer question
Salivary gland and pharynx and larynx				
ANAT9.1	Describe the Anatomy and Function of the Major Salivary Glands	K	Large group teaching	MCQ & Short answer question
ANAT9.2	Explain the Structure and Divisions of the Pharynx	K	Large group teaching	MCQ & Short answer question
ANAT9.3	Summarize the arterial supply, venous drainage, and innervation of the salivary glands, pharynx, and larynx	K	Large group teaching	MCQ & Short answer question
ANAT9.4	Outline the Anatomy and Function of the Larynx	K	Large group teaching	MCQ and Short answer question
Nose and orbit				
ANAT10.1	Describe the structure and components of the external nose and nasal cavity, including bones, cartilages, and associated anatomical features.	K	Large group teaching	MCQ & Short answer question
ANAT10.2	Explain the anatomy and functions of the paranasal sinuses, their locations, drainage pathways, and clinical significance	K	Large group teaching	MCQ & Short answer question
ANAT10.3	Identify the key structures of the orbit, including bones, muscles, nerves, blood supply, and their roles in eye movement and vision	K	Large group teaching	MCQ & Short answer question
ANAT10.4	Understand the clinical relevance of nasal and orbital anatomy, such as septum deviation, sinusitis, danger triangle infections, and common eye conditions	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
	like cataracts and glaucoma.			
Orbit and eye				
ANAT11.1	Describe the bony structure of the orbit and its anatomical components	K	Large group teaching	MCQ & Short answer question
ANAT11.2	Explain the functions and innervation of the extraocular and intrinsic eye muscles	K	Large group teaching	MCQ & Short answer question
ANAT11.3	Identify the key structures of the eyeball and their layers	K	Large group teaching	MCQ & Short answer question
ANAT11.4	Understand the clinical significance of orbital and ocular anatomy, such as common conditions (e.g., cataracts, glaucoma), lacrimal apparatus disorders (e.g., dry eye), and nerve-related pathologies	K	Large group teaching	MCQ & Short answer question
Ear				
ANAT12.1	Describe the three main divisions of the ear (external, middle, and inner ear)	K	Large group teaching	MCQ & Short answer question
ANAT12.2	Explain the functional roles of the ear in hearing and balance	K	Large group teaching	MCQ & Short answer question
ANAT12.3	Identify the key nerves, blood vessels, and muscles associated with the ear	K	Large group teaching	MCQ & Short answer question
ANAT12.4	Understand clinical correlations of ear anatomy, such as tympanic membrane abnormalities, conductive vs. sensorineural hearing loss, and disorders of balance	K	Large group teaching	MCQ & Short answer question
Brain				

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
ANAT13.1	Describe the major anatomical divisions of the brain	K	Large group teaching	MCQ & Short answer question
ANAT13.2	1. Identify the 12 cranial nerves, their origins, pathways, and primary functions (sensory, motor, or mixed).	K	Large group teaching	MCQ & Short answer question
ANAT13.3	Explain the arterial blood supply and venous drainage of the brain	K	Large group teaching	MCQ & Short answer question
ANAT13.4	Recognize key surface features of the cerebral hemispheres (gyri, sulci, lobes) and correlate them with functional areas	K	Large group teaching	MCQ & Short answer question
Meninges and venous sinuses and CSF				
ANAT14.1	Describe the three layers of the meninges (dura mater, arachnoid mater, and pia mater)	K	Large group teaching	MCQ & Short answer question
ANAT14.2	Identify the major dural folds (falx cerebri, tentorium cerebelli, falx cerebelli, diaphragma sellae)	K	Large group teaching	MCQ & Short answer question
ANAT14.3	Explain the relationship between the meninges and venous sinuses	K	Large group teaching	MCQ & Short answer question
ANAT14.4	1. Understand the clinical implications of meningeal and venous sinus anatomy, such as subdural hematomas, meningitis, and cavernous sinus thrombosis	K	Large group teaching	MCQ & Short answer question
Oral cavity and Tongue				
ANAT7.1	Describe the Structure and Function of the Oral Cavity	K	Large group teaching	MCQ & Short answer question
ANAT7.2	Explain the Muscular and Innervation Anatomy of the Tongue	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
ANAT7.3	Outline the Sensory and Vascular Supply of the Tongue	K	Large group teaching	MCQ & Short answer question
ANAT7.4	Describe the hard and soft palate structures, their nerve/vascular supply, and the function of palatal muscles	K	Large group teaching	MCQ & Short answer question
Salivary gland				
ANAT8.1	Describe the Anatomy and Location of the Major Salivary Glands	K	Large group teaching	MCQ & Short answer question
ANAT8.2	Explain the Duct Systems and Secretory Functions of Salivary Glands	K	Large group teaching	MCQ & Short answer question
ANAT8.3	Outline the Neurovascular Supply and Lymphatic Drainage of Salivary Glands	K	Large group teaching	MCQ & Short answer question
ANAT8.4	Discuss common pathologies (e.g., sialolithiasis, parotitis) and procedural considerations	K	Large group teaching	MCQ & Short answer question
Salivary gland and pharynx and larynx				
ANAT9.1	Describe the Anatomy and Function of the Major Salivary Glands	K	Large group teaching	MCQ & Short answer question
ANAT9.2	Explain the Structure and Divisions of the Pharynx	K	Large group teaching	MCQ & Short answer question
ANAT9.3	Summarize the arterial supply, venous drainage, and innervation of the salivary glands, pharynx, and larynx, and discuss clinical correlations (e.g., sialolithiasis, recurrent laryngeal	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
	nerve injury).			
ANAT9.4	Outline the Anatomy and Function of the Larynx	K	Large group teaching	MCQ and Short answer question
Nose and orbit				
ANAT10.1	Describe the structure and components of the external nose and nasal cavity, including bones, cartilages, and associated anatomical features.	K	Large group teaching	MCQ & Short answer question
ANAT10.2	Explain the anatomy and functions of the paranasal sinuses, their locations, drainage pathways, and clinical significance	K	Large group teaching	MCQ & Short answer question
ANAT10.3	Identify the key structures of the orbit, including bones, muscles, nerves, blood supply, and their roles in eye movement and vision	K	Large group teaching	MCQ & Short answer question
ANAT10.4	2. Understand the clinical relevance of nasal and orbital anatomy, such as septum deviation, sinusitis, danger triangle infections, and common eye conditions like cataracts and glaucoma.	K	Large group teaching	MCQ & Short answer question
Orbit and eye				
ANAT11.1	Describe the bony structure of the orbit and its anatomical components	K	Large group teaching	MCQ & Short answer question
ANAT11.2	Explain the functions and innervation of the extraocular and intrinsic eye muscles	K	Large group teaching	MCQ & Short answer question
ANAT11.3	Identify the key structures of the eyeball and their layers	K	Large group teaching	MCQ & Short answer question
ANAT11.4	Understand the clinical significance of orbital and ocular anatomy, such	K	Large group	MCQ & Short answer

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
	as common conditions (e.g., cataracts, glaucoma), lacrimal apparatus disorders (e.g., dry eye), and nerve-related pathologies		teaching	question
Ear				
ANAT12.1	Describe the three main divisions of the ear (external, middle, and inner ear)	K	Large group teaching	MCQ & Short answer question
ANAT12.2	Explain the functional roles of the ear in hearing and balance	K	Large group teaching	MCQ & Short answer question
ANAT12.3	Identify the key nerves, blood vessels, and muscles associated with the ear	K	Large group teaching	MCQ & Short answer question
ANAT12.4	Understand clinical correlations of ear anatomy, such as tympanic membrane abnormalities, conductive vs. sensorineural hearing loss, and disorders of balance	K	Large group teaching	MCQ & Short answer question
Brain				
ANAT13.1	Describe the major anatomical divisions of the brain	K	Large group teaching	MCQ & Short answer question
ANAT13.2	2. Identify the 12 cranial nerves, their origins, pathways, and primary functions (sensory, motor, or mixed).	K	Large group teaching	MCQ & Short answer question
ANAT13.3	Explain the arterial blood supply and venous drainage of the brain	K	Large group teaching	MCQ & Short answer question
ANAT13.4	Recognize key surface features of the cerebral hemispheres (gyri, sulci, lobes) and correlate them with functional areas	K	Large group teaching	MCQ & Short answer question
Meninges and venous sinuses and CSF				
ANAT14.1	Describe the three layers of the meninges (dura mater, arachnoid mater, and pia mater)	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
ANAT14. 2	Identify the major dural folds (falx cerebri, tentorium cerebelli, falx cerebelli, diaphragma sellae)	K	Large group teaching	MCQ & Short answer question
ANAT14. 3	Explain the relationship between the meninges and venous sinuses	K	Large group teaching	MCQ & Short answer question
ANAT14. 4	2. Understand the clinical implications of meningeal and venous sinus anatomy, such as subdural hematomas, meningitis, and cavernous sinus thrombosis.	K	Large group teaching	MCQ & Short answer question
Cerebral cortex				
ANAT15. 1	Describe the cytoarchitecture of the cerebral cortex	K	Large group teaching	MCQ & Short answer question
ANAT15. 2	Explain the functional organization of the cerebral cortex	K	Large group teaching	MCQ & Short answer question
ANAT15. 3	Identify the types of white matter fibers (association, commissural, and projection)	K	Large group teaching	MCQ & Short answer question
ANAT15. 4	Understand the blood supply to the brain, including the arterial circle of Willis, and the clinical implications of vascular occlusion	K	Large group teaching	MCQ & Short answer question
Ventricular system and brain stem				
ANAT16. 1	Describe the anatomy and connections of the ventricular system	K	Large group teaching	MCQ & Short answer question
ANAT16. 2	Explain the functions of CSF	K	Large group teaching	MCQ & Short answer question
ANAT16. 3	Identify the major structures and functions of the brainstem	K	Large group teaching	MCQ & Short answer question
ANAT16. 4	1. Recognize the exit points of cranial nerves from the brainstem and their functional significance in sensory, motor, and	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
	autonomic pathways.			
Cerebellum				
ANAT17.1	Describe the gross anatomy and functional divisions of the cerebellum	K	Large group teaching	MCQ & Short answer question
ANAT17.2	Explain the microscopic structure of the cerebellar cortex	K	Large group teaching	MCQ & Short answer question
ANAT17.3	Identify the intracerebellar nuclei	K	Large group teaching	MCQ & Short answer question
ANAT17.4	Understand the blood supply to the cerebellum (PICA, AICA, SCA) and clinical signs of cerebellar dysfunction	K	Large group teaching	MCQ & Short answer question
Basal nuclei and diencephalon				
ANAT18.1	Describe the anatomy and functional roles of the basal nuclei	K	Large group teaching	MCQ & Short answer question
ANAT18.2	Explain the structure and subdivisions of the diencephalon	K	Large group teaching	MCQ & Short answer question
ANAT18.3	Analyze the limbic system's components	K	Large group teaching	MCQ & Short answer question
ANAT18.4	Discuss clinical implications of dysfunction in basal nuclei (e.g., Parkinson's disease), diencephalon (e.g., thalamic stroke, hypothalamic disorders), and limbic structures	K	Large group teaching	MCQ & Short answer question
Spinal cord				
ANAT19.1	Describe the anatomy of the vertebral column and spinal cord	K	Large group teaching	MCQ & Short answer question
ANAT19.2	Explain the gross and internal structure of the spinal cord	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
ANAT19. 3	Analyze the functional pathways of ascending (sensory) and descending (motor) tracts	K	Large group teaching	MCQ & Short answer question
ANAT19. 4	Discuss the blood supply and clinical implications of spinal cord lesions, covering the anterior/posterior spinal arteries, segmental reinforcement, and deficits caused by tract-specific damage	K	Large group teaching	MCQ & Short answer question
Cranial nerve				
ANAT20. 1	Identify the 12 pairs of cranial nerves	K	Large group teaching	MCQ & Short answer question
ANAT20. 2	Describe the nuclei, functions, and clinical significance of each cranial nerve	K	Large group teaching	MCQ & Short answer question
ANAT20. 3	Explain the peripheral distributions and key branches of mixed nerves	K	Large group teaching	MCQ & Short answer question
ANAT20. 4	Analyze clinical correlations of cranial nerve lesions, such as: • Bell's palsy	K	Large group teaching	MCQ & Short answer question
Abdomen wall 1				
ANAT21. 1	Describe the boundaries and layers of the abdominal wall, including: Bony landmarks (lumbar vertebrae, iliac crest, costal margin).	K	Large group teaching	MCQ & Short answer question
ANAT21. 2	Explain the structure and function of the rectus sheath, highlighting: • Composition above/below the arcuate line.	K	Large group teaching	MCQ & Short answer question
ANAT21. 3	Analyze the blood supply and innervation of the abdominal wall	K	Large group teaching	MCQ & Short answer question
ANAT21. 4	Discuss clinical correlations, such as: • Hernias (inguinal, umbilical) related to	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
	abdominal wall weaknesses. Surgical implications of the arcuate line and rectus sheath anatomy.			
Abdominal wall 2				
ANAT22.1	Describe the surface anatomy and topographical divisions of the abdomen, including: The four-quadrant and nine-region schemes for organ localization.	K	Large group teaching	MCQ & Short answer question
ANAT22.2	Explain the anatomy of the inguinal region and inguinal canal	K	Large group teaching	MCQ & Short answer question
ANAT22.3	Analyze the peritoneal cavity and its reflections, focusing on: Intraperitoneal vs. retroperitoneal organs.	K	Large group teaching	MCQ & Short answer question
ANAT22.4	1. Discuss clinical correlations, such as: - Hernias (indirect/direct/femoral) and their anatomical vulnerabilities. - Surgical relevance of the inguinal canal and peritoneal folds (e.g., in appendicitis or bowel obstruction).	K	Large group teaching	MCQ & Short answer question
Abdominal cavity and abdominal viscera				
ANAT23.1	Describe the anatomy and functions of the stomach	K	Large group teaching	MCQ & Short answer question
ANAT23.2	Explain the structure and divisions of the small intestine	K	Large group teaching	MCQ & Short answer question
ANAT23.	Outline the anatomy and functions	K	Large	MCQ & Short

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
3	of the large intestine, including its segments (cecum, appendix, colon divisions)		group teaching	answer question
ANAT23.4	1. Summarize the vascular and lymphatic systems of the abdominal viscera, emphasizing the portal venous system, portosystemic anastomoses, and the roles of the celiac, superior mesenteric, and inferior mesenteric arteries in supplying the foregut, midgut, and hindgut.	K	Large group teaching	MCQ & Short answer question
Abdominal viscera (liver , gallbladder , spleen)				
ANAT24.1	Describe the anatomy and functions of the liver, including its surfaces, lobes, ligaments, blood supply	K	Large group teaching	MCQ & Short answer question
ANAT24.2	Explain the structure and physiology of the gallbladder and biliary tree	K	Large group teaching	MCQ & Short answer question
ANAT24.3	Outline the anatomy and functions of the pancreas, distinguishing between its exocrine (digestive enzyme secretion) and endocrine	K	Large group teaching	MCQ & Short answer question
ANAT24.4	1. Summarize the anatomy, vascular supply, and functions of the spleen, including its role in immune response, blood filtration, and its connection to the portal venous system, as well as its relations to surrounding organs.	K	Large group teaching	MCQ & Short answer question
Urinary system				
ANAT25.1	Describe the anatomy and functions of the kidneys	K	Large group teaching	MCQ & Short answer question
ANAT25.2	Explain the pathway and clinical significance of the ureters	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
ANAT25. 3	Outline the vascular and nervous supply of the urinary system	K	Large group teaching	MCQ & Short answer question
ANAT25. 4	Summarize the embryological and functional roles of the suprarenal glands, including their anatomy (cortex vs. medulla), hormone production (corticosteroids, catecholamines), and vascular supply (inferior phrenic, aortic, and renal arteries).	K	Large group teaching	MCQ & Short answer question
The pelvis viscera 1				
ANAT26. 1	Describe the bony and structural anatomy of the pelvis, including the differentiation between the false (greater) and true (lesser) pelvis	K	Large group teaching	MCQ & Short answer question
ANAT26. 2	Explain the organization and function of the pelvic viscera, covering the gastrointestinal (rectum, anal canal), urinary (bladder, urethra), and reproductive systems	K	Large group teaching	MCQ & Short answer question
ANAT26. 3	Outline the neurovascular and muscular framework of the pelvis, focusing on the pelvic diaphragm	K	Large group teaching	MCQ & Short answer question
ANAT26. 4	1. Summarize the clinical and functional significance of pelvic anatomy, such as the pectinate line in the anal canal, ligaments supporting the uterus, and the role of the pelvic floor in maintaining continence and supporting visceral organs.	K	Large group teaching	MCQ & Short answer question
The pelvis viscera 2				
ANAT27. 1	Describe the nervous system of the pelvis, including the sacral and coccygeal plexuses	K	Large group teaching	MCQ & Short answer question
ANAT27. 2	Explain the vascular supply and drainage of the pelvis, covering the internal iliac artery branches, pelvic venous plexuses,	K	Large group teaching	MCQ & Short answer question

Number	Learning Objective	Domain K/S/A/ C	Teaching Learning Methods	Assessment Methods
	and the clinical significance of portosystemic anastomoses			
ANAT27.3	Outline the peritoneal reflections and spatial organization of pelvic structures	K	Large group teaching	MCQ & Short answer question
ANAT27.4	Summarize the anatomy and functional divisions of the perineum, including the urogenital and anal triangle	K	Large group teaching	MCQ & Short answer question
Facial nerve				
ANAT28.1	Describe the Functional Components and Nuclei of the Facial Nerve	K	Large group teaching	MCQ & Short answer question
ANAT28.2	Trace the Anatomical Course and Branches of the Facial Nerve	K	Large group teaching	MCQ & Short answer question
ANAT28.3	Explain the Motor and Sensory Roles of the Facial Nerve	K	Large group teaching	MCQ & Short answer question
ANAT28.4	Recognize Clinical Correlates of Facial Nerve Lesions	K	Large group teaching	MCQ & Short answer question
Meninges				
ANAT29.1	Describe the Three Layers of the Meninges and Their Functions	K	Large group teaching	MCQ & Short answer question
ANAT29.2	Understand the Dural Folds and Venous Sinuses	K	Large group teaching	MCQ & Short answer question
ANAT29.3	Explain the Clinical Significance of Meningeal Spaces	K	Large group teaching	MCQ & Short answer question
ANAT29.4	Relate Meningeal Structures to Clinical Conditions: Discuss the consequences of meningeal damage	K	Large group teaching	MCQ & Short answer question

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Skull, Cervical Bones, and Neonatal Skull				
ANAT 1.1	Identify the major bones of the adult skull and cervical vertebrae on the anatomical model.	K	LAB, VR	CIVA & OSPE
ANAT 1.2	Demonstrate the sutures, foramina, and key bony landmarks of the skull, including the base and vault.	K	LAB, VR	CIVA & OSPE
ANAT 1.3	Differentiate between adult and neonatal skull features, including fontanelles and unfused sutures.	K	LAB, VR	CIVA & OSPE
ANAT 1.4	Describe the anatomical features and clinical significance of the first and second cervical vertebrae (atlas and axis).	K	LAB, VR	CIVA & OSPE
The Cranial Cavity				
ANAT 2.1	Identify the major compartments and floors of the cranial cavity on the anatomical model.	K	LAB, VR	CIVA & OSPE
ANAT 2.2	Demonstrate the foramina and canals transmitting cranial nerves and vessels.	K	LAB, VR	CIVA & OSPE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
ANAT 2.3	Describe the boundaries and contents of the anterior, middle, and posterior cranial fossae.	K	LAB, VR	CIVA & OSPE
ANAT 2.4	Correlate anatomical landmarks of the cranial cavity with related clinical conditions such as increased intracranial pressure.	K	LAB, VR	CIVA & OSPE
Anterior Triangle of the Neck				
ANAT 3.1	Identify the anatomical boundaries of the anterior triangle of the neck on the model.	K	LAB, VR	CIVA & OSPE
ANAT 3.2	Demonstrate the location and contents of the submental, submandibular, carotid, and muscular triangles.	K	LAB, VR	CIVA & OSPE
ANAT 3.3	Describe the anatomical relationships of the major vessels and nerves within these sub-triangles.	K	LAB, VR	CIVA & OSPE
ANAT 3.4	Relate the clinical importance of the anterior triangle in surgeries such as tracheostomy and carotid endarterectomy.	K	LAB, VR	CIVA & OSPE
Posterior Triangle of the Neck				
ANAT 4.1	Identify the boundaries and floor of the posterior triangle of the neck.	K	LAB, VR	CIVA & OSPE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
ANAT 4.2	Demonstrate the course of the spinal accessory nerve and its relation to surrounding structures.	K	LAB, VR	CIVA & OSPE
ANAT 4.3	Describe the contents of the posterior triangle, including vessels, nerves, and lymph nodes.	K	LAB, VR	CIVA & OSPE
ANAT 4.4	Understand the clinical implications of injuries to the posterior triangle structures, especially during surgical procedures.	K	LAB, VR	CIVA & OSPE
Root of the Neck				
ANAT 5.1	Identify the anatomical boundaries and contents of the root of the neck using the anatomical model.	K	LAB, VR	CIVA & OSPE
ANAT 5.2	Demonstrate the course and relationships of major vessels such as the subclavian artery and vein.	K	LAB, VR	CIVA & OSPE
ANAT 5.3	Locate key structures including the thoracic duct, sympathetic trunk, and phrenic nerve.	K	LAB, VR	CIVA & OSPE
ANAT 5.4	Explain the clinical relevance of the root of the neck in procedures like central line insertion and thoracic outlet syndrome	K	LAB, VR	CIVA & OSPE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Face, Scalp, Temporal Fossa, and TMJ				
ANAT 6.1	Identify the layers of the scalp and the muscles of facial expression using the model.	K	LAB	CIVA & OSPE
ANAT 6.2	Demonstrate the boundaries and contents of the temporal fossa.	K	LAB	CIVA & OSPE
ANAT 6.3	Describe the anatomy and movements of the temporomandibular joint (TMJ).	K	LAB	CIVA & OSPE
ANAT 6.4	Correlate the anatomy of the face and TMJ with clinical conditions such as facial nerve palsy and TMJ disorders.	K	LAB	CIVA & OSPE
The orbit				
ANAT 7.1	Identify the bony walls and openings of the orbit.	K	LAB	CIVA & OSPE
ANAT 7.2	Demonstrate the extraocular muscles and their innervation.	K	LAB	CIVA & OSPE
ANAT 7.3	Locate the structures passing through the superior and inferior orbital fissures and optic canal.	K	LAB	CIVA & OSPE
ANAT 7.4	Explain clinical correlations such as orbital fractures and oculomotor nerve palsy.	K	LAB	CIVA & OSPE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Parotid Region & TMJ				
ANAT 8.1	Identify the boundaries and contents of the parotid region on the anatomical model.	K	LAB	CIVA & OSPE
ANAT 8.2	Demonstrate the course of the facial nerve through the parotid gland.	K	LAB	CIVA & OSPE
ANAT 8.3	Describe the anatomical relations of the parotid gland to adjacent structures such as the masseter and mandible.	K	LAB	CIVA & OSPE
ANAT 8.4	Correlate parotid anatomy with clinical conditions like parotitis and facial nerve injury.	K	LAB	CIVA & OSPE
Infratemporal Fossa, Oral Cavity				
ANAT 9.1	Identify the boundaries and contents of the infratemporal fossa.	K	LAB	CIVA & OSPE
ANAT 9.2	Demonstrate the branches of the maxillary artery and the mandibular nerve (V3).	K	LAB	CIVA & OSPE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
ANAT 9.3	Describe the anatomy of the oral cavity including tongue, hard and soft palate.	K	LAB	CIVA & OSPE
ANAT 9.4	Understand the clinical significance of the pterygoid venous plexus and lingual nerve.	K	LAB	CIVA & OSPE
Pharynx, Larynx				
ANAT 10.1	Identify the divisions and walls of the pharynx on the model.	K	LAB	CIVA & OSPE
ANAT 10.2	Demonstrate the cartilages and muscles of the larynx.	K	LAB	CIVA & OSPE
ANAT 10.3	Describe the innervation of the pharynx and larynx including branches of the vagus nerve.	K	LAB	CIVA & OSPE
ANAT 10.4	Correlate the anatomy with clinical conditions such as dysphagia and vocal cord paralysis.	K	LAB	CIVA & OSPE
Nose & Paranasal Sinuses, Eye & Ear				
ANAT 11.1	Identify the nasal cavity, nasal septum, and lateral wall structures.	K	LAB	CIVA & OSPE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
ANAT 11.2	Demonstrate the locations and drainage pathways of the paranasal sinuses.	K	LAB	CIVA & OSPE
ANAT 11.3	Describe the external and middle ear structures, including tympanic membrane and ossicles.	K	LAB	CIVA & OSPE
ANAT 11.4	Relate anatomical features to clinical conditions such as sinusitis and otitis media.	K	LAB	CIVA & OSPE
The Brain				
ANAT 12.1	Identify the major lobes, sulci, and gyri on the surface of the brain model.	K	LAB	CIVA & OSPE
ANAT 12.2	Demonstrate the major arteries supplying the brain, including the circle of Willis.	K	LAB	CIVA & OSPE
ANAT 12.3	Describe the functional areas of the cerebral cortex.	K	LAB	CIVA & OSPE
ANAT 12.4	Correlate the anatomy of brain blood supply with clinical conditions like stroke.	K	LAB	CIVA & OSPE
Meninges, Dural Sinuses, CSF, Hindbrain				
ANAT 13.1	Identify the layers of the meninges and their anatomical arrangement.	K	LAB	CIVA & OSPE

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
ANAT 13.2	Demonstrate the location and flow pathway of the dural venous sinuses.	K	LAB	CIVA & OSPE
ANAT 13.3	Describe the production and circulation of cerebrospinal fluid (CSF).	K	LAB	CIVA & OSPE
ANAT 13.4	Locate the structures of the hindbrain: pons, medulla, and cerebellum, and relate them to clinical conditions like hydrocephalus.	K	LAB	CIVA & OSPE
Midbrain, Ventricles				
ANAT 14.1	Identify the major external and internal features of the midbrain.	K	LAB	CIVA & OSPE
ANAT 14.2	Demonstrate the locations of the cerebral aqueduct and surrounding structures.	K	LAB	CIVA & OSPE
ANAT 14.3	Describe the ventricular system and its communication pathways.	K	LAB	CIVA & OSPE
ANAT 14.4	Relate ventricular anatomy to conditions such as obstructive hydrocephalus.	K	LAB	CIVA & OSPE
Diencephalon & Basal Nuclei				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
ANAT 15.1	Identify the major parts of the diencephalon including thalamus and hypothalamus.	K	LAB	CIVA & OSPE
ANAT 15.2	Demonstrate the anatomical relations of the diencephalon to surrounding brain structures.	K	LAB	CIVA & OSPE
ANAT 15.3	Describe the components and functions of the basal nuclei.	K	LAB	CIVA & OSPE
ANAT 15.4	Correlate the anatomy of the basal nuclei with motor control and diseases like Parkinson's.	K	LAB	CIVA & OSPE
Gross Anatomy of the Spinal Cord & Blood Supply				
ANAT 16.1	Identify the external features and segments of the spinal cord.	K	LAB	CIVA & OSPE
ANAT 16.2	Demonstrate the spinal cord enlargements and conus medullaris.	K	LAB	CIVA & OSPE
ANAT 16.3	Demonstrate the spinal cord enlargements and conus medullaris.	K	LAB	CIVA & OSPE
ANAT 16.4	Relate spinal cord blood supply to clinical syndromes such as anterior spinal artery syndrome.	K	LAB	CIVA & OSPE
Neuroanatomy of the Spinal Cord (Tracts), Cranial Nerves				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
ANAT 17.1	Identify the major ascending and descending spinal tracts on cross-sectional models.	K	LAB	CIVA & OSPE
ANAT 17.2	Describe the functions and decussation points of key tracts (e.g., corticospinal, spinothalamic).	K	LAB	CIVA & OSPE
ANAT 17.3	Identify the origin and exit points of cranial nerves from the brainstem.	K	LAB	CIVA & OSPE
ANAT 17.4	Relate clinical signs to lesions in spinal tracts and cranial nerves.	K	LAB	CIVA & OSPE
Cranial Nerves				
ANAT 18.1	Identify the nuclei, course, and exit points of all 12 cranial nerves.	K	LAB	CIVA & OSPE
ANAT 18.2	Demonstrate the functional components (motor, sensory, parasympathetic) of each cranial nerve.	K	LAB	CIVA & OSPE
ANAT 18.3	Relate cranial nerve anatomy to clinical signs of lesions (e.g., diplopia, facial palsy).	K	LAB	CIVA & OSPE
ANAT 18.4	Review common clinical tests used to assess cranial nerve function.	K	LAB	CIVA & OSPE

Biochemistry



Second Grade

Academic Program Description

This academic program description summarizes the course's most essential qualities and the

learning objectives that the student is expected to attain, indicating whether he or she made

advantage of all of the resources that are accessible. It includes a description of each course in the program of study.

1) Educational Establishment	University of Al-Ameed
2) Scientific Department	College of Medicine – Department of Chemistry and Biochemistry
3) Name of the Professional Academic Program.	Modified Traditional Curriculum
4) Final Graduation Certificate	M.B.Ch.B
5) Educational system: Annual/courses/other	Annual
6) Approved accreditation program	Iraqi National Guideline on Standards for Established and Accrediting Medical School
7) Other external factors	• Availability of relevant scientific research in the field of specialization • Access to global electronic networks • Access to traditional and digital libraries • Teaching aids such as data show and PowerPoint presentations

	• Availability of equipped classrooms • Use of free online communication platforms (e.g., Free Conference Call)
8) Date the description was written	2023/9/15
9) Objectives of the academic program: 1. Understand Key Metabolic Pathways Provide students with a solid understanding of biochemical pathways such as glycolysis, gluconeogenesis, lipid and protein metabolism, and nucleic acid metabolism, emphasizing their integration and regulation in health and disease. 2. Correlate Biochemistry with Clinical Practice Emphasize the clinical relevance of biochemistry through disease-based examples such as diabetes, inborn errors of metabolism, jaundice, gout, vitamin deficiencies, and hormonal disorders. 3. Master Biochemical Laboratory Techniques Develop hands-on experience in performing and interpreting biochemical lab tests related to blood glucose, liver enzymes, kidney function, and lipid profile — fostering analytical and diagnostic skills. 4. Interpret Biochemical Results for Diagnosis Train students to evaluate and interpret biochemical test results, understand reference ranges, and use these insights in diagnosing and managing common clinical conditions. 5. Explore Molecular Biology and Genetic Basis of Disease Introduce molecular biology techniques, DNA replication, transcription, and recombinant DNA technology, linking them to diagnostics and modern therapeutic approaches. 6. Appreciate the Role of Nutrition and Antioxidants in Health Highlight the importance of proper nutrition, vitamins, minerals, antioxidants, and their biochemical impact on cellular health and disease prevention. 7. Foster Ethical and Safe Laboratory Practices Instill strict adherence to laboratory safety, biosafety protocols, and ethical considerations in handling biological specimens and hazardous materials. 8. Encourage Independent Learning and Clinical Reasoning Cultivate critical thinking, self-directed learning, and the ability to apply	

biochemical knowledge to solve clinical cases and understand pathophysiological mechanisms.

10) The most reliable resources for program information are :

1. Harper's Biochemistry
2. Lippincott's Illustrated Review
3. Essential Medical Genetics Textbook

BIOCHEMISTRY \ Grade 2

Code BIOC 203

8 Credits

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Digestion and absorption of carbohydrates, glycolysis				
BIOC 1.1	a) students will be able to describe the process of carbohydrate digestion and absorption, including the role of enzymes like pancreatic amylase and brush border enzymes, b) explain how disorders such as lactase deficiency impact carbohydrate absorption and lead to digestive issues.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 1.2	a) students will be able to explain the process of glycolysis, identify key enzymes involved in its regulation (such as hexokinase and phosphofructokinase-1) b) discuss how disruptions in glycolysis can lead to metabolic conditions like lactic acidosis or enzyme deficiencies affecting energy production.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 1.3	a) students will be able to describe the clinical relevance of glycolysis, including its role in energy production in red blood cells and rapidly dividing cells, b) identify conditions such as cancer (Warburg effect) and pyruvate kinase deficiency, explaining how these conditions disrupt glycolysis and result in clinical symptoms like hemolytic	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	anemia.			
Glycogenesis, Glycogenolysis, Gluconeogenesis				
BIOC 2.1	a) students will be able to explain the process of glycogenesis, including the role of insulin in activating glycogen storage in the liver and muscles, b) describe its importance in regulating blood sugar and providing an energy reserve for the body.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 2.2	a) students will be able to explain the processes of glycogenolysis and gluconeogenesis, identify their key hormonal regulators (glucagon and epinephrine), b) analyze how these pathways maintain blood glucose during fasting or stress, with reference to clinical conditions such as hypoglycemia and endocrine disorders.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 2.3	a) students will be able to identify the role of glycogenolysis and gluconeogenesis in maintaining blood glucose levels, b) describe how disruptions in these pathways contribute to conditions like diabetes mellitus and glycogen storage diseases (GSDs),	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Citric acid cycle , oxidative phosphorylation , respiratory chain				
BIOC 3.1	a) students will be able to describe the key steps of the Citric Acid Cycle, explain how ATP, NADH, and FADH ₂ are generated, b) analyze how cycle intermediates contribute to both energy production and biosynthetic processes, demonstrating this through annotated pathway	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	diagrams and clinical examples related to metabolic integration.			
BIOC 3.2	a) students will be able to describe the process of oxidative phosphorylation, including the roles of NADH, FADH ₂ , ATP synthase, and oxygen, b) explain how the proton gradient drives ATP production, demonstrating understanding through labeled diagram interpretation or a written explanation	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 3.3	a) students will be able to describe the role of the mitochondrial respiratory chain in ATP production by outlining the sequence of electron transfer through protein complexes b) explaining how the resulting proton gradient drives ATP synthase to synthesize ATP.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 3.4	a) students will be able to identify key mitochondrial disorders such as MELAS and Leber's hereditary optic neuropathy, explain how dysfunction in the Citric Acid Cycle or respiratory chain contributes to their pathophysiology, b) describe the clinical consequences of toxin-induced inhibition (e.g., cyanide) of ATP production.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Pentose phosphate pathway, metabolism of fructose & galactose				
BIOC 4.1	a) students will be able to describe the oxidative and non-oxidative phases of the Pentose Phosphate Pathway (PPP), outline the	K	Large group lectures	multiple choice questions (MCQ)

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	enzymes and intermediates involved in each phase, b) explain how the pathway contributes to the generation of NADPH and ribose-5-phosphate			& Short Answer Questions
BIOC 4.2	a) students will be able to explain the clinical significance of NADPH production in red blood cells, describe how glucose-6-phosphate dehydrogenase (G6PD) deficiency impairs antioxidant defense mechanisms, b) discuss how this deficiency can lead to hemolytic anemia under oxidative stress.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 4.3	a) students will be able to outline the metabolic pathway of fructose in the liver, identify key enzymes involved b) explain the biochemical and clinical features of disorders, including their diagnostic markers and dietary management.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 4.4	a) students will be able to describe the key steps of galactose metabolism, including the conversion of galactose to glucose-6-phosphate, and discuss the metabolic consequences of galactosemia, emphasizing the role of enzymes like galactose-1-phosphate uridylyltransferase. b) Students will also understand the clinical features, diagnostic tests, and dietary management of galactosemia.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Metabolism in starvation and diabetes				
BIOC 5.1	a) students will be able to explain the sequential metabolic adaptations during prolonged	K	Large group lectures	multiple choice

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	starvation, including glycogen depletion, activation of gluconeogenesis using amino acids, lactate, and glycerol, and the shift to fat metabolism leading to ketone body production. b) Students will also identify how ketone bodies become a primary energy source for the brain and muscles as fasting progresses, and understand the physiological significance of these adaptations for survival.			questions (MCQ) & Short Answer Questions
BIOC 5.2	a) students will be able to describe the hormonal regulation of metabolic shifts during starvation, including the roles of insulin, glucagon, epinephrine, and cortisol in promoting lipolysis and gluconeogenesis. b) students will explain how insulin dysfunction in diabetes disrupts this hormonal balance, leading to hyperglycemia, excessive lipolysis, and ketogenesis, and discuss the clinical implications of these disturbances in metabolic control.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 5.3	a) students will be able to explain the process of ketone body production in the liver during increased fatty acid oxidation, including the formation of β-hydroxybutyrate and acetoacetate. b) Students will also describe the clinical significance of ketone body production in metabolic states like diabetes, detailing how excessive ketone production leads to ketoacidosis	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 5.4	a) students will be able to describe the metabolic changes in Type 1 and Type 2 diabetes mellitus, b) explaining how insulin deficiency in Type 1 leads to unregulated lipolysis, ketogenesis, and diabetic ketoacidosis (DKA). c) Students will also outline the pathophysiology of Type 2 diabetes, including insulin resistance and its impact on glucose uptake, leading to chronic hyperglycemia and long-term complications such as cardiovascular disease, neuropathy, and kidney damage.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 5.5	a) students will be able to explain the long-term complications of uncontrolled diabetes, including the effects of chronic hyperglycemia on blood vessels, leading to an increased risk of stroke, heart disease, and poor wound healing. b) Students will also describe how prolonged reliance on fat metabolism increases oxidative stress and inflammation, exacerbating complications. c) They will understand the importance of early diagnosis and management through diet, exercise, and medication in preventing these long-term effects.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Classification and functions of lipids, metabolism of lipid				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 6.1	a) students will be able to classify lipids into fatty acids, triglycerides, phospholipids, steroids, and lipoproteins. b) They will describe the biological roles of lipids, including their functions as structural components of cell membranes, c) Students will also explain how each type of lipid contributes to cellular and metabolic processes.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 6.2	a) students will be able to explain the process of lipid digestion and absorption, including the role of bile salts in emulsification and pancreatic lipases in enzymatic breakdown. b) They will describe how free fatty acids and monoglycerides are absorbed by enterocytes and reassembled into triglycerides, and how these triglycerides are transported via chylomicrons in the bloodstream to various tissues for energy storage and utilization.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 6.3	a) students will be able to describe key pathways in lipid metabolism, including beta-oxidation and ketogenesis, b) explain how disruptions in these processes can lead to metabolic disorders such as ketoacidosis. c) They will also discuss the clinical relevance of lipid metabolism in conditions like diabetes and the importance of early detection and management to prevent complications.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Phospholipid metabolism, cholesterol metabolism				
BIOC 7.1	a) students will be able to describe key pathways in lipid metabolism, including beta-oxidation and ketogenesis, b) explain how disruptions in these processes can lead to metabolic disorders such as ketoacidosis. c) They will also discuss the clinical relevance of lipid metabolism in conditions like diabetes and the importance of early detection and management to prevent complications.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 7.2	a) students will be able to outline the key steps involved in the synthesis, degradation, and modification of phospholipids, b) explain their structural and functional roles in cell membranes and signaling pathways. c) They will also analyze how abnormalities in phospholipid metabolism contribute to clinical conditions such as neurological disorders and liver diseases.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 7.3	a) students will be able to analyze how disruptions in lipid metabolic pathways contribute to disorders such as familial hypercholesterolemia and Niemann-Pick disease. b) They will relate biochemical defects to clinical presentations and discuss diagnostic and therapeutic approaches for managing lipid-related conditions.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Eicosanoids				
BIOC 8.1	a) students will be able to describe the biosynthetic pathways of eicosanoids from arachidonic acid, differentiate between major classes (prostaglandins, thromboxanes, leukotrienes, and lipoxins), b) explain their physiological roles in inflammation, coagulation, and vascular regulation	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 8.2	a) students will be able to outline the cyclooxygenase (COX) and lipoxygenase (LOX) pathways involved in eicosanoid biosynthesis, b) identify the major eicosanoids derived from each pathway, and explain how pharmacological agents like NSAIDs modulate these pathways and their physiological implications.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 8.3	a) students will be able to outline the cyclooxygenase (COX) and lipoxygenase (LOX) pathways involved in eicosanoid biosynthesis, b) identify the major eicosanoids derived from each pathway, and explain how pharmacological agents like NSAIDs modulate these pathways and their physiological implications.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 8.4	a) students will be able to explain how dysregulation of eicosanoid synthesis contributes to inflammatory diseases such as rheumatoid arthritis and inflammatory bowel disease (IBD), b) evaluate how therapeutic agents targeting eicosanoid pathways (e.g., COX inhibitors, leukotriene	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	antagonists) are used in clinical management.			
Plasma lipids and lipoprotein metabolism, hyperlipidemias				
BIOC 9.1	a) students will be able to identify and classify the major types of plasma lipids b) describe their physiological functions and transport mechanisms via lipoproteins, c) and correlate abnormal lipid profiles with common clinical conditions (e.g., hyperlipidemia, atherosclerosis)	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 9.2	a) students will be able to describe the structure and function of different lipoproteins (chylomicrons, VLDL, LDL, and HDL), b) explain the processes of lipolysis, receptor-mediated endocytosis, and the role of key enzymes like lipoprotein lipase and hepatic lipase in lipid metabolism, c) analyze the clinical implications of abnormal lipoprotein metabolism, such as in hyperlipidemia and cardiovascular diseases,	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 9.3	a) students will be able to define hyperlipidemia and identify the different types (hypercholesterolemia, hypertriglyceridemia) based on lipid profiles, b) explain the pathophysiology of hyperlipidemia in the context of atherosclerosis and cardiovascular disease, c) discuss the clinical implications and risk factors	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	associated with elevated lipid levels			
The fat soluble vitamins		Number of learning Objectives: (6)		
BIOC 10.1	a) Identify the four fat-soluble vitamins (A, D, E, K) and their primary functions in the body. b) Explain the process of absorption and storage of fat-soluble vitamins, highlighting the role of bile and pancreatic enzymes. c) Describe the clinical consequences of deficiencies and excesses of each fat-soluble vitamin, linking these to common disorders.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 10.2	a) Describe the two forms of vitamin A (retinoids and carotenoids) and their sources in the diet. b) Explain the role of vitamin A in vision, immune function, skin health, and cellular growth. c) Identify the biochemical conversion of carotenoids (such as beta-carotene) into active retinol. d) Assess the clinical consequences of vitamin A deficiency, including symptoms such as night blindness and immune dysfunction, using case scenarios. e) Differentiate between vitamin A deficiency and toxicity, recognizing clinical signs and recommended treatment approaches.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 10.3	a) Explain the synthesis of vitamin D in the skin upon exposure to UVB radiation and its conversion to active forms in the body (calcidiol and calcitriol). b) Identify dietary sources of vitamin D and discuss its role in calcium and phosphate homeostasis, bone health, and immune function. c) Recognize the clinical signs and symptoms of vitamin D deficiency, including rickets in children and osteomalacia in adults, and understand the underlying pathophysiology. d) Evaluate the role of vitamin D supplementation in different patient populations, considering factors like age, geographic location, and comorbid conditions.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 10.4	a) Describe the role of vitamin E as a fat-soluble antioxidant and its mechanism of scavenging free radicals to prevent oxidative damage in cells. b) Identify the primary physiological functions of vitamin E, including its effects on skin health, immune function, and protection against cellular damage in organs like the skin, lungs, and eyes. c) Discuss the clinical implications of vitamin E deficiency, including hemolytic anemia and neurological problems, and understand the conditions under which deficiency may occur. d) Evaluate the sources of	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	vitamin E in the diet and assess the potential risks and benefits of vitamin E supplementation in clinical practice.			
BIOC 10.5	a) Explain the role of vitamin K in blood clotting, focusing on its activation of coagulation proteins and the regulation of the coagulation cascade. b) Identify the two main forms of vitamin K (K1 and K2) and describe their dietary sources, emphasizing their presence in green leafy vegetables (K1) and animal products/fermented foods (K2). c) Discuss the importance of vitamin K in bone health and its role in calcium regulation within bone tissues. d) Recognize the clinical implications of vitamin K deficiency, including excessive bleeding and poor bone mineralization, and understand the conditions under which vitamin K deficiency can occur.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 10.6	a) Describe the conditions that increase the risk of deficiencies in fat-soluble vitamins, such as malabsorption disorders, liver disease, and inadequate dietary intake. b) Evaluate the role of proper vitamin intake (through diet or supplementation) in preventing these deficiencies and maintaining overall health. c) Analyze case studies to diagnose fat-soluble vitamin deficiencies based on clinical symptoms and recommend appropriate management	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	strategies, including supplementation or dietary changes. d) Explain the importance of monitoring fat-soluble vitamin levels in patients with conditions that impair absorption, such as celiac disease or cystic fibrosis.			
Water soluble vitamins part 1				
BIOC 11.1	a) Identify the key water-soluble vitamins, including the B-complex vitamins (B1, B2, B3, B5, B6, B7, B9, B12) and vitamin C, and describe their primary functions in the body. b) Explain the absorption process of water-soluble vitamins from the gastrointestinal tract into the bloodstream and their excretion when consumed in excess. c) Discuss the dietary sources of each water-soluble vitamin and their importance for maintaining metabolic processes and overall health. d) Identify conditions and diseases associated with deficiencies in water-soluble vitamins (e.g., scurvy for vitamin C, pellagra for niacin, beriberi for thiamine). e) Evaluate the potential clinical consequences of water-soluble vitamin deficiencies and how they can be	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	prevented or treated through diet or supplementation.			
BIOC 11.2	a) Describe the biochemical functions of vitamin C, including its role in collagen synthesis, antioxidant defense, and enhancement of non-heme iron absorption. b) Identify dietary sources of vitamin C and explain its water-soluble nature and implications for daily intake. c) Explain the clinical manifestations of vitamin C deficiency, particularly scurvy, and its pathophysiological basis. d) Correlate the role of vitamin C with connective tissue health, immune function, and wound healing. e) Evaluate strategies for preventing and treating vitamin C deficiency in various patient populations.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 11.3	a) Describe the biochemical role of thiamine as a coenzyme in carbohydrate metabolism, particularly in the decarboxylation of alpha-keto acids. b) Explain the physiological importance of thiamine in maintaining normal nerve conduction and cardiovascular function. c) Identify dietary sources of thiamine and factors affecting its absorption and bioavailability, including the impact of alcohol consumption.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	d) Recognize the clinical manifestations of thiamine deficiency, including beriberi (wet and dry forms) and Wernicke-Korsakoff syndrome, and their underlying pathophysiology.			
BIOC 11.4	a) Explain the biochemical role of riboflavin in forming the coenzymes FAD and FMN, and their functions in oxidative metabolism. b) Describe the importance of riboflavin in the metabolism of carbohydrates, fats, and proteins. c) Identify common dietary sources of riboflavin and discuss factors influencing its absorption and stability (e.g., sensitivity to light). d) Recognize the clinical signs and symptoms of riboflavin deficiency, including cheilosis, glossitis, and sore throat, and explain the underlying pathophysiology. e) Develop basic dietary strategies to prevent and manage riboflavin deficiency in different population groups.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Water soluble vitamins part 2				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 12.1	a) Describe the role of niacin in cellular metabolism through its conversion into the coenzymes NAD and NADP. b) Explain the functions of NAD and NADP in redox reactions and energy production within metabolic pathways (e.g., glycolysis, TCA cycle). c) Identify dietary sources of niacin and discuss how it can be synthesized from tryptophan in the human body. d) Recognize the clinical features of niacin deficiency (pellagra), emphasizing the classical triad of dermatitis, diarrhea, and dementia.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 12.2	a) Describe the biochemical role of pantothenic acid as a component of Coenzyme A and its importance in the metabolism of carbohydrates, fats, and proteins b) Explain the function of Coenzyme A in key metabolic pathways such as the citric acid cycle, fatty acid synthesis, and β -oxidation. c) Discuss the role of pantothenic acid in the synthesis of steroid hormones and neurotransmitters. d) Identify common dietary sources of pantothenic acid and understand why deficiencies are rare.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 12.3	a) Describe the biochemical role of pyridoxine (as PLP – pyridoxal phosphate) in amino acid metabolism,	K	Large group lectures	multiple choice questions (MCQ)

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	particularly in transamination, decarboxylation, and deamination reactions. b) Explain the involvement of vitamin B6 in neurotransmitter synthesis (e.g., serotonin, dopamine, GABA) and hemoglobin production. c) Discuss the role of B6 in maintaining immune function and regulating homocysteine levels. d) Identify dietary sources rich in vitamin B6 and outline daily requirements. e) Recognize clinical manifestations of B6 deficiency such as irritability, confusion, peripheral neuropathy, depression, and microcytic anemia, linking these symptoms to its biochemical functions.			& Short Answer Questions
BIOC 12.4	a) Explain the role of biotin as a coenzyme in carboxylation reactions, particularly in fatty acid synthesis, gluconeogenesis, and amino acid catabolism. b) List dietary sources of biotin and describe how it is synthesized by intestinal microbiota. c) Describe the clinical features and biochemical basis of biotin deficiency, including hair thinning, dermatitis, and neurological disturbances. d) Evaluate risk factors for deficiency such as prolonged antibiotic use, excessive consumption of raw egg whites (avidin), or genetic	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	disorders like biotinidase deficiency.			
BIOC 12.5	a) Describe the role of folic acid in one-carbon metabolism, particularly in nucleotide synthesis and methylation reactions. b) Explain the importance of folic acid in DNA synthesis and red blood cell formation, linking its deficiency to megaloblastic anemia. c) Discuss the increased requirement for folic acid during pregnancy and its role in preventing neural tube defects in the fetus. d) Identify dietary sources rich in folic acid and understand how cooking methods can affect its bioavailability. e) Recognize clinical symptoms of folic acid deficiency and differentiate them from vitamin B12 deficiency based on neurological involvement.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 12.6	a) Explain the biochemical role of vitamin B12 in methylmalonyl-CoA and homocysteine metabolism. b) Describe the absorption pathway of vitamin B12, including the role of intrinsic factor and ileal uptake. c) Identify dietary sources of vitamin B12 and understand populations at risk for deficiency (e.g., vegans, elderly, patients with malabsorption). d) Recognize the clinical manifestations of vitamin B12 deficiency, including megaloblastic anemia,	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	peripheral neuropathy, and cognitive dysfunction. e) Differentiate between vitamin B12 and folate deficiencies based on laboratory findings and neurological involvement.			
Digestion and metabolism of protein				
BIOC 13.1	a) Describe the enzymatic digestion of proteins, including the roles of pepsin in the stomach and trypsin and chymotrypsin in the small intestine. b) Explain the mechanism of amino acid absorption in the small intestine, focusing on the transporters involved (e.g., sodium-dependent and sodium-independent transport). c) Identify common disorders related to protein digestion and amino acid absorption, such as cystinuria, Hartnup disorder, and pancreatic insufficiency. d) Discuss the clinical implications of defects in protein digestion and absorption, including malnutrition, growth delays, and metabolic disturbances.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 13.2	a) Explain the mechanisms of amino acid absorption in the small intestine, including the involvement of transporters like the sodium-dependent neutral amino acid transporter. b) Identify disorders related to protein digestion and absorption, such as pancreatic	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	insufficiency or Hartnup disorder. c) Analyze how defects in protein breakdown or amino acid absorption can lead to clinical symptoms like malnutrition or metabolic disorders.			
Breakdown of phenylalanine and tyrosine, Inborn errors of amino acid metabolism				
BIOC 14.1	a) Explain the metabolic conversion of phenylalanine to tyrosine, highlighting the role of phenylalanine hydroxylase and tetrahydrobiopterin as a cofactor. b) Identify the key metabolic products derived from tyrosine, including melanin, catecholamines (dopamine, norepinephrine, epinephrine), and thyroid hormones. c) Analyze the clinical consequences of disruptions in the phenylalanine and tyrosine metabolism pathway, such as phenylketonuria (PKU), and its impact on neurological development and health.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 14.2	a) Describe the importance of tyrosine as a precursor for the synthesis of melanin, catecholamines (dopamine, norepinephrine, epinephrine), and thyroid hormones (T3 and T4). b) Identify and explain metabolic disorders associated with disruptions in phenylalanine and tyrosine metabolism, such as phenylketonuria (PKU) and	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	tyrosinemia.			
Creatine synthesis, hemoproteins, porphyrin metabolism and porphyrin disorders				
BIOC 15.1	a) Describe the biosynthetic pathway of creatine, including the roles of glycine, arginine, and S-adenosylmethionine (SAM), and explain its importance in energy storage in muscle and brain tissue. b) List and differentiate between major hemoproteins (e.g., hemoglobin, myoglobin, cytochromes), explaining their structures, functions, and clinical relevance.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 15.2	a) Explore the essential role of hemoproteins like hemoglobin, myoglobin, cytochromes, and catalase in oxygen transport, storage, and cellular respiration. b) Emphasize their importance in clinical diagnostics, especially in conditions like <u>anemia</u> or <u>cyanosis</u> .	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 15.3	a) Describe the biosynthesis of heme from glycine and succinyl-CoA through multiple enzymatic steps. b) Understand how defects in these enzymes cause porphyrias, a group of disorders with neurological and photosensitive manifestations, requiring early recognition and specific management.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Metabolism of minerals and trace elements part 1				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 16.1	a) Understand the physiological roles of major minerals b) Explain how essential minerals such as calcium, magnesium, sodium, potassium, and phosphorus contribute to nerve conduction, muscle contraction, bone structure, and maintaining acid-base and fluid balance.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 16.2	a) Describe the absorption and regulation of minerals and trace elements b) Outline the processes by which the body absorbs and stores minerals, and explain how organs like the kidneys, bones, and intestines interact to maintain mineral homeostasis under hormonal regulation.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Metabolism of minerals and trace elements part 2				
BIOC 17.1	a) Identify the clinical significance of trace elements b) Discuss the vital roles of iron, zinc, copper, selenium, and iodine in enzymatic activity, immunity, and metabolism, and explain how their deficiencies or toxicities lead to clinical disorders.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 17.2	a) Recognize metabolic diseases related to mineral imbalance b) Highlight key inherited and acquired disorders, such as Wilson's disease, Menkes syndrome, and hemochromatosis, and relate them to disruptions in mineral metabolism.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 17.3	a) Appreciate the preventive role of minerals in nutrition and public health b) Emphasize the importance of adequate mineral intake in preventing chronic diseases and supporting health in different populations.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Metabolism of purine, hyperuricemia and gout disease				
BIOC 18.1	a) Understand the biochemical pathway of purine metabolism b) Explain the synthesis, salvage, and degradation of purine nucleotides, emphasizing key enzymes and regulatory mechanisms.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 18.2	a) Describe the causes and biochemical basis of hyperuricemia b) Discuss how excessive uric acid accumulation results from purine metabolism abnormalities, renal dysfunction, or dietary factors.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 18.3	a) Explain the pathophysiology of gout b) Outline how urate crystal deposition in joints leads to inflammation, pain, and long-term joint damage, linking it to hyperuricemia.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 18.4	a) Recognize the clinical presentation and diagnosis of gout b) Identify symptoms, laboratory markers, and imaging techniques used in diagnosing hyperuricemia and gout.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 18.5	a) Discuss therapeutic approaches for hyperuricemia and gout b) Review pharmacological treatments, including xanthine oxidase inhibitors and uricosuric agents, along with lifestyle modifications.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Mechanism of action of hormones				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 19.1	a) Understand the classification of hormones based on their mechanism of action b) Differentiate between peptide, steroid, and amino acid-derived hormones and their respective signaling pathways.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 19.2	a) Explore genomic and non-genomic actions of hormones b) Discuss how steroid hormones regulate gene expression, while peptide hormones initiate rapid cellular responses without altering gene transcription.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 19.3	a) Relate hormone mechanisms to clinical disorders b) Connect defects in hormone signaling with endocrine diseases like <u>diabetes mellitus</u> , <u>hypothyroidism</u> , and <u>Cushing's syndrome</u> .	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Pituitary hormones, thyroid hormones				
BIOC 20.1	a) Understand the role of the pituitary gland in hormone regulation b) Describe the anterior and posterior pituitary glands, including their structure and the hormones they secrete (e.g., growth hormone, prolactin, thyroid-stimulating hormone, and antidiuretic hormone).	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 20.2	a) Explain the feedback mechanisms regulating pituitary hormone secretion b) Discuss how the hypothalamus and target organs (e.g., thyroid, adrenal glands) influence pituitary hormone release through negative and positive feedback loops.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 20.3	a) Understand the functions of thyroid hormones b) Detail the synthesis, secretion, and actions of thyroid hormones (T3 and T4), including their role in regulating metabolism, growth, and development.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 20.4	a) Explore clinical correlations with pituitary and thyroid hormone imbalances b) Examine the effects of hypo- and hypersecretion of pituitary hormones (e.g., acromegaly, hypothyroidism) and thyroid hormones (e.g., hyperthyroidism, goiter).	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Steroid hormones, insulin and glucagon				
BIOC 21.1	a) Understand the synthesis and function of steroid hormones b) Describe the synthesis of steroid hormones from cholesterol, focusing on key hormones such as cortisol, aldosterone, and sex hormones (e.g., estrogen, testosterone). c) Explain their role in regulating metabolism, immune function, and stress responses.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 21.2	a) Explain the mechanism of action of steroid hormones b) Discuss how steroid hormones act through intracellular receptors, influencing gene expression and cellular function. Highlight the difference between steroid hormones and peptide hormones in terms of their mechanism of action.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 21.3	a) Examine the clinical relevance of insulin and glucagon imbalances b) Discuss the pathophysiology of	K	Large group lectures	multiple choice

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	disorders related to insulin and glucagon, such as <u>diabetes mellitus (type 1 and type 2)</u> and <u>hypoglycemia</u> , focusing on their impact on metabolism and clinical management			questions (MCQ) & Short Answer Questions
BIOC 21.4	a) Understand the feedback regulation of insulin and glucagon b) Discuss the interplay between insulin and glucagon in regulating blood glucose levels, and how this balance is essential for maintaining homeostasis, particularly during fasting and feeding states.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Liver function tests, jaundice				
BIOC 22.1	a) Understand the role of the liver in metabolism and detoxification b) Explain the essential functions of the liver, including its role in nutrient metabolism, detoxification, synthesis of proteins (such as albumin and clotting factors), and bile production.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 22.2	a) List and describe the most common liver function tests (LFTs) used in clinical practice, including ALT, AST, ALP, GGT, bilirubin albumin, and (PT). b) Differentiate between hepatocellular injury and cholestatic patterns based on elevated ALT/AST versus ALP/GGT levels in liver function tests. c) Interpret elevated ALT and AST values as markers of hepatocellular damage and explain their clinical relevance in conditions such as viral hepatitis, drug-induced liver injury, and alcoholic liver disease. d) Explain the significance of	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	elevated ALP and GGT levels in detecting cholestasis and bile duct obstruction, and correlate these findings with clinical conditions such as gallstones and primary biliary cholangitis.			
BIOC 22.3	a) Define jaundice and its clinical threshold by the end of the session, including the role of bilirubin metabolism in its pathophysiology. b) Differentiate between pre-hepatic, hepatic, and post-hepatic jaundice based on underlying mechanisms, causes, and laboratory findings in a written quiz with 90% accuracy. c) Identify at least three clinical conditions for each type of jaundice (pre-hepatic, hepatic, and post-hepatic) and explain their pathophysiology during a group discussion session.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 22.4	a) Interpret liver function test results in the context of clinical conditions b) Learn how to analyze liver function test results to diagnose various liver conditions such as <u>hepatitis</u> , <u>cirrhosis</u> , <u>alcoholic liver disease</u> , and <u>non-alcoholic fatty liver disease (NAFLD)</u> . c) Discuss the clinical significance of elevated bilirubin levels and their relation to jaundice.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 22.5	a) Recognize the clinical implications of liver function abnormalities b) Identify the signs and symptoms of liver dysfunction, including <u>jaundice</u> , <u>ascites</u> , and <u>encephalopathy</u> , and understand the importance of early diagnosis and intervention to prevent complications like liver failure or	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	cirrhosis.			
Tumor markers, xenobiotics and detoxification				
BIOC 23.1	a) Define tumor markers and explain their clinical significance in cancer detection and management by the end of the lecture. b) List at least five commonly used tumor markers (e.g., CEA, AFP, PSA, CA-125, CA 19-9) and associate each with specific cancer types during a classroom quiz with 90% accuracy. c) Differentiate between the diagnostic, prognostic, and monitoring roles of tumor markers using real or simulated patient scenarios in a small group discussion. d) Analyze the limitations and non-specificity of tumor markers by critically reviewing two case studies where elevated levels were due to non-cancerous conditions.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 23.2	a) Define the term xenobiotics and explain their sources (e.g., drugs, pollutants, food additives) by the end of the session. b) Describe the phases of xenobiotic metabolism (Phase I: functionalization and Phase II: conjugation) in a structured diagram during group work or a formative quiz with 90% accuracy. c) Identify at least three enzymes involved in xenobiotic metabolism (e.g., cytochrome P450 enzymes) and describe their roles in	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	detoxification by the end of the lecture.			
BIOC 23.3	a) Analyze the potential health effects of xenobiotic accumulation, including hepatotoxicity and carcinogenesis, through interpretation of two clinical scenarios. b) Evaluate a case study of drug-induced liver injury (DILI) to suggest possible xenobiotic-related causes and preventive strategies during a case-based learning session.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 23.4	a) Define detoxification and outline its biological significance in the metabolism of endogenous and exogenous compounds by the end of the session. b) Describe the role of the liver in detoxification c) Interpret clinical scenarios involving impaired detoxification, such as paracetamol overdose or alcohol-induced liver injury, and correlate them with altered enzyme activity.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Antioxidants and free radicals				
BIOC 24.1	a) Define free radicals and reactive oxygen species (ROS) and explain their formation during metabolic processes by the end of the lecture session. b) Differentiate between endogenous and exogenous sources of free radicals in a case-based classroom discussion with 100%	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	participation. c) Explain the biochemical basis of free radical-induced diseases (e.g., cancer, atherosclerosis, Alzheimer's disease) with at least two clinical examples during a group presentation. d) Evaluate the role of antioxidants (e.g., vitamins C and E, glutathione) in neutralizing free radicals and maintaining redox balance,			
BIOC 24.2	a) Define the term "antioxidant" and describe its biochemical mechanism of action in neutralizing free radicals, by the end of the lecture session. b) List at least four major antioxidants (e.g., vitamins C and E, glutathione, selenium) and describe their physiological sources and functions during an in-class quiz with a target score of 80% or higher.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 24.3	a) Explain the role of dietary antioxidants in maintaining redox balance and preventing oxidative stress-related diseases through participation in a case-based discussion. b) Compare enzymatic and non-enzymatic antioxidants using a table format in a student worksheet, completed by the end of the session.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 24.4	Analyze a clinical case where antioxidant deficiency contributes to disease (e.g., scurvy, neurological decline) and provide an evidence-based nutritional intervention plan during a group activity.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
DNA replication , transcription				
BIOC 25.1	a) Define the process of DNA replication and explain the role of key enzymes (helicase, DNA polymerase, ligase) in the replication process by the end of the lecture. b) Describe the stages of DNA replication (initiation, elongation, termination) and explain the function of each enzyme involved, using a detailed flowchart completed by the end of the class. c) Evaluate the significance of DNA replication in cell division and its connection to cancer development, using real-life examples of replication errors	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 25.2	a) Define the process of transcription and identify the key steps involved (initiation, elongation, and termination) by the end of the lecture. b) Explain the role of RNA polymerase in the synthesis of mRNA from DNA, describing how it binds to the promoter region and initiates transcription, achieving 90% accuracy in a multiple-choice quiz. c) Compare the structures of DNA and RNA by constructing a table that highlights differences such as sugar type, base pairing, and strand structure, to be completed within 15 minutes. d) Identify the key regulatory elements in transcription, including promoters, enhancers, and transcription factors, and explain their roles in gene expression during a group	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	discussion.			
BIOC 25.3	Analyze the clinical relevance of transcription regulation in cancer , focusing on how oncogenes and tumor suppressor genes are affected demonstrated through case study presentations by the end of the module.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Recombinant DNA technology, DNA repair				
BIOC 26.1	a) Understand the principles of recombinant DNA technology b) Learn about gene cloning, vectors, and their applications in biotechnology.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 26.2	a) Explain DNA repair mechanisms b) Understand the key DNA repair pathways like NER, BER, and MMR, and their role in maintaining genetic stability.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 26.3	Discuss how recombinant DNA technology contributes to therapies (e.g., insulin production) and the health implications of defective DNA repair (e.g., cancer).	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
GIT disorders				
BIOC 27.1	a) Understand the common gastrointestinal disorders b) Learn about conditions such as acid reflux, peptic ulcers, and <u>irritable bowel syndrome (IBS)</u>	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 27.2	a) Identify and describe the key mechanisms underlying gastrointestinal inflammation (e.g., in conditions such as Crohn's disease and ulcerative	K	Large group lectures	multiple choice questions (MCQ) &

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	colitis), b) Analyze the impact of enzyme deficiencies (e.g., lactase deficiency, pancreatic insufficiency) on nutrient absorption and gastrointestinal function,			Short Answer Questions
BIOC 27.3	a) Understand diagnostic methods and treatment options b) Explore how gastrointestinal disorders are diagnosed and the role of dietary changes, medications, and surgical interventions in treatment.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
Clinical Enzymology				
BIOC 28.1	a) Understand the role of enzymes in clinical diagnostics b) Learn how enzymes are used as biomarkers in diagnosing various diseases such as myocardial infarction, liver damage, and pancreatitis.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 28.2	a) Explore enzyme kinetics and their clinical significance b) Study the factors influencing enzyme activity and how abnormal enzyme levels can indicate pathological conditions.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 28.3	a) Recognize the different types of enzymes used in clinical practice b) Gain knowledge about diagnostic enzymes such as transaminases, lactate dehydrogenase, and alkaline phosphatase, and their specific roles in disease detection.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 28.4	a) Interpret enzyme activity in relation to disease b) Understand how changes in enzyme levels correlate with specific diseases and how enzyme assays guide treatment	K	Large group lectures	multiple choice questions (MCQ) &

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	decisions.			Short Answer Questions
Nutrition and obesity				
BIOC 29.1	a) Understand the basic principles of nutrition b) Learn the essential macronutrients (carbohydrates, proteins, fats) and micronutrients (vitamins, minerals) and their role in maintaining health.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 29.2	a) Identify and explain the key metabolic mechanisms contributing to obesity, including insulin resistance, leptin resistance, and altered adipose tissue function, b) Analyze the genetic factors associated with obesity, including common genetic variations c) Examine the environmental and lifestyle factors contributing to obesity, such as dietary patterns, physical activity levels, and socio-economic influences, by completing a case study on a typical patient profile at the end of the module.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 29.3	a) Examine the role of nutrition in obesity prevention and management b) Understand how diet and lifestyle modifications, such as balanced nutrition and exercise, can prevent and manage obesity, with a focus on weight control strategies and healthy eating habits.	K	Large group lectures	multiple choice questions (MCQ) & Short Answer Questions
BIOC 29.4	a) Analyze clinical approaches to obesity treatment b) Explore medical and surgical	K	Large group lectures	multiple choice

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	treatments for obesity, including pharmacological options and bariatric surgery, and understand when they are indicated based on clinical assessment.			questions (MCQ) & Short Answer Questions

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Laboratory safety Rules, Hazard Signs, Instrument Name				
BIOC 1.1	a) Understand and apply laboratory safety protocols: b) Recognize and follow the key safety rules in the laboratory environment to prevent accidents and ensure a safe working space. c) Identify the importance of personal protective equipment (PPE) and proper handling of hazardous materials.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 1.2	a) Learn the various hazard symbols (flammable, toxic, corrosive, etc.) and understand their significance in the laboratory. b) Demonstrate the ability to assess risk based on hazard signage and take appropriate precautionary measures.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 1.3	a) Familiarize yourself with common laboratory instruments (e.g., pipettes, centrifuges, microscopes) and their correct usage. b) Understand the basic maintenance and calibration requirements for laboratory equipment to ensure accurate results.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Introduction to Clinical Biochemistry				
BIOC 2.1	a) Understand the scope and importance of clinical biochemistry: b) Define clinical biochemistry and its role in the diagnosis, monitoring, and treatment of diseases. c) Explain how biochemical tests are used in clinical settings to assess the health of patients and diagnose various conditions.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 2.2	a) Identify major biochemical markers, and understand their relevance to patient care. b) Interpret common clinical biochemistry test results and their implications for diagnosis.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 2.3	a) Learn the fundamental laboratory methods used in clinical biochemistry, including sample collection, preparation, and analysis. b) Understand the importance of quality control and standardization in laboratory procedures to ensure reliable and accurate test results	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Lambert Beer's Law and Spectrophotometer				
BIOC 3.1	a) Understand the principles of Lambert Beer's Law b) Define Lambert Beer's Law and explain its relationship between absorbance, concentration, and path length. c) Discuss how the law is used to determine the concentration of solutes in a solution.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 3.2	a) Learn how to operate a spectrophotometer for measuring absorbance or transmittance of light at specific wavelengths. b) Understand the calibration process of the spectrophotometer and the importance of using proper controls and blanks.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 3.3	a) Calculate the concentration of an unknown sample using absorbance measurements and Lambert Beer's Law. b) Practice preparing standard solutions and plotting calibration curves for determining unknown	K	Small group learning & Practical session	multiple choice questions (MCQ) &

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	concentrations.			Short Answer Questions
Determination Of Blood Hb				
BIOC 4.1	a) Recognize the role of hemoglobin in oxygen transport within the blood. b) Understand the clinical importance of determining hemoglobin levels in diagnosing conditions like anemia, polycythemia, and other blood disorders.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 4.2	a) Learn the technique for blood hemoglobin determination b) Understand the principle behind the cyanmethemoglobin method or any other method used for hemoglobin measurement. c) Familiarize with the proper use of hemoglobin meters or colorimetric methods for accurate measurement of blood hemoglobin levels.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 4.3	a) Understand how to interpret the results of hemoglobin determination and the factors that may influence the readings, such as dehydration or improper sample handling. b) Learn how to compare results to standard reference values and discuss the significance of variations in hemoglobin levels.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Determination Of Blood Glucose In Serum Blood				
BIOC 5.1	Understand the clinical significance of measuring blood glucose levels, particularly in diagnosing conditions such as diabetes mellitus and hypoglycemia.	K	Small group learning & Practical session	multiple choice questions (MCQ) &

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
				Short Answer Questions
BIOC 5.2	Learn the various methods for determining blood glucose levels, such as the glucose oxidase method or enzymatic colorimetric techniques, ensuring accurate measurement.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 5.3	Interpret the results and understand normal, pre-diabetic, and diabetic ranges of glucose levels, including the importance of fasting vs. postprandial glucose levels in clinical practice.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 5.4	Master proper sample handling techniques to avoid contamination or errors, and understand the factors that can affect glucose measurements, such as hemolysis or improper storage	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Glucose tolerance test (GTT)				
BIOC 6.1	Recognize its role in diagnosing disorders such as <u>diabetes mellitus</u> , gestational diabetes, and insulin resistance by evaluating the body's ability to metabolize glucose.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 6.2	Prepare the patient by explaining the fasting requirements (usually 8-12 hours before the test). Administer an oral glucose load (typically 75 grams of glucose in 250-300 mL of water). Collect blood samples at intervals (e.g.,	K	Small group learning & Practical session	multiple choice questions (MCQ) &

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	fasting, 1 hour, 2 hours) to measure blood glucose levels.			Short Answer Questions
BIOC 6.3	Recognize normal, impaired glucose tolerance, and diabetic results based on blood glucose concentrations at various time intervals. Understand the diagnostic thresholds for conditions such as prediabetes and diabetes.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 6.4	a) Be aware of potential factors influencing test results b) Discuss factors like age, stress, medications, and illnesses that can affect the results of the test. Understand how patient adherence to fasting requirements affects the accuracy of the test.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 6.5	Ensure patient safety and proper technique	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation Of Blood Urea				
BIOC 7.1	a) Understand the importance of blood urea estimation: b) Recognize its clinical relevance in evaluating kidney function and diagnosing conditions like kidney disease, dehydration, and protein metabolism disorders.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 7.2	Perform blood urea estimation using appropriate methods (e.g., urease or Berthelot's reaction), following lab protocols for sample handling.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 7.3	Know normal urea levels and how deviations (elevated or reduced) correlate with kidney function and metabolic conditions	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 7.4	Understand how the test is used in conjunction with other tests to assess kidney health and diagnose related disorders.	K	Small group learning & Practical session	multiple choice questions (MCQ)& Short Answer Questions
Estimation of Serum Creatinine				
BIOC 8.1	a) Understand the clinical significance of serum creatinine: b) Recognize its importance as a marker for kidney function, especially in diagnosing <u>chronic kidney disease</u> and evaluating renal health.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 8.2	Learn the procedure and Perform serum creatinine estimation using methods such as the Jaffe reaction, ensuring accurate sample collection and handling.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 8.3	Interpret results and Understand normal creatinine levels and how deviations indicate renal impairment or other related conditions like dehydration or muscle damage.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 8.4	a) Describe the metabolic and hormonal mechanisms contributing to obesity, b) Identify at least three genetic	K	Small group learning &	multiple choice questions (MCQ)

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	and three environmental risk factors for obesity and explain their contribution to energy imbalance c) Analyze the pathophysiological link between obesity and type 2 diabetes, including insulin resistance and pancreatic beta-cell dysfunction,		Practical session	& Short Answer Questions
Estimation of Serum Uric Acid				
BIOC 9.1	a) Understand the clinical relevance of serum uric acid: b) Recognize its role in diagnosing <u>gout, hyperuricemia, and kidney stone</u> formation.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 9.2	Learn the laboratory procedure and Perform uric acid estimation using enzymatic methods or colorimetric assays, ensuring proper sample collection and handling.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 9.3	Identify normal uric acid levels and understand how elevated or decreased levels can indicate metabolic disorders or kidney dysfunction.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 9.4	Evaluate serum uric acid levels as part of a diagnostic workup for secondary causes of hypertension and metabolic syndrome during clinical rotations, demonstrating proper test interpretation and clinical reasoning.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation of Serum Alanin Aminotransferase (ALT)				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 10.1	a) Recognize the clinical importance of ALT estimation: b) Understand ALT as a key liver enzyme used to assess hepatocellular injury, especially in conditions like <u>hepatitis</u> and <u>liver cirrhosis</u> .	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 10.2	a) Perform the test using standard laboratory protocols: b) Follow enzymatic methods to estimate serum ALT levels accurately, ensuring correct handling of serum samples.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 10.3	a) Interpret ALT levels in a clinical context: b) Differentiate between normal and elevated ALT values and correlate them with possible liver dysfunction or systemic illness.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 10.4	a) Apply ALT results in patient care: b) Use ALT as part of a liver function test panel to monitor liver health, detect early liver damage, and guide treatment decisions.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation of Serum Aspartate Aminotransferase(AST)				
BIOC 11.1	a) Understand the diagnostic significance of AST: b) Recognize Aspartate Aminotransferase (AST) as a key enzyme present in the liver, heart, muscles, and other tissues, useful in evaluating liver and cardiac health.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 11.2	a) Perform AST estimation using standard lab techniques: b) Accurately carry out the enzymatic	K	Small group learning	multiple choice questions (MCQ)

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	method for AST measurement in serum, adhering to clinical biochemistry protocols.		& Practical session	& Short Answer Questions
BIOC 11.3	a) Interpret elevated AST levels: b) Analyze AST results to identify <u>potential liver damage, myocardial infarction, or muscular injury</u> , and distinguish AST from ALT patterns for more precise diagnosis.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 11.4	a) Correlate AST values with clinical conditions: b) Use AST measurements in conjunction with other liver enzymes and clinical data to assess the extent and cause of tissue damage.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation of Serum Bilirubin				
BIOC 12.1	a) Understand the clinical significance of bilirubin estimation: b) Recognize bilirubin as a breakdown product of hemoglobin and an essential marker for liver function, <u>hemolytic disorders</u> , and <u>bile duct obstruction</u> .	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 12.2	a) Differentiate between types of bilirubin: b) Distinguish between direct (conjugated) and indirect (unconjugated) bilirubin and understand their respective clinical implications.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 12.3	a) Perform serum bilirubin estimation accurately: b) Apply proper laboratory techniques for measuring total, direct, and indirect bilirubin levels using colorimetric or enzymatic assays.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 12.4	a) Interpret bilirubin levels in clinical context: b) Evaluate elevated bilirubin in the diagnosis of jaundice types—pre-hepatic, hepatic, or post-hepatic—and correlate findings with patient symptoms and history.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation of Total Protein				
BIOC 13.1	a) Understand the clinical significance of total protein estimation: b) Recognize serum total protein as a key indicator of nutritional status, liver function, and various disease states such as nephrotic syndrome or chronic infections.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 13.2	a) Identify the main components of total protein: b) Learn the physiological roles of albumin and globulin in maintaining osmotic pressure, immune function, and transport of substances in the blood.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 13.3	a) Perform accurate laboratory estimation of total protein: b) Use appropriate biochemical methods (e.g., Biuret method) to measure total protein concentration in serum samples with precision.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 13.4	a) Interpret abnormal protein levels: b) Analyze high or low total protein values in the context of clinical conditions like dehydration, liver disease, kidney dysfunction, or malabsorption disorders.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation of Alkaline Phosphate (ALP)				

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 14.1	a) Understand the clinical relevance of ALP estimation: b) Recognize alkaline phosphatase (ALP) as an important enzyme marker used to assess liver function, bone metabolism, and biliary obstruction.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 14.2	a) Identify sources and physiological roles of ALP: b) Know that ALP is produced mainly in the liver, bones, intestines, and placenta, and plays a role in dephosphorylation processes.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 14.3	a) Perform the estimation of ALP in serum samples: b) Apply the standard colorimetric methods accurately to measure ALP activity in clinical biochemistry labs.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 14.4	a) Interpret abnormal ALP levels in a clinical context: b) Correlate elevated ALP with conditions like bone disorders (e.g., <u>rickets</u> , <u>osteomalacia</u>), liver diseases (e.g., <u>cholestasis</u>), and certain cancers. Consider low ALP levels as a potential indicator of malnutrition, hypothyroidism, or genetic enzyme deficiency.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation of Cholesterol Estimation				
BIOC 15.1	a) Understand the clinical importance of cholesterol measurement b) Recognize cholesterol as a vital lipid molecule involved in cell membrane integrity, hormone synthesis, and bile acid production, and its role in cardiovascular health.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 15.2	Perform serum cholesterol estimation using enzymatic or colorimetric	K	Small group learning &	multiple choice questions (MCQ)

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	methods, ensuring accurate pipetting, mixing, and spectrophotometric reading.		Practical session	& Short Answer Questions
BIOC 15.3	a) Interpret cholesterol levels clinically b) Differentiate between normal, borderline, and high cholesterol levels and relate them to conditions like atherosclerosis, coronary artery disease, and metabolic syndrome.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 15.4	a) Emphasize the role of cholesterol in preventive medicine b) Understand the importance of regular lipid profile monitoring in early detection and management of cardiovascular risk factors.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation of High Density Lipoprotein (HDL)				
BIOC 16.1	a) Understand the physiological role of HDL b) Explain HDL's function in reverse cholesterol transport and its protective role against <u>atherosclerosis</u> and <u>cardiovascular diseases</u> .	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 16.2	a) Perform accurate estimation of HDL in serum b) Apply appropriate chemical or enzymatic methods to isolate and quantify HDL, with attention to centrifugation, reagent use, and spectrophotometric analysis.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 16.3	a) Interpret HDL levels in a clinical context b) Recognize how variations in HDL concentrations can indicate risks for <u>coronary heart disease</u> , <u>metabolic syndrome</u> , and other <u>lipid-related disorders</u> .	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 16.4	a) Appreciate the importance of HDL monitoring b) Understand how HDL measurement contributes to a complete lipid profile and supports early intervention in lipid management and cardiovascular health.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Estimation of Triglycerides (TG)				
BIOC 17.1	a) Understand the clinical significance of triglycerides b) Explain the role of triglycerides as a major form of stored fat in the body and their association with metabolic disorders like diabetes, pancreatitis, and cardiovascular disease.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 17.2	a) Perform the biochemical estimation of triglycerides b) Accurately carry out enzymatic or colorimetric methods for TG estimation in serum, including sample preparation, reagent handling, and spectrophotometric measurement.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 17.3	a) Interpret triglyceride levels in clinical diagnostics b) Analyze TG values in the context of normal and pathological ranges, understanding their relevance in lipid profile evaluation and disease risk assessment.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
Hemoglobin Estimation of amylase				
BIOC 18.1	a) Understand the diagnostic value of hemoglobin and amylase tests b) Explain the importance of hemoglobin estimation in assessing anemia, and the significance of serum amylase in diagnosing pancreatic and salivary gland disorders.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
BIOC 18.2	a) Perform laboratory estimation methods b) Accurately conduct hemoglobin estimation (e.g., cyanmethemoglobin method) and enzymatic determination of amylase activity using standard biochemical techniques.	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions
BIOC 18.3	Interpret results in clinical contexts and Relate altered hemoglobin or amylase levels to specific clinical conditions such as anemia, pancreatitis, or parotitis,	K	Small group learning & Practical session	multiple choice questions (MCQ) & Short Answer Questions

Histology



Second Grade

This academic program description summarizes the course's most essential qualities and the learning objectives that the student is expected to attain, indicating whether he or she made advantage of all of the resources that are accessible.

Educational Establishmet	University of Al-Ameed
Scientific Department	HISTOLOGY department
Name of the Professional Academic Program.	Modified traditional curriculum
Final Graduation Certificate	بكالوريوس طب وجراحة عامة . M.B.Ch.B
Educational system. Annual/courses/other	Annual
Approved accreditation program	Approved accreditation program Iraqi National Guideline on Standards for Established and Accrediting Medical School
Other external factors	• Access to global electronic networks • Access to traditional and digital libraries • Teaching aids such as data show

	and PowerPoint presentations • Availability of equipped classrooms • Use of free online communication platforms (e.g., Free Conference Call)
Date the description was written	2024/9/15

Objective of the Academic Program

The Histology course at Stage HGEHKDM aims to:

- Provide foundational knowledge of microscopic tissue structures and their correlation with organ function.
- Train students to apply histological principles to clinical diagnostics and research, aligning with the college's mission to produce competent, research-oriented physicians.
- Foster lifelong learning through integration of histology with pathology and clinical medicine.

- **Resources:**

- **Textbooks:** *Junqueira's Basic Histology*, *Wheater's Functional Histology*.
- **Tools:** Light microscopes, virtual slide platforms (e.g., PathPresenter).

- **Faculty:** Histologists, pathologists, and clinical anatomists.

HISTOLOGY \ Grade 2	
Code HIST 204	6 Credits

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Circulatory system				
HIST1.1	Understand the Structure and Function of Blood Vessels	K	Large Group lecture	-MCQ -Short answer question
HIST1.2	Differentiate Types of Blood Vessels	K	Large Group lecture	-MCQ -short answer question
HIST1.3	Explore the Role of Endothelium and Capillaries	K	Large Group lecture	-MCQ -short answer question
HIST1.4	Relate endothelial damage to conditions like atherosclerosis and thrombosis	K	Large Group lecture	-MCQ -short answer question
CIRCULATORY SYSTEM				
HIST2.1	Understand Microcirculation and Capillary Function	K	Large Group lecture	-MCQ -Short answer question
HIST2.2	Compare Venous Structures and Their Roles	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
HIST2.3	Explore the Heart's Layers and Conducting System	K	Large Group lecture	-MCQ -short answer question
HIST2.4	Introduce the Lymphatic Vascular System	K	Large Group lecture	-MCQ -short answer question
INNATE AND ADAPTIVE IMMUNIT				
HIST3.1	Understand the Immune System's Components and Functions	K	Large Group lecture	-MCQ -Short answer question
HIST3.2	Differentiate Between Innate and Adaptive Immunity	K	Large Group lecture	-MCQ -short answer question
HIST3.3	Explore How Immune Responses Work	K	Large Group lecture	-MCQ -short answer question
HIST3.4	Describe the functions of B cells (antibody production), T cells (helper, cytotoxic, regulatory roles), and natural killer (NK) cell	K	Large Group lecture	-MCQ -short answer question
LYMPHOID SYSTEM				
HIST4.1	Understand the Structure and Function of Lymphoid Organs	K	Large Group lecture	-MCQ -Short answer question
HIST4.2	Explore Lymph Node Anatomy and Filtration Role	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
HIST4.3	Explain Lymphocyte Recirculation and Immune Surveillance	K	Large Group lecture	-MCQ -short answer question
HIST4.4	Discuss the role of lymph nodes in metastasis (cancer spread) and their enlargement during infection	K	Large Group lecture	-MCQ -short answer question
LYMPHOID SYSTEM				
HIST5.1	Understand the Structure and Function of the Thymus	k	Large Group lecture	-MCQ -Short answer question
HIST5.2	Explore T Cell Maturation and Selection	k	Large Group lecture	-MCQ -short answer question
HIST5.3	Examine the Spleen's Role in Immunity and Blood Filtration	K	Large Group lecture	-MCQ -short answer question
HIST5.4	Relate Clinical Aspects of Lymphoid Organ	K	Large Group lecture	-MCQ -short answer question
SKIN				
HIST6.1	Understand the Structure and Layers of the Skin	k	Large Group lecture	-MCQ -Short answer question
HIST6.2	Explore the Functions of Skin	k	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
HIST6.3	Identify Key Epidermal Cells and Their Roles	K	Large Group lecture	-MCQ -short answer question
HIST6.4	Discuss conditions like psoriasis (rapid keratinocyte turnover), melanoma (malignant melanocytes), and vitiligo	K	Large Group lecture	-MCQ -short answer question
SKIN				
HIST7.1	Understand the Structure and Function of the Respiratory System	K	Large Group lecture	-MCQ -Short answer question
HIST7.2	Explore the Respiratory Epithelium and Its Cell Types	K	Large Group lecture	-MCQ -short answer question
HIST7.3	Examine Specialized Regions of the Nasal Cavity	K	Large Group lecture	-MCQ -short answer question
HIST7.4	Discuss disorders like immotile cilia syndrome (cilia dysfunction) and olfactory neuron damage, linking them to specific histological features.	K	Large Group lecture	-MCQ -short answer question
RESPIRATORY SYSTEM				
HIST8.1	Understand the Bronchial Tree Structure and Function	K	Large Group lecture	-MCQ -Short answer question
HIST8.2	Explore the Transition to Gas Exchange Structures	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
HIST8.3	Examine Alveolar Histology and the Blood-Air Barrier	K	Large Group lecture	-MCQ -short answer question
HIST8.4	Discuss disorders like COPD, asthma, respiratory distress syndrome (surfactant deficiency), and lung cancer, linking them to structural or functional abnormalities in the respiratory system.	K	Large Group lecture	-MCQ -short answer question
DIGESTIVE SYSTEM				
HIST9.1	Understand the General Structure of the Digestive Tract	K	Large Group lecture	-MCQ -Short answer question
HIST9.2	Explore the Histology of Key Digestive Organs	K	Large Group lecture	-MCQ -short answer question
HIST9.3	Examine the Stomach's Regional Specializations	K	Large Group lecture	-MCQ -short answer question
HIST9.4	Discuss disorders like GERD, Barrett's esophagus, peptic ulcers, and pernicious anemia, linking them to structural or functional abnormalities in the digestive system	K	Large Group lecture	-MCQ -short answer question
DIGESTIVE SYSTEM				
HIST10.1	Understand the Structure and Function of the Small Intestine	K	Large Group lecture	-MCQ -Short answer question
HIST10.2	Explore the Histological Features of the Small Intestine	K	Large Group lecture	-MCQ -short answer

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
				question
HIST10.3	Examine the Large Intestine's Role in Digestion	K	Large Group lecture	-MCQ -short answer question
HIST10.4	Discuss the significance of Peyer's patches (immune surveillance glands (mucus secretion), and conditions like appendicitis or hemorrhoids linked to structural abnormalities.), Brunner's	K	Large Group lecture	-MCQ -short answer question
PANCREAS				
HIST11.1	Understand the Structure and Function of Salivary Glands.	K	Large Group lecture	-MCQ -Short answer question
HIST11.2	Explore the Exocrine and Endocrine Pancreas	K	Large Group lecture	-MCQ -short answer question
HIST11.3	Examine the Histological Features of Pancreatic Cells	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
HIST11.4	Discuss disorders like diabetes mellitus (beta cell dysfunction), pancreatitis (enzyme activation), and pancreatic tumors, linking them to structural or functional abnormalities.	K	Large Group lecture	-MCQ -short answer question

Practical

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Tissue Processing				
HIST1.1	☐ Understand the steps involved in tissue processing, including fixation, dehydration, clearing, and embedding.	K	practical session	-MCQ -Short answer question
HIST1.2	☐ Identify common artifacts that can occur during tissue processing.	K	practical session	-MCQ -short answer question
HIST1.3	☐ Describe the importance of each processing step for maintaining tissue structure.	K	practical session	-MCQ -short answer question
HIST1.4	Correlate processing methods with quality of histological slides.	K	practical session	-MCQ -short answer question
Vascular System				
HIST2.1	☐ Understand the steps involved in tissue processing, including fixation, dehydration, clearing, and embedding.	K	practical session	-MCQ -Short answer question
HIST2.2	☐ Identify common artifacts that can occur during tissue processing.	K	practical session	-MCQ -short answer question
HIST2.3	☐ Describe the importance of each processing step for maintaining tissue structure.	K	practical session	-MCQ -short answer question
HIST2.4	Correlate processing methods with quality of histological slides.	K	practical session	-MCQ -short answer question
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Lymphoid System				

HIST3.1	☐ Identify primary and secondary lymphoid organs (thymus, spleen, lymph nodes, tonsils).	K	practical session	-MCQ -Short answer question
HIST3.2	☐ Describe the histological architecture of lymph nodes and spleen.	K	practical session	-MCQ -short answer question
HIST3.3	☐ Recognize lymphatic tissue in MALT (e.g., Peyer's patches, tonsils).	K	practical session	-MCQ -short answer question
HIST3.4	Correlate lymphoid structure with immune response functions.	K	practical session	-MCQ -short answer question
Skin				
HIST4.1	☐ Identify the layers of the epidermis and differentiate between thick and thin skin.	K	practical session	-MCQ -Short answer question
HIST4.2	☐ Recognize the dermis and its components, including connective tissue and blood vessels.	K	practical session	-MCQ -short answer question
HIST4.3	☐ Identify skin appendages such as hair follicles, sebaceous glands, and sweat glands.	K	practical session	-MCQ -short answer question
HIST4.4	Understand how skin histology supports its protective and sensory roles.	K	practical session	-MCQ -short answer question
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Respiratory System				

HIST5.1	☐ Recognize the epithelial lining and supporting structures in the trachea and bronchi.	K	practical session	-MCQ -Short answer question
HIST5.2	☐ Identify bronchioles, alveolar ducts, and alveoli in lung tissue.	K	practical session	-MCQ -short answer question
HIST5.3	☐ Differentiate between conducting and respiratory portions of the respiratory system.	K	practical session	-MCQ -short answer question
HIST5.4	Understand how structural changes facilitate gas exchange.	K	practical session	-MCQ -short answer question
Digestive Tract Part 1				
HIST6.1	Identify types of papillae and muscle arrangement in the tongue	K	practical session	-MCQ -Short answer question
HIST6.2	☐ Recognize salivary gland types (parotid, submandibular, sublingual) and their acini.	K	practical session	-MCQ -short answer question
HIST6.3	☐ Identify epithelial transitions at the esophagogastric junction.	K	practical session	-MCQ -short answer question
HIST6.4	Differentiate between the regions of the stomach histologically (cardiac, fundic, pyloric)	K	practical session	-MCQ -short answer question
Digestive Tract Part 2				
HIST7.1	Identify villi, crypts, and specific glands (Brunner's, Peyer's patches) in small intestine	K	practical session	-MCQ -Short answer question
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods

HIST7.2	Compare mucosal architecture of ileum and colon.	K	practical session	-MCQ -short answer question
HIST7.3	Recognize lymphoid tissue in appendix and epithelial transition at ano-rectal junction.	K	practical session	-MCQ -short answer question
HIST7.4	Relate histological features to absorptive and immune functions.	K	practical session	-MCQ -short answer question
Liver and Pancreas				
HIST8.1	Identify liver lobules, portal triads, and central veins.	K	practical session	-MCQ -Short answer question
HIST8.2	☐ Distinguish exocrine and endocrine regions of the pancreas.	K	practical session	-MCQ -short answer question
HIST8.3	☐ Recognize the histological organization of hepatocytes and pancreatic acini.	K	practical session	-MCQ -short answer question
HIST8.4	Correlate structure with metabolic and digestive functions.	K	practical session	-MCQ -short answer question
Endocrine System				
HIST9.1	Identify histological zones of the pituitary and adrenal glands.	k	practical session	-MCQ -Short answer question
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods

HIST9.2	Recognize thyroid follicles and parafollicular cells.	k	practical session	-MCQ -short answer question
HIST9.3	Differentiate between endocrine and exocrine components of the pancreas.	K	practical session	-MCQ -short answer question
HIST9.4	Describe pineal gland structure and its role in circadian rhythm regulation.	K	practical session	-MCQ -short answer question
Reproductive System				
HIST10.1	Identify seminiferous tubules and spermatogenic cells in the testis.	K	practical session	-MCQ -Short answer question
HIST10.2	Recognize ducts and glandular structures of the male reproductive tract.	K	practical session	-MCQ -short answer question
HIST10.3	Describe the ovarian follicular stages and corpus luteum structure.	K	practical session	-MCQ -short answer question
HIST10.4	Recognize uterine layers and changes in pregnancy (placenta, mammary gland development)	K	practical session	-MCQ -short answer question
Kidney				
HIST11.1	Identify renal cortex and medulla, and locate renal corpuscles.	K	practical session	-MCQ -Short answer question
HIST11.2	Distinguish proximal and distal convoluted tubules histologically.	K	practical session	-MCQ -short answer question
Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods

HIST11.3	Recognize loop of Henle and collecting ducts.	K	practical session	-MCQ -short answer question
HIST11.4	Understand the role of nephron structures in urine formation	K	practical session	-MCQ -short answer question
Ureter & Urinary Bladder				
HIST12.1	☐ Identify transitional epithelium lining the ureter and urinary bladder.	K	practical session	-MCQ -Short answer question
HIST12.2	☐ Recognize the smooth muscle layers and their arrangement in the ureter.	K	practical session	-MCQ -short answer question
HIST12.3	☐ Identify detrusor muscle in the bladder and describe its role in contraction.	K	practical session	-MCQ -short answer question
HIST12.4	Correlate the structure of the urinary tract with its function in urine storage and passage.	K	practical session	-MCQ -short answer question

Embryology



Second Grade

Academic Program Description

This academic program description summarizes the course's most essential qualities and the learning objectives that the student is expected to attain, indicating whether he or she made advantage of all of the resources that are accessible. It includes a description of each course in the program of study.

1) Educational Establishment	University of AL-Ameed
2) Scientific Department	College of medicine
3) Name of the Professional Academic Program.	Modified Traditional Curriculum
4) Final Graduation Certificate	M.B.Ch/B
5) Educational system: Annual/courses/other	Annual
6) Approved accreditation program	Iraqi National Guideline on Standards for Established and Accrediting Medical School
7) Other external factors	☐ Access to global electronic networks ☐ Access to traditional and digital libraries ☐ Teaching aids such as data show and PowerPoint presentations ☐ Availability of equipped classrooms

	☐ Use of free online communication platforms (e.g., Free Conference Call)
8) Date the description was written	15\9\2024
9) Objectives of the academic program: Objective of Academic Program – Embryology: 1. To provide students with a comprehensive understanding of human embryological development and its clinical applications. 2. To enable students to link congenital anomalies and developmental disorders with embryological stages. 3. To prepare students to apply embryological knowledge in clinical practice, medical research, and public health fields.	

Embryology \ Grade 2	
Code EMBR 205	2 Credits

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
General Embryology				
EMBR1.1	define and differentiate between mitosis and meiosis, including the number of divisions and genetic outcomes, by listing at least 3 key differences in a short-answer quiz.	K	Large Group lecture	-MCQ -short answer question
EMBR1.2	describe the migration of primordial germ cells (PGCs) from the yolk sac to the gonads by outlining the timeline and movement path by the end of the session.	K	Large Group lecture	-MCQ -short answer question
EMBR1.3	illustrate the stages of gametogenesis and identify where abnormalities may lead to conditions such as teratomas using labeled diagrams and clinical scenarios..	K	Large Group lecture	-MCQ -short answer question
EMBR1.4	analyze the process of crossover during meiosis I by explaining how it contributes to genetic variability with at least one real-life example.	K	Large Group lecture	-MCQ -short answer question
EMBR1.5	evaluate the significance of embryological knowledge in prenatal diagnosis and genetic counseling by discussing two examples in a short reflective essay or group discussion	K	Large Group lecture	-MCQ -short answer question
General Embryology				
EMBR2.1	list and define the four main types of chromosomal abnormalities (numerical, structural, translocations, and	K	Large Group	-MCQ -short answer

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	fragile sites) using simple definitions and clinical examples.		lecture	question
EMBR2.2	explain the process of nondisjunction in meiosis and mitosis, including how it leads to syndromes such as Down syndrome and Turner syndrome, supported by basic diagrams or karyotypes.	K	Large Group lecture	-MCQ -short answer question
EMBR2.3	identify the chromosomal abnormality and match it to the corresponding genetic syndrome (e.g., trisomy 21, Klinefelter's), demonstrating accurate interpretation of signs.	K	Large Group lecture	-MCQ -short answer question
EMBR2.4	compare and contrast between microdeletion syndromes (e.g., Angelman vs. Prader-Willi), analyzing how maternal vs. paternal inheritance leads to different phenotypes despite the same chromosomal region.	K	Large Group lecture	-MCQ -short answer question
EMBR2.5	evaluate the clinical implications of maternal age on chromosomal nondisjunction, and support their discussion with statistical data and real-world examples.	K	Large Group lecture	-MCQ -short answer question
General Embryology				
EMBR3.1	define oogenesis and spermatogenesis and recall their respective sites, onset, and duration in the human reproductive system.	K	Large Group lecture	-MCQ -short answer question
EMBR3.2	describe the step-by-step progression of primary oocyte maturation from fetal development to ovulation using sequential terminology and key hormonal triggers.	K	Large Group lecture	-MCQ -short answer question
EMBR3.3	identify structural or numerical abnormalities in gametes and predict their potential impact on fertility or early embryonic development.	K	Large Group lecture	-MCQ -short answer question
EMBR3.4	analyze and compare the regulatory mechanisms of	K	Large Group	-MCQ

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	spermatogenesis and oogenesis, highlighting the roles of LH, FSH, Sertoli, and Leydig cells.		lecture	-short answer question
EMBR3.5	evaluate the morphological transformations during spermiogenesis and explain how each step ensures functional sperm formation, using diagrams or descriptive assessments.	K	Large Group lecture	-MCQ -short answer question
Ovulation to Implantation				
EMBR4.1	recall and define the main hormonal regulators of the ovarian cycle, including FSH, LH, and their role in follicular development and ovulation.	K	Large Group lecture	-MCQ -short answer question
EMBR4.2	describe the three main phases of fertilization (penetration of corona radiata, zona pellucida, and membrane fusion) with correct terminology and sequence.	K	Large Group lecture	-MCQ -short answer question
EMBR4.3	apply their understanding to identify where fertilization failure might occur and propose appropriate assisted reproductive technologies such as IVF or ICSI.	K	Large Group lecture	-MCQ -short answer question
EMBR4.4	analyze the cellular responses of the oocyte after sperm entry, including cortical reaction, resumption of meiosis, and zygote formation, using schematic representation or case examples.	K	Large Group lecture	-MCQ -short answer question
EMBR4.5	evaluate the significance of capacitation and the acrosome reaction in successful fertilization by comparing normal vs. defective sperm behavior.	K	Large Group lecture	-MCQ -short answer question
Pre-embryonic Period				
EMBR5.1	recall and define key stages of early embryonic development, including cleavage, morula,	K	Large	-MCQ -short

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	blastocyst, and bilaminar germ disc formation.		Group lecture	answer question
EMBR5.2	explain the transformation of the trophoblast and embryoblast into their respective layers and describe the formation of the amniotic cavity and yolk sac.	K	Large Group lecture	-MCQ -short answer question
EMBR5.3	identify embryological structures (e.g., epiblast, hypoblast, primary villi) on histological diagrams and correlate them with their developmental days.	K	Large Group lecture	-MCQ -short answer question
EMBR5.4	analyze the chronological sequence of morphological events from zygote to implantation and distinguish between day-specific embryonic milestones.	K	Large Group lecture	-MCQ -short answer question
EMBR5.5	evaluate the clinical relevance of syncytiotrophoblast function by explaining the role of hCG in early pregnancy testing and embryo viability.	K	Large Group lecture	-MCQ -short answer question
Trilaminar Germ Layer				
EMBR6.1	define the trilaminar germ disc and list the three primary germ layers formed during gastrulation: ectoderm, mesoderm, and endoderm.	K	Large Group lecture	-MCQ -short answer question
EMBR6.2	describe the structural development of the oropharyngeal membrane, cloacal membrane, and prechordal plate, and their roles in body axis formation.	K	Large Group lecture	-MCQ -short answer question
EMBR6.3	identify clinical abnormalities such as holoprosencephaly, situs inversus, and sacrococcygeal teratomas, and relate them to defects in gastrulation and primitive streak development.	K	Large Group lecture	-MCQ -short answer question
EMBR6.4	analyze the transformation of primary, secondary, and tertiary villi and explain how this progression supports the formation of the placental villous capillary system.	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
EMBR6.5	evaluate the role of the connecting stalk and chorionic villi in establishing embryo-maternal circulation and assess how these adaptations support early embryonic survival.	K	Large Group lecture	-MCQ -short answer question
3rd to 8th Weeks				
EMBR7.1	list the major derivatives of the ectoderm, mesoderm, and endoderm germ layers, including key structures and organ systems.	K	Large Group lecture	-MCQ -short answer question
EMBR7.2	describe the processes of neurulation and somite formation, explaining the role of the notochord, neural tube, and paraxial mesoderm.	K	Large Group lecture	-MCQ -short answer question
EMBR7.3	identify clinical conditions such as neural tube defects, sacroccygeal teratoma, and situs inversus, and associate them with the corresponding embryological events.	K	Large Group lecture	-MCQ -short answer question
EMBR7.4	analyze the morphogenetic movements such as cephalocaudal and lateral folding, explaining how these lead to the formation of the body plan and ventral body wall.	K	Large Group lecture	-MCQ -short answer question
EMBR7.5	evaluate the importance of germ layer interactions in forming complex tissues (e.g., neural crest derivatives, blood vessels) and explain how disruption may affect organ development.	K	Large Group lecture	-MCQ -short answer question
Fetal period				
EMBR8.1	define the fetal period and identify key terms such as CRL, CHL, and the developmental milestones by trimester.	K	Large Group lecture	-MCQ -short answer question
EMBR8.2	explain the monthly changes in fetal growth, including weight and body proportions, and the significance of structures such as vernix caseosa and lanugo.	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
EMBR8.3	use fetal biometric data (e.g., biparietal diameter, femur length) to estimate gestational age and correlate it with typical developmental features observable via ultrasound.	K	Large Group lecture	-MCQ -short answer question
EMBR8.4	distinguish between Intrauterine Growth Restriction (IUGR) and Small for Gestational Age (SGA) by comparing clinical definitions, causes, and outcomes.	K	Large Group lecture	-MCQ -short answer question
EMBR8.5	evaluate the long-term clinical implications of IUGR, including its association with chronic conditions such as type 2 diabetes, cardiovascular disease, and neurodevelopmental disorders..	K	Large Group lecture	-MCQ -short answer question
Placenta				
EMBR9.1	define the placenta and identify its fetal and maternal components, including chorion frondosum and decidua basalis.	K	Large Group lecture	-MCQ -short answer question
EMBR9.2	explain the development and structure of placental villi (primary, secondary, and tertiary) and how they facilitate maternal-fetal exchange.	K	Large Group lecture	-MCQ -short answer question
EMBR9.3	describe and interpret clinical conditions such as preeclampsia and hemolytic disease of the newborn, including their causes and placental origins	K	Large Group lecture	-MCQ -short answer question
EMBR9.4	compare dizygotic and monozygotic twinning based on placental arrangement, chorionicity, and timing of embryonic division.	K	Large Group lecture	-MCQ -short answer question
EMBR9.5	evaluate the endocrine functions of the placenta by discussing the role of hormones such as hCG, progesterone, and human placental lactogen in pregnancy	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	<i>maintenance.</i>			
Birth Defects				
EMBR10.1	define the terms birth defect, malformation, disruption, deformation, syndrome, and association, and recall the incidence of congenital anomalies.	K	Large Group lecture	-MCQ -short answer question
EMBR10.2	describe the principles of teratology and explain how timing, genetics, and dosage of teratogens affect embryonic development.	K	Large Group lecture	-MCQ -short answer question
EMBR10.3	classify types of birth defects (e.g., sirenómelia, amniotic band syndrome) according to the proper category: malformation, disruption, or deformation.	K	Large Group lecture	-MCQ -short answer question
EMBR10.4	analyze prenatal diagnostic techniques (ultrasound, CVS, amniocentesis) and their role in detecting fetal abnormalities or developmental delays.	K	Large Group lecture	-MCQ -short answer question
EMBR10.5	evaluate methods of birth defect prevention (e.g., folic acid, iodine supplementation) and justify their role in reducing the incidence of neural tube and metabolic disorders.	K	Large Group lecture	-MCQ -short answer question
Embryology of (CVS)1				
EMBR11.1	identify and describe the origin of the cardiogenic field, including the early heart tube formation from the splanchnic mesoderm.	K	Large Group lecture	-MCQ -short answer question
EMBR11.2	explain the process of lateral and cephalocaudal folding and how these contribute to positioning the heart in the thoracic cavity.	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
EMBR11.3	illustrate the steps of cardiac looping and label the resulting anatomical regions (e.g., truncus arteriosus, bulbus cordis, ventricle, atrium) on diagrams.	K	Large Group lecture	-MCQ -short answer question
EMBR11.4	analyze the development of the sinus venosus and distinguish between the fates of the right and left sinus horns and their venous contributions.	K	Large Group lecture	-MCQ -short answer question
EMBR11.5	evaluate clinical outcomes of defective cardiac looping such as dextrocardia and situs inversus, and correlate them with embryological mechanisms.	K	Large Group lecture	-MCQ -short answer question
Embryology of (CVS)2				
EMBR12.1	identify the steps of atrial and ventricular septum formation, including the roles of septum primum, septum secundum, and endocardial cushions.	K	Large Group lecture	-MCQ -short answer question
EMBR12.2	explain how the conotruncal septum and neural crest cells contribute to the separation of the aorta and pulmonary artery during heart development.	K	Large Group lecture	-MCQ -short answer question
EMBR12.3	diagnose common congenital heart defects (e.g., ASD, VSD, tetralogy of Fallot) by linking them to their embryological origin. s	K	Large Group lecture	-MCQ -short answer question
EMBR12.4	analyze the functional consequences of atrioventricular septal defects and explain how improper fusion of endocardial cushions can lead to combined anomalies.	K	Large Group lecture	-MCQ -short answer question
EMBR12.5	evaluate the relationship between neural crest cell migration and craniofacial syndromes associated with congenital heart disease (e.g., DiGeorge syndrome).	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
Embryology of (CVS)3				
EMBR13.1	define vasculogenesis and angiogenesis and list the derivatives of the major aortic arches.	K	Large Group lecture	-MCQ -short answer question
EMBR13.2	describe the structure and function of the fetal circulation, including the role of the ductus venosus, oval foramen, and ductus arteriosus.	K	Large Group lecture	-MCQ -short answer question
EMBR13.3	trace the pathway of oxygenated and deoxygenated blood in the fetal body and apply this understanding to explain how fetal organs receive different oxygen levels.	K	Large Group lecture	-MCQ -short answer question
EMBR13.4	analyze the changes in circulatory anatomy that occur after birth and explain how fetal shunts are transformed into adult structures.	K	Large Group lecture	-MCQ -short answer question
EMBR13.5	evaluate clinical vascular anomalies such as patent ductus arteriosus and coarctation of the aorta, differentiating between preductal and postductal types.	K	Large Group lecture	-MCQ -short answer question
Embryology of (respiratory system)				
EMBR14.1	define the embryological origins of the lung epithelium and surrounding tissues and recall key stages of lung bud formation starting in week 4.	K	Large Group lecture	-MCQ -short answer question
EMBR14.2	explain the partitioning of the foregut by the tracheoesophageal septum and describe how tracheoesophageal fistulae (TEFs) can form from developmental errors.	K	Large Group lecture	-MCQ -short answer question
EMBR14.3	identify the stages of lung maturation and correlate the presence of surfactant with fetal viability and respiratory function at birth.	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
EMBR14.4	analyze the structural differentiation of the bronchial tree and pleural cavities, including the formation of bronchopulmonary segments and pleural linings.	K	Large Group lecture	-MCQ -short answer question
EMBR14.5	evaluate the causes, consequences, and clinical management of neonatal respiratory distress syndrome (RDS), especially in preterm infants lacking surfactant.	K	Large Group lecture	-MCQ -short answer question
Embryology of (GIT)1				
EMBR15.1	define the terms mesentery, peritoneal ligaments, and distinguish between intraperitoneal and retroperitoneal organs.	K	Large Group lecture	-MCQ -short answer question
EMBR15.2	explain the embryological development and rotation of the stomach, including the formation of curvatures and peritoneal folds like the omental bursa.	K	Large Group lecture	-MCQ -short answer question
EMBR15.3	identify key structures derived from the hepatic diverticulum and relate them to clinical conditions like biliary atresia and congenital liver abnormalities.	K	Large Group lecture	-MCQ -short answer question
EMBR15.4	analyze the dual embryonic origins of the duodenum and its blood supply, and explain how its position becomes retroperitoneal during development.	K	Large Group lecture	-MCQ -short answer question
EMBR15.5	evaluate common congenital malformations such as esophageal atresia, pyloric stenosis, and hiatal hernia based on their embryologic origins and clinical significance.	K	Large Group lecture	-MCQ -short answer question
Embryology of (GIT)2				
EMBR16.1	identify the embryological origins and duct development of the pancreas, including the contributions of the dorsal and	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	ventral buds..			
EMBR16.2	explain the process of midgut rotation and physiological herniation and describe how these movements influence the positioning of intestinal organs.	K	Large Group lecture	-MCQ -short answer question
EMBR16.3	differentiate between omphalocele and gastroschisis based on anatomical presentation, embryological cause, and clinical consequences.	K	Large Group lecture	-MCQ -short answer question
EMBR16.4	analyze the implications of abnormal gut rotation (e.g., volvulus, malrotation) and their impact on blood supply, using real-life examples like atresias or mesenteric entrapment.	K	Large Group lecture	-MCQ -short answer question
EMBR16.5	evaluate hindgut development and its related defects, such as imperforate anus and rectourethral fistulas, with respect to urorectal septum formation and cloacal partitioning.	K	Large Group lecture	-MCQ -short answer question
Embryology of (urinary system)1				
EMBR17.1	list and differentiate the three kidney systems (pronephros, mesonephros, metanephros) and recall their respective functions and fates.	K	Large Group lecture	-MCQ -short answer question
EMBR17.2	describe the dual origin of the kidney, explaining how the ureteric bud and metanephric mesoderm contribute to nephron and collecting system development.	K	Large Group lecture	-MCQ -short answer question
EMBR17.3	identify normal and abnormal kidney development on diagrams and relate structural changes to clinical conditions such as Wilms' tumor and multicystic dysplastic kidney.	K	Large Group lecture	-MCQ -short answer question
EMBR17.4	analyze the formation of nephrons and explain how defects in branching of the ureteric bud can lead to renal agenesis or polycystic	K	Large Group lecture	-MCQ -short answer

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
	kidney disease.			question
EMBR17.5	evaluate congenital renal anomalies (e.g., Potter sequence, duplicated ureters) based on embryological origins and assess their impact on fetal development and postnatal life.	K	Large Group lecture	-MCQ -short answer question
Embryology of (urinary system)2				
EMBR18.1	define the stages of kidney ascent and identify structures such as the ureter, bladder, and urachus along their developmental timeline.	K	Large Group lecture	-MCQ -short answer question
EMBR18.2	describe the process of bladder and urethra development from the urogenital sinus, including the role of the urorectal septum and mesonephric ducts.	K	Large Group lecture	-MCQ -short answer question
EMBR18.3	recognize and differentiate anomalies such as pelvic kidney, horseshoe kidney, urachal fistula, and bladder exstrophy using embryological and clinical features.	K	Large Group lecture	-MCQ -short answer question
EMBR18.4	analyze how migration, rotation, and arterial supply changes impact kidney positioning and explain the embryologic basis of accessory renal arteries.	K	Large Group lecture	-MCQ -short answer question
EMBR18.5	evaluate severe congenital anomalies like cloacal exstrophy and correlate them with failures in body wall closure and urorectal septum formation.	K	Large Group lecture	-MCQ -short answer question
Embryology of (genital system)2				
EMBR19.1	identify the embryological origins of the gonads, genital ducts, and germ cells, including the role of the intermediate mesoderm, coelomic epithelium, and yolk sac.	K	Large Group lecture	-MCQ -short answer question
EMBR19.2	describe the genetic and molecular mechanisms of sex determination, focusing on the role of the SRY gene and testis-determining factor in gonadal differentiation.	K	Large Group lecture	-MCQ -short answer question

Number	Learning Objective	Domain K/S/A/C	Teaching Learning Methods	Assessment Methods
EMBR19.3	compare male and female gonadal development, identifying structural changes in the primitive sex cords, tunica albuginea, and formation of primary follicles.	K	Large Group lecture	-MCQ -short answer question
EMBR19.4	Analyze the developmental trajectory of mesonephric and paramesonephric ducts in both sexes and predict which structures they will form or regress into.	K	Large Group lecture	-MCQ -short answer question
EMBR19.5	evaluate the timing and anatomical changes during the indifferent stage of genital development and assess how failure in germ cell migration can result in gonadal dysgenesis.	K	Large Group lecture	-MCQ -short answer question
Embryology of (genital system)2				
EMBR20.1	identify the embryological origins of the uterus, vagina, and gubernaculum, and describe the contributions of the paramesonephric ducts and urogenital sinus.	K	Large Group lecture	-MCQ -short answer question
EMBR20.2	explain the descent of the testes, including the role of the gubernaculum, intra-abdominal pressure, and formation of the tunica vaginalis.	K	Large Group lecture	-MCQ -short answer question
EMBR20.3	classify uterine and vaginal anomalies such as uterus didelphys and bicornis, and relate them to failed duct fusion or incomplete canalization.	K	Large Group lecture	-MCQ -short answer question
EMBR20.4	analyze the pathogenesis of congenital inguinal hernia, hydrocele, and cryptorchidism based on abnormal development of the processus vaginalis.	K	Large Group lecture	-MCQ -short answer question
EMBR20.5	evaluate the dual embryonic origin of the vagina and assess the developmental timing and hormonal factors that influence normal and abnormal testicular descent.	K	Large Group lecture	-MCQ -short answer question

Al-Ba'ath party crime



Second Grade

وصف البرنامج الأكاديمي

يوفر وصف البرنامج الأكاديمي هذا إيجازاً مقتضياً لأهم خصائص البرنامج ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناتاً عما إذا كان قد حقق الاستفادة القصوى من الفرص المتاحة. ويصاحبه وصف لكل مقرر ضمن البرنامج

1. المؤسسة التعليمية	جامعة العميد
2. القسم العلمي / المركز	جرائم حزب البعث
3. اسم البرنامج الأكاديمي او المهني	Modified Traditional Curriculum
4. اسم الشهادة النهائية	M.B.ch.B
5. النظام الدراسي: سنوي / مقررات / أخرى	سنوي
6. برنامج الاعتماد المعتمد	Iraqi National Guideline on Standards for Established and Accrediting Medical School
7. المؤثرات الخارجية الأخرى	• Availability of relevant scientific research in the field of specialization • Access to global electronic networks • Access to traditional and digital libraries • Teaching aids such as data show and PowerPoint presentations • Availability of equipped classrooms • Use of free online communication platforms (e.g., Free Conference Call)
8. تاريخ إعداد الوصف	2024\9\15
9. أهداف البرنامج الأكاديمي	تهدف هذه المادة إلى تزويد طلبة كلية الطب بفهم شامل ومتعمق للجرائم التي ارتكبتها حزب البعث خلال فترة حكمه في العراق، مع التركيز على تأثير هذه الجرائم على مختلف جوانب الحياة العراقية. سنتناول المادة السياق التاريخي لصعود حزب البعث إلى السلطة، وأيديولوجيته، والآليات التي استخدمها في ارتكاب الانتهاكات الجسيمة لحقوق الإنسان. كما

ستركز على أنواع الجرائم المختلفة التي ارتكبتها الحزب، بما في ذلك الجرائم الدولية (الإبادة الجماعية، الجرائم ضد الإنسانية، جرائم الحرب)، والجرائم النفسية والاجتماعية، والجرائم البيئية، وجرائم المقابر الجماعية، وتأثير هذه الجرائم على النسيج المجتمعي والصحة العامة. بالإضافة إلى ذلك، ستناقش المادة الجهود المبذولة لتحقيق العدالة الانتقالية ومحاسبة المسؤولين عن هذه الجرائم، والتحديات التي تواجه هذه العملية، وأهمية توثيق هذه الجرائم لضمان عدم تكرارها في المستقبل وتعزيز المصالحة الوطنية.

10. أهم مصادر المعلومات عن البرنامج

المقرر الدراسي لمادة جرائم حزب البعث للجامعات الحكومية والأهلية

جرائم حزب البعث \ المرحلة الثانية

Code BIOCI 203

8 Credits

العدد	الاهداف التعليمية	Domain K/S/A/C*	طريقة التعليم والتعلم	طريقة التقييم
مفهوم الجريمة في الفقه الإسلامي				
1.AICr 1	تعريف الجريمة في الفقه الإسلامي وبيان خصائصها المميزة، وتعداد أقسام الجريمة المختلفة (الحدود، القصاص والدية، التعزير) مع أمثلة لكل قسم، بالإضافة إلى تعداد أركان الجريمة الأساسية في الفقه الإسلامي.	K	Large group lecture	Short standard essay and MCQ
1.AICr 2	شرح أقسام الجريمة في الفقه الإسلامي وتوضيح شروط إقامة العقوبة في الفقه الإسلامي، وشرح قاعدة "درء الحدود بالشبهات" وبيان أهميتها في النظام الجنائي الإسلامي.	K	Large group lecture	Short standard essay and MCQ
1.AICr 3	مقارنة أقسام الجريمة في الفقه الإسلامي من حيث طبيعة الجريمة ونوع العقوبة المقررة، وتحليل أهداف التجريم والعقوبة في الفقه الإسلامي وبيان العلاقة بينها وبين مقاصد الشريعة الإسلامية.	K	Large group lecture	Short standard essay and MCQ
مفهوم الجريمة في القانون				
2.AICr 1	تعريف الجريمة في القانون وتحديد أركانها الأساسية (الركن القانوني، الركن المادي، الركن المعنوي)، وتعداد تصنيفات الجريمة من حيث جسامتها (جنايات، جنح، مخالفات) ومن حيث طبيعتها (جرائم عامة، جرائم خاصة) ومن حيث الركن المعنوي (جرائم عمدية، جرائم غير عمدية).	K	Large group lecture	Short standard essay and MCQ
2.AICr 2	شرح أركان الجريمة في القانون مع تقديم أمثلة توضيحية، وتوضيح الفرق بين تصنيفات الجريمة المختلفة من حيث الجسامة والطبيعة والركن المعنوي، وشرح الفرق بين الجرائم العمدية وغير العمدية وتأثير ذلك على المسؤولية الجنائية.	K	Large group lecture	Short standard essay and MCQ
2.AICr 3	مقارنة أركان الجريمة في القانون مع أركان الجريمة في الفقه الإسلامي لتحديد أوجه التشابه والاختلاف، وتحليل أهداف التجريم والعقوبة في القانون وبيان العلاقة بينها وبين حماية المجتمع والنظام العام.	K	Large group lecture	Short standard essay and MCQ
أسباب الإباحة في الجريمة				
3.AICr 1	تعريف أسباب الإباحة في الجريمة وبيان مفهومها القانوني، وتعداد أنواع أسباب الإباحة الرئيسية في القانون (الدفاع الشرعي، رضا المجني عليه، تنفيذ أمر القانون، حالة الضرورة) مع أمثلة موجزة لكل نوع، وتعداد شروط كل سبب من أسباب الإباحة على حدة.	K	Large group lecture	Short standard essay and MCQ

Short standard essay and MCQ	Large group lecture	K	توضيح الفرق بين أسباب الإباحة ونفي الركن المادي أو المعنوي للجريمة، وشرح مفصل لكل نوع من أنواع أسباب الإباحة في القانون مع تقديم أمثلة توضيحية، وتوضيح الشروط العامة التي يجب توافرها في جميع حالات الإباحة.	3.AICr 2
طريقة التقييم	طريقة التعليم والتعلم	Domain K/S/A/C	الاهداف التعليمية	العدد
Short standard essay and MCQ	Large group lecture	K	مقارنة أنواع أسباب الإباحة المختلفة في القانون من حيث شروطها ونطاق تطبيقها، وتحليل أهمية أسباب الإباحة في تحقيق التوازن بين حماية المجتمع وحقوق الأفراد، ومنع العقاب الظالم في الظروف الاستثنائية.	3.AICr 3
جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام 2005م				
Short standard essay and MCQ	Large group lecture	K	تعريف الجريمة لغة واصطلاحاً، وأنواع الجرائم المختلفة (الدولية، السياسية، الاجتماعية، جرائم السلطة، النفسية، جرائم حرية الدين والمعتقد، مصادرة الأموال، التهجير، البيئية، وانتهاكات حقوق الإنسان).	4.AICr 1
Short standard essay and MCQ	Large group lecture	K	تعرف الطالب على الجرائم التي ارتكبتها نظام البعث والتي تم توثيقها في قانون المحكمة الجنائية العراقية العليا، مثل جرائم الإبادة الجماعية، والجرائم ضد الإنسانية، وجرائم الحرب، وانتهاكات القوانين العراقية.	4.AICr 2
Short standard essay and MCQ	Large group lecture	K	فهم أنواع الجرائم الدولية التي ارتكبتها نظام البعث، مع التركيز على تعريف كل نوع (الإبادة الجماعية، الجرائم ضد الإنسانية، جرائم الحرب) والعناصر المكونة لكل جريمة.	4.AICr 3
الجرائم النفسية وأثارها				
Short standard essay and MCQ	Large group lecture	K	تعريف الجرائم النفسية بدقة، وتحديد خصائصها المميزة عن أنواع الجرائم الأخرى، مع القدرة على التمييز بين الأفعال التي تشكل جرائم نفسية وتلك التي لا تشكلها، وشرح الأبعاد القانونية والأخلاقية لهذا النوع من الجرائم.	5.AICr 1
Short standard essay and MCQ	Large group lecture	K	توضح المفاهيم الأساسية المتعلقة بالصحة النفسية، وتأثير الصدمات النفسية على الأفراد والمجتمعات، مع القدرة على شرح الآليات النفسية التي من خلالها تؤثر الجرائم النفسية على الضحايا، وتحليل العوامل التي تزيد من قابلية الأفراد للتأثر بهذه الجرائم.	5.AICr 2
Short standard essay and MCQ	Large group lecture	K	يصف بدقة الآليات والأدوات التي استخدمها نظام البعث في ارتكاب الجرائم النفسية، مثل التهريب والتعذيب النفسي والتطهير العرقي وعسكرة المجتمع، مع القدرة على تحليل الدوافع والأهداف الكامنة وراء استخدام هذه الأساليب، وربطها بالأيديولوجية السياسية للنظام	5.AICr 3
الجرائم الاجتماعية وأثارها				

Short standard essay and MCQ	Large group lecture	K	تعريف الجرائم الاجتماعية بدقة، وتحديد أنواعها وخصائصها المميزة، مع القدرة على التمييز بين الأفعال التي تصنف كجرائم اجتماعية وتلك التي لا تصنف كذلك.	6.AICr 1
طريقة التقييم	طريقة التعليم والتعلم	Domain K/S/A/C	الاهداف التعليمية	العدد
Short standard essay and MCQ	Large group lecture	K	يحلل الآثار المترتبة على الجرائم الاجتماعية التي ارتكبتها نظام البعث على الفرد والمجتمع العراقي، مثل تدمير القيم الأخلاقية، وتفتيت الروابط الاجتماعية، وزعزعة الثقة بين أفراد المجتمع، مع القدرة على تقييم شدة هذه الآثار ومدى استمرارها حتى الوقت الحاضر.	6.AICr 2
جرائم انتهاكات القوانين العراقية				
Short standard essay and MCQ	Large group lecture	K	يذكر أسماء أبرز القوانين العراقية التي تم انتهاكها بشكل ممنهج من قبل حزب البعث خلال فترة حكمه، مع إعطاء أمثلة موجزة لأهم بنود تلك القوانين التي تم تجاوزها.	7.AICr 1
Short standard essay and MCQ	Large group lecture	K	يشرح بأسلوبه الخاص كيف قام حزب البعث بتفسير وتطبيق القوانين العراقية بطريقة تخدم أجندته السياسية والأيدولوجية، مما أدى إلى تقويض سيادة القانون وحقوق المواطنين.	7.AICr 2
Short standard essay and MCQ	Large group lecture	K	يحلل الأسباب الجذرية التي دفعت حزب البعث إلى انتهاك القوانين العراقية بشكل واسع النطاق، مع التركيز على دور السلطة المطلقة وغياب المساءلة في تسهيل ارتكاب تلك الجرائم.	7.AICr 3
بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث				
Short standard essay and MCQ	Large group lecture	K	يذكر أمثلة محددة لقرارات سياسية وعسكرية اتخذها نظام البعث وأدت بشكل مباشر إلى انتهاكات واسعة لحقوق الإنسان والقوانين العراقية والدولية، مع تحديد التواريخ التقريبية لتلك القرارات.	8.AICr 1
Short standard essay and MCQ	Large group lecture	K	يقيم بناءً على المعايير القانونية والأخلاقية، مدى مشروعية القرارات السياسية والعسكرية التي اتخذها نظام البعث والتي أدت إلى انتهاكات، مع تقديم حجج مدعومة بالأدلة.	8.AICr 2
الجرائم البيئية لنظام البعث في العراق				

Short standard essay and MCQ	Large group lecture	K	يذكر أمثلة محددة للممارسات والسياسات التي تبناها نظام البعث وأدت إلى أضرار بيئية كبيرة في العراق، مع تحديد المناطق الجغرافية الأكثر تضرراً وأنواع التلوث الرئيسية.	9.AICr 1
طريقة التقييم	طريقة التعليم والتعلم	Domain K/S/A/C	الاهداف التعليمية	العدد
Short standard essay and MCQ	Large group lecture	K	يشرح الطالب كيف كانت الأولويات السياسية والاقتصادية لنظام البعث (مثل التوسع الصناعي السريع والحروب المتعددة) تؤثر سلبيًا على البيئة العراقية وتؤدي إلى تدهور الموارد الطبيعية.	9.AICr 2
Short standard essay and MCQ	Large group lecture	K	يقيم حجم وتأثير الأضرار البيئية التي خلفها نظام البعث على المدى الطويل على صحة الإنسان والتنوع البيولوجي والاقتصاد العراقي، مع الأخذ في الاعتبار جهود التعافي والإصلاح البيئي اللاحقة	9.AICr 3
أحداث عام 1963 وعلاقتها بالمقابر الجماعية				
Short standard essay and MCQ	Large group lecture	K	يذكر التسلسل الزمني لأبرز الأحداث التي وقعت في العراق عام 1963، مع التركيز بشكل خاص على الانقلاب الذي أطاح بحكومة عبد الكريم قاسم والأحداث التي تلتها من عمليات اعتقال وإعدام.	1AICr 0.1
Short standard essay and MCQ	Large group lecture	K	يشرح السياق السياسي والاجتماعي الذي أدى إلى انقلاب عام 1963، موضحةً دوافع القوى التي نفذت الانقلاب والعوامل الداخلية والخارجية التي ساهمت في وقوعه وتداعياته اللاحقة.	1AICr 0.2
Short standard essay and MCQ	Large group lecture	K	يربط بين عمليات الاعتقال والإعدام الواسعة التي أعقبت انقلاب عام 1963 وظهور المقابر الجماعية في تلك الفترة أو اكتشافها لاحقاً، مع تحديد الفئات الأكثر استهدافاً في حملات القمع.	1AICr 0.3
الاحداث الممتدة من عام 1979-2003 وعلاقتها بالمقابر الجماعية				
Short standard essay and MCQ	Large group lecture	K	أن يذكر أبرز الأحداث والسياسات التي شهدتها العراق في الفترة الممتدة من عام 1979 إلى عام 2003 تحت حكم حزب البعث، مع التركيز على الحملات القمعية والحروب التي ارتبطت بظهور المقابر الجماعية.	1AICr 1.1
Short standard essay and MCQ	Large group lecture	K	يربط بين أحداث محددة مثل حملة الأنفال، قمع الانتفاضة الشعبانية، وحرب الخليج الثانية، وبين اكتشاف مقابر جماعية في المناطق التي شهدت تلك الأحداث، مع تحديد الفئات السكانية التي استهدفتها تلك العمليات.	1AICr 1.2
أحداث الانتفاضة الشعبانية				

Short standard essay and MCQ	Large group lecture	K	يذكر التاريخ التقريبي لاندلاع الانتفاضة الشعبانية في العراق وأهم المناطق التي شهدت أحداثها، بالإضافة إلى الأسباب المباشرة وغير المباشرة التي أدت إلى اندلاعها في أعقاب حرب الخليج الثانية.	1AlCr 2.1
طريقة التقييم	طريقة التعليم والتعلم	Domain K/S/A/C	الاهداف التعليمية	العدد
Short standard essay and MCQ	Large group lecture	K	يشرح السياق السياسي والاجتماعي والاقتصادي الذي كان سائداً في العراق بعد حرب الخليج الثانية وكيف ساهم في تهيئة الظروف لاندلاع الانتفاضة الشعبانية كرد فعل شعبي على ضعف النظام وتدايعات الحرب.	1AlCr 2.2
Short standard essay and MCQ	Large group lecture	K	يحلل الأسباب التي أدت إلى فشل الانتفاضة الشعبانية في تحقيق أهدافها، مع التركيز على العوامل الداخلية (مثل التنسيق والقيادة) والخارجية (مثل موقف القوى الدولية) التي ساهمت في إخمادها.	1AlCr 2.3
المقابر الجماعية وتحديد امكانها وفق التسلسل الزمني 1963م				
Short standard essay and MCQ	Large group lecture	K	يذكر المعلومات المتاحة حول المواقع التي يُحتمل وجود مقابر جماعية تعود إلى أحداث عام 1963 في العراق، مع التركيز على المناطق التي شهدت عمليات اعتقال وإعدام واسعة النطاق بعد الانقلاب.	1AlCr 3.1
Short standard essay and MCQ	Large group lecture	K	يحلل التحديات والصعوبات التي تواجه جهود تحديد مواقع المقابر الجماعية التي تعود إلى عام 1963 بعد مرور عقود طويلة على تلك الأحداث، مع الأخذ في الاعتبار العوامل الجغرافية والسياسية والاجتماعية.	1AlCr 3.2
المقابر الجماعية وتحديد امكانها وفق التسلسل الزمني 1980-1988م				
Short standard essay and MCQ	Large group lecture	K	يذكر الأحداث الرئيسية التي وقعت في العراق خلال الفترة الممتدة من 1980 إلى 1988 (الحرب العراقية الإيرانية وحملات القمع الداخلية)، مع تحديد المناطق التي يُحتمل وجود مقابر جماعية مرتبطة بتلك الأحداث.	1AlCr 4.1
Short standard essay and MCQ	Large group lecture	K	يشرح كيف أدت الحرب العراقية الإيرانية وحملات القمع التي شنها النظام خلال تلك الفترة إلى زيادة حالات القتل والإخفاء القسري، مما أدى بدوره إلى ظهور المقابر الجماعية في مناطق النزاع والمناطق التي شهدت عمليات إعدام.	1AlCr 4.2
Short standard essay and MCQ	Large group lecture	K	يقيم التحديات التي تواجه جهود تحديد مواقع المقابر الجماعية التي تعود إلى فترة الحرب العراقية الإيرانية، مع الأخذ في الاعتبار اتساع نطاق النزاع وطول مدته والتغيرات الجيولوجية التي طرأت على المناطق المتأثرة.	1AlCr 4.3
المقابر الجماعية وتحديد امكانها وفق التسلسل الزمني 1983م				

Short standard essay and MCQ	Large group lecture	K	يذكر الأحداث والعمليات العسكرية أو حملات القمع الرئيسية التي وقعت في العراق خلال عام 1983 والتي يُحتمل ارتباطها بظهور مقابر جماعية، مع تحديد المناطق التي شهدت نشاطاً عسكرياً مكثفاً أو عمليات اعتقال وإعدام واسعة النطاق في ذلك العام.	1AlCr 5.1
طريقة التقييم	طريقة التعليم والتعلم	Domain K/S/A/C	الاهداف التعليمية	العدد
Short standard essay and MCQ	Large group lecture	K	يستخدم المعلومات المتاحة حول مسار العمليات العسكرية والنزاعات الإقليمية خلال عام 1983 لتحديد المناطق التي يُرجح أن تكون مواقع لمقابر جماعية محتملة لضحايا تلك الأحداث، مع الأخذ في الاعتبار طبيعة المعارك والمناطق المتأثرة بشكل خاص في ذلك العام.	1AlCr 5.2
Short standard essay and MCQ	Large group lecture	K	يقيم التحديات الخاصة بتحديد مواقع مقابر جماعية تعود تحديداً إلى عام 1983 ضمن سياق الحرب الطويلة، مع الأخذ في الاعتبار تداخل الأحداث وصعوبة عزل تأثيرات عام واحد على ظهور المقابر الجماعية.	1AlCr 5.3
المسؤولية الجنائية للطبيب في القانون العراقي				
Short standard essay and MCQ	Large group lecture	K	تعريف المسؤولية الجنائية للطبيب في القانون العراقي وتحديد أركانها (الركن المادي، الركن المعنوي، الرابطة السببية).	1AlCr 6.1
Short standard essay and MCQ	Large group lecture	K	تعداد القوانين العراقية التي تنظم المسؤولية الجنائية للطبيب (قانون العقوبات، قانون حماية الأطباء، قانون مزاولة مهنة الطب، قانون الصحة العامة).	1AlCr 6.2
Short standard essay and MCQ	Large group lecture	K	تعداد صور الجرائم التي يمكن أن يُسأل عنها الطبيب في القانون العراقي (القتل الخطأ، الإيذاء الخطأ، الامتناع عن تقديم العلاج، إجراء عمليات بدون موافقة، إقضاء الأسرار الطبية).	1AlCr 6.3
المسؤولية الجنائية للطبيب في الفقه الإسلامي				
Short standard essay and MCQ	Large group lecture	K	تحديد مبدأ الإباحة المشروطة في الفقه الإسلامي لعمل الطبيب وشروطه الأساسية (الإذن، الأهلية، عدم الضرر أو المخالفة الشرعية).	1AlCr 7.1
Short standard essay and MCQ	Large group lecture	K	تعداد الحالات التي يُسأل فيها الطبيب جنائياً في الفقه الإسلامي (الإهمال، العمل بدون إذن، عدم الإبلاغ عن الخطر).	1AlCr 7.2
Short standard essay and MCQ	Large group lecture	K	توضيح أحكام الدية والقصاص في الفقه الإسلامي في سياق المسؤولية الجنائية للطبيب.	1AlCr 7.3

