M. ISLAM DENTAL COLLEGE

GUJRANWALA

FOUNDATION BLOCK
MODULE- VII, VIII, IX

FIRST YEAR BDS, ACADEMIC SESSION 2026-27

BLOCK: III
Academic Year: 2026-27
Duration: 12 Weeks

DISCLAIMER

- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
- However, students are advised to use it as a guide for respective modules.
- It is to declare that the learning objectives (general and specific) and the distribution of assessment tools (both theory and practical) are obtained from M. Islam Dental College Gujranwala. These can be obtained from: https://www.uhs.edu.pk/
- The time tables are for guiding purpose. It is to advise that final timetables are always displayed over the notice boards of each lecture hall.
- Students are encouraged to provide feedback via module coordinator.

Vision of UHS

"UHS is a leading University aiming to keep its graduates apt with the ever-emerging global health challenges, evolving educational methodologies, and emerging technological advancements to maintain its distinguishable position as a Medical University."

Mission of MIDC

To emerge as a globally acclaimed institute that prepares compassionate, knowledgeable & skilled dental professionals excelling in innovative research, patient care & community service

Program Outcomes:

At the end of the BDS program, the dental graduate should be able to:

1. **Clinical Competence:** Graduates will demonstrate essential clinical skills, knowledge, and attitude to provide safe, effective, and ethical dental care to diverse populations.
2. **Community-Oriented Care:** Students will develop a commitment to serving underserved communities, understanding the specific oral health challenges faced by Pakistan's population, and contributing to public health initiatives.
3. **Ethical and Professional Conduct:** Graduates will uphold high standards of ethical practice, showing respect, empathy, and accountability in all patient and professional interactions.
4. **Lifelong Learning:** Graduates will embrace lifelong learning, continually updating their skills and knowledge to keep pace with advances in dental science and technology.
5. **Leadership and Collaboration:** Students will be prepared to take on leadership roles within healthcare teams, collaborating effectively with other professionals to enhance patient care.
6. **Research and Innovation:** Graduates will engage in or support research and innovation in dental science, contributing to evidence-based practices that advance oral health in Pakistan.

Module Committees

Sr.no	Name	Department & Designation	Role
1.	Prof. Dr. Rana Modassir	Principal	Curriculum Director
2.	Assist. Prof. Dr M. Saif Ullah	HOD, DME	Assistant curriculum Director
3.	Prof Dr Raheela	Assoc. Professor Oral Biology	Coordinator Block-III
Module Team			
4.	Dr. Shahid Saeed	Professor Physiology	Member
5.	Dr Saveela Sadaqat	AP Biochemistry	Member
6.	Dr. Uzma Riaz	Professor Pharmacology	Member
7.	Dr Shamsa Mohsin	Professor Anatomy	Member
8.	Dr. Rabia Asad	Professor Community Dentistry	Member
9.	Dr. Afshan Khattak	Professor General Pathology	Member
10.	Dr. M. Azam	Assistant Professor G. Medicine	Member
11.	Dr. Sobia Siddique	Professor Oral Pathology	Member
12.	Dr. Nivish	DME	Developer Block-III

Introduction to Study Guide

It is an aid to Inform students how student learning program of the module has been organized, to help students organize and manage their studies throughout the module and guide students on assessment methods, rules and regulations.

The Study Guide:

- Communicates information on organization and management of the module.
- This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as lectures, small group teachings.

Module Outcomes:

- Provides a list of learning resources such as books, computer-assisted learning programs, web links, and journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's performance.

Achievement of Objectives:

- Focuses on information pertaining to examination policy, rules and regulations.

Students will experience an integrated curriculum.

Integrated Curriculum:

An integrated curriculum is all about making connections, whether to real life or across the disciplines, about skills or about knowledge. An integrated curriculum fuses subject areas, experiences, and real-life knowledge together to make a more fulfilling and tangible learning environment for students. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples. Case based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab are characteristics of integrated teaching program.

Teaching and learning strategies

The following teaching / learning methods are used to promote better understanding:

1. Interactive Lectures
2. Small Group Discussion
3. Practical
4. Skills session in skill labs
5. Case-Based Learning (tutorials)
6. Directed Self-Learning

- **Interactive lectures:**
  An interactive lecture is an easy way for instructors to intellectually engage and involve students as active participants in a lecture - based class of any size.

- **Small group discussion (SGD):**
  Students learn from each other. Everyone gets more practice at expressing their ideas. A two-way discussion is almost always more creative than individual thoughts. Social skills are practiced in a 'safe' environment e.g. tolerance, cooperation.

- **Skills session:**
  Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Laboratories of various departments.

- **Case Based Learning (CBL):**

  A small group discussion format where learning is focused on a series of questions based on a clinical scenario. Students discuss and answer the questions by applying relevant knowledge gained previously in clinical and basic health sciences during the module and construct new knowledge. The CBD will be provided by the concerned department. It is an active learning & teaching strategy which promotes application of foundational knowledge in relevant clinical scenarios.

- **Directed Self-learning (DSL):**
  Directed Self-learning, which involves studying with indirect supervision in a classroom/Library, is a valuable way to learn and is quickly growing in popularity among parents and students.
  Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Centre, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

BLOOD AND CARDIOVASCULAR SYSTEM
MODULE 07

GROSS ANATOMY				
TOPIC	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Circulatory System	Describe the Blood components.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the structure of heart wall and functioning of heart.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Classify and exemplify various types of blood vessels.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe and exemplify various types of anastomoses	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe three circulatory routes.	LGIS	C1	MCQS, SEQS, OSPE, OSVE
	Define portal system and describe its two varieties.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe the vascular supply of blood vessels.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe various components of lymph vascular system.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Phlebotomy	Describe the boundaries and contents of cubital fossa.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the clinical significance of cubital fossa: taking blood pressure and collecting blood sample.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Phlebotomy	Describe the superficial veins, muscles, nerves and vessels of flexor/anterior compartment of forearm.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe the clinical significance of median forearm vein.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Phlebotomy	Describe the superficial veins, muscles, tendons, vessels and nerves of dorsum of hand.	LGIS	C2	MCQS, SEQS, OSPE, OSVE

	Describe the boundaries, contents and clinical importance of anatomical snuff box.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the clinical importance of dorsal venous arch, cephalic and basilic veins.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
BIOCHEMISTRY				
TOPIC	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Chemistry & classification of amino acids	Define Zwitter ion and isoelectric pH.	LGIS	C1	MCQS, SEQS, OSPE, OSVE
Classification of proteins	Define limiting amino acids and provide suitable examples of limiting amino acids.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
PEM	Understand the nutritional importance of proteins and correlate this information to protein energy malnutrition.	LGIS/SGD	C3	MCQS, SEQS, OSPE, OSVE
	Compare and contrast the salient features of kwashiorkor and marasmus.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Conjugated Proteins	Define conjugated proteins and provide suitable examples of conjugated proteins in the human body (lipoproteins, glycoproteins, nucleoproteins, chromoproteins, and metalloproteins).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Structural organization of proteins	Elaborate the role of chaperones in protein folding.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Protein misfolding	Briefly describe the consequences of protein misfolding (Alzheimer's disease and prion diseases).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Protein structure & denaturation	Differentiate between denaturation and coagulation.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Plasma proteins	Enlist the functions and give the clinical importance of plasma proteins (albumin, fibrinogen, and transferrin).	LGIS	C1	MCQS, SEQS, OSPE, OSVE
Immunoglobulin classes and their	Draw and label the general structure of an antibody.	LGIS	C3	MCQS, SEQS, OSPE, OSVE

functions	Enlist five major types of immunoglobulins and give functions/significance of each class separately.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Lipid metabolism	Explain the process of beta-oxidation of fatty acids and how it contributes to ATP production during sustained, low-intensity exercise.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Eicosanoids	Define eicosanoids.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Outline classification and biomedical importance of eicosanoids.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist functions of prostaglandins, leukotrienes and thromboxanes.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain how low-dose aspirin therapy helps in the management of patients with IHD.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
PHYSIOLOGY				
BLOOD				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Resistance of the Body to Infection: I. Leukocytes, Granulocytes, the Monocyte-Macrophage System, and Inflammation	Enumerate the types of white blood cells along with their normal blood count.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss their site of genesis.	LGIS	C2	
Resistance of the Body to Infection: I. Leukocytes, Granulocytes, the MonocyteMacrophage System, and Inflammation	Describe the characteristics and functions of Neutrophils.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Explain the process of phagocytosis and lysis of invading agent by neutrophils.	LGIS/SGD	C2	
	Explain the process of phagocytosis and lysis of invading agent by macrophages.	LGIS	C2	
	Explain the process of opsonization.	LGIS	C2	
	Describe the process of inflammation.	LGIS	C2	
	Enlist different lines of defense during inflammation.	LGIS	C2	
Resistance of the Body to Infection:	Explain the process of Migration of neutrophils from the blood into inflamed tissue.	LGIS	C2	MCQS, SEQS, OSPE, OSVE

I. Leukocytes, Granulocytes, the Monocyte-Macrophage System, and Inflammation	Explain the functions of eosinophils and basophils.	LGIS	C2	
	Give normal lifespan of white blood cells.	LGIS	C2	
Resistance of the Body to Infection II : Immunity & Allergy	Classify lymphocytes.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Classify T lymphocytes and enlist their salient functions.	LGIS	C2	
	Define immunity.	LGIS	C2	
	Describe innate immunity.	LGIS	C2	
	Describe and classify acquired immunity.	LGIS	C2	
	Define passive immunity.	LGIS	C2	
Specific attributes of the B-lymphocyte system— humoral immunity and antibodies	Discuss the role of T cells and B cells in acquired immunity.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Define plasma cells.	LGIS/SGD	C2	
	Describe the structure of antigen and immunoglobulin.	LGIS	C2	
	Enlist types of immunoglobulins.	LGIS	C2	
	Describe the mechanism of direct action of antibodies.	LGIS	C2	
Blood Types; Transfusion	Enumerate different blood group types.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the basis of ABO and Rh blood system.	LGIS/SGD	C2	
	Discuss the features and complications of mismatched blood transfusion reaction.	LGIS	C2	
	Enlist the Hazards of blood transfusion.	LGIS	C2	
	Discuss the pathophysiology, features and treatment of Rh incompatibility.	LGIS	C3	

HEART				
Topic	**Specific Learning Objectives**	**Teaching**	**Levels**	**Assessment**

Hemostasis and Blood Coagulation	Define hemostasis.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist and explain the mechanisms that secure hemostasis.	LGIS	C2	
	Give characteristics and functions of platelets.	LGIS	C2	
	Mention normal platelet count in blood and life span of platelets.	LGIS	C2	
	Explain the steps involved in formation of primary platelet plug to seal small vascular holes Define thrombocytopenia.	LGIS	C2	
	Enlist causes of thrombocytopenia.	LGIS	C2	
	Explain consequences of thrombocytopenia.	LGIS	C2	
	Enlist the clotting factors in blood. Name vitamin K dependent clotting factors.	LGIS	C2	
	Explain the Intrinsic & extrinsic clotting pathway.	LGIS	C2	
	Describe mechanism of clot formation after injury.	LGIS	C2	
	Name and give mechanism of anticoagulants (heparin, oxalate & citrate) used in laboratory.	LGIS	C2	
Conditions that cause excessive bleeding in humans	Enlist and explain the conditions that cause excessive bleeding (Vitamin K deficiency, Hemophilia, Thrombocytopenia)	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Define Prothrombin time and mention its significance.	LGIS	C2	

		strategy	C/P/A	
Cardiac Muscle; The Heart as a Pump and Function of the Heart Valves	Explain the physiological anatomy of cardiac muscle.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe and draw the phases of action potential of ventricle.	LGIS	C2	
Rhythmical Excitation of the Heart	Describe and draw the phases of action potential of SA node along with explanation of the mechanism of selfexcitation/ Auto rhythmicity of SA node.	LGIS	C2	

	Draw and explain the conducting system of heart	LGIS	C2	
Cardiac Muscle; The Heart as a Pump and Function of the Heart Valves	Describe the mechanism of excitation-contraction coupling in cardiac muscle.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Draw & explain pressure & volume changes of left ventricle during cardiac cycle.	LGIS/SGD	C2	
	Define & give the normal values of the cardiac output, stroke volume, end diastolic volume, end systolic volume and venous return	LGIS/SGD	C2	
	Describe the mechanism of excitation-contraction coupling in cardiac muscle.	LGIS	C2	
	Draw & explain pressure & volume changes of left ventricle during cardiac cycle.	LGIS	C2	
	Define & give the normal values of the cardiac output, stroke volume, end diastolic volume, end systolic volume and venous return	LGIS	C2	
	Describe the Frank starling mechanism.	LGIS	C2	
	Describe the autonomic regulation of heart pumping. Describe the effect of potassium, calcium ions & temperature on heart function.	LGIS		
Fundamentals of Electrocardiography	Define Electrocardiogram.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist, draw, and explain the physiological basis & give durations of waves, intervals, and segments of normal ECG.	LGIS/SGD		
Cardiac Arrhythmias	Define tachycardia and enlist its causes.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Define bradycardia and enlist its causes.	LGIS		
	Define sinus arrhythmia and its physiological basis.	LGIS		

CIRCULATION

Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Overview of the Circulation Nervous Regulation of the Circulation	Explain the functional parts of circulation (arteries, arterioles, capillaries, veins, venules).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Mention the pressures in systemic & pulmonary circulation.	LGIS	C2	

	Describe nervous regulation of blood vessels and functioning of vasomotor centers.	LGIS	C2	
	Explain vasovagal syncope.	LGIS	C2	
The Microcirculati on and Lymphatic System: Capillary Fluid Exchange, Interstitial Fluid, and Lymph Flow	Identify vessels constituting microcirculation.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enumerate starling forces (hydrostatic and osmotic forces) and explain their role in capillary filtration and formation of interstitial fluid.	LGIS	C2	
	Define edema.	LGIS	C2	
Local and Humoral Control of Tissue Blood Flow	Describe local control of blood flow in response to tissue needs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss role of Humoral factors in control of blood flow.	LGIS	C2	
	Explain acute mechanism of local blood flow control (tissue metabolism & oxygen/nutrient demand).	LGIS	C2	
	Describe autoregulation of blood flow during changes in arterial pressure—(metabolic and myogenic mechanisms).	LGIS	C2	
Clinical methods for measuring systolic and diastolic pressures	Define blood pressure and its two primary determinants (cardiac output and total peripheral resistance).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Define pulse pressure and mean arterial pressure.	LGIS	C2	
	Give normal blood pressure value and mean arterial pressure value.	LGIS	C2	
Primary (essential) Hypertension	Define hypertension.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Cardiac Output, Venous Return, and Their Regulation	Define Cardiac output and venous return. Give their normal values.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist and explain factors that affect cardiac output and venous return.	LGIS		

Nervous regulation of the circulation and rapid control of arterial pressure	Describe role of the nervous system in rapid control of arterial pressure.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enumerate nervous reflex mechanisms for regulation of blood pressure.	LGIS	C2	
	Explain the role of baroreceptors in regulation of arterial blood pressure. Explain the role of chemoreceptors in regulation of arterial blood pressure	LGIS	C2	
	Explain CNS ischemic response.	LGIS	C2	
	Explain Cushing reaction.	LGIS	C2	
Role of the kidneys in long- term control of arterial pressure	Describe role of renin-angiotensin aldosterone mechanism in blood pressure regulation.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain stress relaxation and capillary fluid shift.	LGIS	C2	
	Enlist immediate (seconds to minutes), intermediate (after several minutes) and long-term mechanism of blood pressure regulation.	LGIS	C2	
Role of the kidneys in long- term control of arterial pressure	Define & enlist different types of shock.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the causes, features, and pathophysiology of hypovolemic/hemorrhagic shock.	LGIS/SGD	C3	
	Explain the causes, features, and pathophysiology of septic shock.	LGIS/SGD	C2	
	Explain the causes, features, and pathophysiology of neurogenic shock.	LGIS	C2	
	Explain the causes and features of anaphylactic shock.	LGIS	C2	
	Explain cardiogenic shock	LGIS	C2	
Circulatory shock & it's treatment	Explain stages of shock.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist & explain compensatory mechanisms during non-progressive shock.	LGIS		
The Coronary Circulation and Ischemic Heart	Define angina pectoris and myocardial infarction.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE

Disease				
Heart valves and heart sounds	Enlist the different types of heart sounds and explain the physiological basis of each Heart sounds.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist the causes of 3rd and 4th heart sounds.	LGIS	C2	
	Define murmur.	LGIS	C2	

PATHOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Disorders of WBCs	Define white blood cell (WBC) disorders and classify them into benign and malignant types.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Recognize the causes of reactive leukocytosis (infections, stress, inflammation) that result in elevated WBC counts and its impact on planning and postoperative healing in dental patients.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Differentiate between reactive and neoplastic WBC disorders based on clinical and laboratory findings.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the pathophysiology of leukemoid reactions and leukemias.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Disorders of WBCs	Differentiate between reactive and neoplastic WBC disorders based on clinical and laboratory findings.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Explain the pathophysiology of leukemoid reactions and leukemias.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Immunology	Define the clinical aspects of innate and acquired immunity, including active and passive immunity.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE

	List the types of immune cells, such as phagocytes, T cells, B cells, and NK cells, and explain their roles in immunity and disease progression.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the complement activation pathways(classical, alternative, and lectin)	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Immunology	List the types of antibodies (IgG, IgA, IgM, IgE, IgD) and discuss their relevance in hypersensitivity reactions.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Hypersensitivity reactions	Explain the types and pathogenesis of hypersensitivity reactions (Type I–IV) and their implications in dental conditions like latex allergies, drug reactions, and autoimmune oral lesions.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Blood grouping & complications of blood transfusion	Define the principles of ABO and Rh blood grouping systems.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	State the importance of compatibility testing, including crossmatching, for safe transfusions.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Identify scenarios in dentistry where blood grouping knowledge is essential, such as surgeries or trauma management.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Hemodynamic disorders	Define thrombosis, embolism, infarction, and hemorrhage as hemodynamic disorders relevant to systemic and oral health.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the types of thrombosis, including arterial and venous, and their potential impact on dental procedures, such as delayed healing or increased bleeding risks.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss the pathophysiology of thrombosis, focusing on Virchow's triad (endothelial injury, stasis, and hypercoagulability), and its relevance to dental patients with cardiovascular disorders.	LGIS	C2	MCQS, SEQS, OSPE, OSVE

Hemodynamics	Explain the mechanisms and clinical features of embolism, including pulmonary and systemic embolism.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the pathophysiology of embolism, including detachment of thrombi and subsequent vascular occlusion, and its potential effects on oral tissues or emergency scenarios during dental care.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Outline the types of infarctions (white and red) and their effects on oral tissues, such as necrosis or ischemic lesions.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the pathophysiology of infarction, focusing on ischemia and necrosis in oral and systemic contexts.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Hemodynamics & platelet bleeding disorder	Define bleeding disorders and their relevance to clinical dentistry.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Classify bleeding disorders into vascular, platelet, coagulation, and mixed types.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist causes of thrombocytopenia, such as decreased production, increased destruction, or sequestration of platelets.	LGIS	C1	MCQS, SEQS, OSPE, OSVE
Hemodynamics	List first-line laboratory investigations for bleeding disorders, including complete blood count (CBC), platelet count, bleeding time (BT), clotting time (CT), prothrombin time (PT), activated partial thromboplastin time (aPTT), and international normalized ratio (INR).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss interpretation of laboratory findings and their clinical correlation in diagnosing bleeding disorders (platelet & coagulation related disorder) in dental patients.	LGIS	C3	MCQS, SEQS, OSPE, OSVE

Microbiology of blood relevance & implications in dentistry	Apply knowledge of Streptococcus viridans and Staphylococcus aureus to recognize their role in infective endocarditis and bacteremia, and their implications for dental care.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Recognize oral manifestations of HIV, including candidiasis, hairy leukoplakia, and periodontal disease, in immunosuppressed patients.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Identify oral ulcerations caused by Cytomegalovirus (CMV) or Epstein-Barr Virus (EBV) in immunocompromised individuals.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Apply infection control protocols to prevent crosscontamination and transmission of bloodborne pathogens and parasites during dental procedures.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
CVS				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Haemodynamics	Define and classify types of shock (hypovolemic, cardiogenic, septic) and evaluate their pathophysiology and relevance in dental emergencies.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Microbiology related to CVS & Dentistry	Correlate septicemia caused by cardiovascular pathogens (e.g., Staphylococcus aureus, Pseudomonas aeruginosa) with oral manifestations such as petechiae or splinter hemorrhages.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Identify microbial causes of myocarditis, such as Coxsackievirus and their systemic effects influencing dental care.	LGIS	C2	MCQS, SEQS, OSPE, OSVE

	Assess the role of oral pathogens like Treponema denticola and Porphyromonasgingivalis in contributing to cardiovascular diseases, including atherosclerosis, and integrate this knowledge into periodontal therapy.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
PHARMACOLOGY				
BLOOD				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Anticoagulants	Classify anti-clotting drugs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Compare their usefulness in venous and arterial thrombosis.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the mechanisms of action, clinical uses and adverse effects of anticoagulants.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Compare Unfractionated heparin, LMW heparins and oral anticoagulants.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Compare and contrast the mechanism of action, clinical uses, and toxicities of the oral anticoagulants (warfarin, rivaroxaban, and dabigatran).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the pharmacokinetic and pharmacodynamic drug interactions of Warfarin.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe the mechanisms of action, clinical uses and adverse effects of antiplatelet drugs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Illustrate where the 4 major classes of antiplatelet drugs act.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Differentiate between Clopidogrel and Ticlopidine.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss the mechanism of action, clinical uses, adverse effects and contraindications of Thrombolytics.	LGIS	C2	MCQS, SEQS, OSPE, OSVE

	Tabulate differences between Streptokinase & recombinant tissue plasminogen activators.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Classify and give clinical uses of various iron preparations along with their adverse effects.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
CVS				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Antihypertensive drugs-I **ACE inhibitors, AT receptor antagonist, Direct acting vasodilators**	Classify vasodilators on the basis of site, route and mechanism of action.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the pharmacokinetic properties and side effects of vasodilators.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Classify the drugs acting on renin-angiotensin aldosterone system (RAAS).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain their mechanisms of action, clinical indications, adverse effects and contraindications.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Antihypertensive drugs-II Sympatholyti c drugs, Diuretics, Ca++ Channel Blockers	Classify antihypertensives according to site and mechanism of action.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the role of sympatholytic drugs in hypertension.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Recall the role of diuretics in hypertension.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Recount the relevance of calcium channel blockers in hypertension.	LGIS/SGD	C3	MCQS, SEQS, OSPE, OSVE
	Tabulate the compensatory mechanisms of antihypertensive drugs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Anti-anginal drugs	Classify the drugs used in the management of angina pectoris.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe important pharmacokinetic aspects of nitrates.	LGIS	C3	MCQS, SEQS, OSPE, OSVE

	Explain mechanism of action of nitrates.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Give pharmacological basis for the use of nitrates in angina.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enumerate adverse and toxic effects of nitrates.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Drug treatment for heart Failure	Explain briefly the pathophysiology of heart failure.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Recall the compensatory mechanisms in a failing heart.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Outline a treatment plan for patients with compensated or decompensated CHF.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist major drug groups used for management of congestive heart failure.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the role of diuretics, angiotensin-converting enzyme inhibitors and beta blockers, in treating patients with congestive heart failure.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Drug treatment for heart Failure	Discuss digoxin and its use in long-term management of congestive heart failure.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the mechanism of action of Digoxin.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Recount the mechanical and electrical effects of Digoxin. Enumerate and explain the clinical uses of Digoxin.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe the important side-effects, contraindications & drug interactions of Digoxin.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the treatment and management of digitalis toxicity.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Anti-arrythmic drugs	Classify anti-arrhythmic drugs.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE

	Describe cardiac, noncardiac effects of class I drugs (all subgroups).	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Enumerate therapeutic uses and major side-effects of all class I antiarrhythmic drugs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the important antiarrhythmic actions of class II drugs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enumerate clinical indications and side-effects of class II drugs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the actions, uses and side-effects of class III drugs(amiodarone).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the actions, uses and adverse effects of calcium channel blockers (class IV drugs).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe briefly the salient features of adenosine as an antiarrhythmic and its toxicity.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Antifibrinolytics	Describe the mechanism of action, indications/clinical uses and adverse effects of tranexamic acid and aminocaproic acid	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Analgesics	Identify cardiovascular risks associated with NSAID use and briefly explain the underlying pharmacological mechanisms.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the antiplatelet mechanism of action of lowdose aspirin and its role in the prevention of myocardial infarction	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Differentiate between the use of low-dose and highdose aspirin in cardiovascular vs. anti-inflammatory indications.	LGIS	C2	MCQS, SEQS, OSPE, OSVE

PRACTICALS				
ANATOMY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**

Arteries	Identify under light microscope/ draw and label arteries	Practical/Lab	C3/P	OSPE
Veins	Identify under light microscope/ draw and label veins and capillaries	Practical/Lab	C3/P	OSPE
Infection control & PPE in clinical practice	Demonstrate proper hand hygiene and use of personal protective equipment (PPE) during preparation for the procedure.	Practical/Lab	C2/P	OSPE
Venous access site & identification	Identify appropriate venous access sites on a simulation model using surface anatomy and vein palpation techniques.	Practical/Lab	C2/P	OSPE
IV Cannulation procedure	Perform intravenous cannulation on a simulation arm model, including: Patient preparation and positioning, Tourniquet application, Site cleaning and asepsis, Cannula insertion, flashback confirmation, and securing the IV line, Disposal of sharps and used materials.	Practical/Lab	C3/P	OSPE
Post IV cannulation Care & Complications management	Manage post-procedure care, including documentation, patient monitoring, and recognizing signs of infiltration or complications.	Practical/Lab	C3/P	OSPE
Effective patient and team communication	Communicate effectively and empathetically with simulated patients or team members before, during, and after the procedure.	Practical/Lab	C2/P	OSPE
Professional conduct in clinical skills	Demonstrate confidence and competence in performing the procedure under faculty supervision.	Practical/Lab	C2/P	OSPE
IV Access in Dental Medical Emergencies	Reflect on the importance of IV access in medical emergencies related to dental practice (e.g., anaphylaxis, hypoglycemia, cardiac emergencies).	Practical/Lab	C2/P	OSPE
BIOCHEMISTRY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Introduction to Laboratory techniques	Understand the principle, procedure and uses of electrophoresis (demonstration only).	Practical/Lab	C3/P	OSPE
Plasma proteins	Describe the types of plasma proteins and explain their general functions.	Practical/Lab	C2/P	OSPE
Plasma proteins	Describe serum albumin and globulins and explain their biological roles in the human body.	Practical/Lab	C3/P	OSPE
Lipid profile	List the components of a lipid profile and describe the significance of cardiac enzyme markers (TropT,	Practical/Lab	C2/P	OSPE

	CKMB) in cardiovascular health.			
PHYSIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Blood Grouping Awareness in Clinical Dentistry	Observe the demonstration of blood grouping procedure and explain its clinical relevance in dental practice, including its role in managing medical emergencies.	Practical/Lab	C2/P	OSPE
Bleeding Time Awareness in Clinical Dentistry	Observe the demonstration of bleeding time measurement and explain its importance in assessing bleeding risk in dental procedures.	Practical/Lab	C2/P	OSPE
Clotting Time Awareness in Clinical Dentistry	Observe the demonstration of clotting time measurement and explain its relevance to safe dental practice.	Practical/Lab	C2/P	OSPE
ECG Waveform Recognition	Observe and identify the normal waveforms and intervals on a sample ECG tracing.	Practical/Lab	C2/P	OSPE
ECG-Based Heart Rate Calculation	Calculate heart rate from a provided normal ECG tracing and describe its clinical significance.	Practical/Lab	C2/P	OSPE
Cardiac Examination Basics	Demonstrate how to locate and palpate the apex beat on a simulation model or peer under supervision.	Practical/Lab	C2/P	OSPE
Cardiac Auscultation Basics	Demonstrate the correct method to auscultate the precordium for heart sounds under supervision.	Practical/Lab	C2/P	OSPE
Blood Pressure Measurement Techniques	Demonstrate blood pressure measurement using palpatory and auscultatory methods in the sitting position under supervision.	Practical/Lab	C2/P	OSPE
Postural Influence on Blood Pressure	Demonstrate the effect of posture on blood pressure measurement under supervision.	Practical/Lab	C2/P	OSPE
Pulse Examination Awareness	Observe and describe the radial pulse characteristics, including rate, rhythm, and volume, under supervision.	Practical/Lab	C2/P	OSPE
Basic Life Support (BLS) Introduction	Demonstrate the basic steps of cardiopulmonary resuscitation (CPR) on a simulation model under supervision.	Practical/Lab	C2/P	OSPE

PATHOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Disorders of WBCs	Perform differential WBC count and correlate findings with clinical cases of leukocytosis or leukopenia. (Practical) Identify oral manifestations of WBC disorders (e.g., gingival bleeding, delayed wound healing. Demonstrate infection control measures for patients with compromised immunity.	Practical/Lab	C3/P	OSPE
Immunology	Demonstrate skin prick testing for Type I hypersensitivity reactions. Identify oral manifestations of autoimmune diseases.	Practical/Lab	C2/P	OSPE
Blood grouping & Transfusion Complications	Perform blood typing and crossmatching procedures.	Practical/Lab	C2/P	OSPE
	Recognize clinical signs of transfusion reactions and their emergency management.		C2/P	
	Identify scenarios in dentistry requiring knowledge of blood grouping (e.g., trauma management.		C2/P	
Haemodynamic disorders	Identify clinical signs of thrombosis, embolism, or hemorrhage during oral examinations.	Practical/Lab	C2/P	OSPE
	Interpret lab findings related to coagulation profiles(e.g., INR, PT, aPTT).		C2/P	
	Manage dental patients on anticoagulant therapy to minimize bleeding risks.		C3/P	

PHARMACOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**

Pharmacological Consideration s in Dental Practice	Describe the common classes of antihypertensive and anticoagulant medications and their relevance to dental care.	Practical/Lab	C2/P	OSPE
Drug Interactions and Procedural Modifications	Identify potential drug interactions and describe the importance of modifying dental procedures for patients on these medications.	Practical/Lab	C3/P	OSPE

GASTRO INTESTINAL TRACT
MODULLE 08

THEORY				
ANATOMY				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Oral Cavity Anatomy	Describe the parts and boundaries of oral cavity.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Tongue Structure and Vascular Supply	Describe the anatomical features of tongue with emphasis on its musculature, vascular supply and lymphatic drainage.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Extracranial Cranial Nerve Anatomy and Lesions	Describe the extracranial course, distribution and branches of nerves with special reference to their lesions: Trigeminal, Glossopharyngeal, Hypoglossal, Vagus.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Palate Anatomy and Neurovascular Supply	Describe the anatomical features of hard and soft palate with their neurovascular supply.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Muscles of Soft Palate	Describe the attachments of muscles of soft palate along with their actions and nerve supply.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Salivary Glands Anatomy and Neurovascular Supply	Describe anatomical features and neurovascular supply of salivary glands.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Parotid Gland Clinical Correlates	Discuss the clinical correlates of parotid gland: Mumps, Frey's syndrome.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Submandibular and Otic Ganglia	Describe the location, roots and distribution of submandibular and otic ganglia.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Pharynx Anatomy and Neurovascular Supply	Name the parts of pharynx giving their extent, anatomical features, structure and neurovascular supply.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Muscles of Pharynx	Describe the attachments of muscles of pharynx along with their actions and nerve supply.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Palatine Tonsil	Discuss the location, anatomical features	LGIS	C3	MCQS, SEQS,

Anatomy and Vascular Supply	and vascular supply of palatine tonsils.			OSPE, OSVE
Piriform Fossa and Tonsils Clinical Correlates	Discuss the clinical correlates of piriform fossa and tonsils: Adenoids, Quincy, Tonsilitis.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Waldeyer's Ring of Lymphatic Tissue	Enlist the structures forming the Waldeyer's ring of lymphatic tissue.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Cervical Esophagus Anatomy and Neurovascular Supply	Describe the anatomical features of cervical part of esophagus with its neurovascular supply.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
HISTOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Oral Cavity	Describe the light microscopic structure of lip	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the light microscopic structure of lip	LGIS	C2	MCQS, SEQS, OSPE, OSVE
EMBRYOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Oral Cavity	Describe the development of tongue.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
ORAL BIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Oral Mucosa	Describe the introduction to oral mucosa.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Explain the morphological and histological structure of oral mucosa.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe and explain the component tissues and glands of oral mucosa.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enumerate and discuss the details of the nonkeratinocytes in the oral epithelium and lamina propria.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss the vasculature and innervations of oral mucosa along with the structural variations observed in it.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the mucocutaneous junctions in the oral mucosa.	LGIS	C2	MCQS, SEQS, OSPE, OSVE

	Describe the age-related changes in oral mucosa	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Physiology of Taste	Introduction to taste and its different events. What are the major taste support systems?	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss the four basic taste sensations/ taste stimuli	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Elaborate the structure and location of taste buds	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the mechanism of taste	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	What do you know about abnormal taste sensations?	LGIS	C1	MCQS, SEQS, OSPE, OSVE
	Enumerate or enlist the different conditions affecting taste	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Salivary Glands	Describe the development of major & minor salivary Glands.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe the histology of major and minor salivary glands	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Elaborate its changes with age and its clinical considerations	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Saliva	Discuss the mechanism of saliva formation and how the saliva modifies in the duct.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Physiology of Mastication	Define Mastication and what are the structures involved in masticatory movement.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Elaborate chewing cycle of mastication.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	What are the different stages of mastication?	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	What are the different muscles involved in mastication? Give their origin, insertions, innervation, and functions	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Briefly describe the neurological control of mastication.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Physiology of Swallowing	Introduction to the term swallowing and deglutition.	LGIS	C1	MCQS, SEQS, OSPE, OSVE
	What are the stages of swallowing?	LGIS	C2	MCQS, SEQS, OSPE, OSVE

	Elaborate the pathway of swallowing and its neural control.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
PHYSIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
General Principles of GIT Function - Motility, Nervous Control	Describe physiologic anatomy of gastrointestinal tract.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss electrical activity of smooth muscles of GIT.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the mechanism of excitation of smooth muscle of gastrointestinal tract.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Discuss the factors that depolarize and hyperpolarize GI membrane.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Neural control of GIT function (Enteric Nervous system) GIT Hormones	Describe the role of autonomic nervous system in regulation of GIT's function.	LGIS/SGD	C3	MCQS, SEQS, OSPE, OSVE
	Describe enteric nervous system.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe the Meissner's plexus and differentiate between myenteric and Meissner's plexuses	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Enlist the gastrointestinal reflexes & explain the functions of these reflexes.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Give the stimuli, site of release and actions of cholecystokinin, Gastrin, Secretin & Motilin (enteroendocrine cells)	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Differentiate between sympathetic and parasympathetic modulation of the enteric nervous system and the effector organs of the GI tract	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Functional types of movements in the GI tract	Discuss functional movements of GIT (propulsive & mixing)	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Esophagus	Discuss the pathophysiology& features of achalasia & Mega esophagus.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Role of mucous and saliva	Enlist the functions of saliva	LGIS	C2	MCQS, SEQS, OSPE, OSVE

Vomiting Reflex	Describe the stages of vomiting act. Appraise the location and function of vomiting center/ chemoreceptor trigger zone in the brain	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Motor Function of Stomach	Explain motor function of stomach. Explain factors which regulate stomach emptying	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Gastric Secretion	Describe characteristics & functions of the gastric secretions.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Discuss the role of Intrinsic factor from gastric parietal cells	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Pathophysiology of stomach	Define and discuss basic causes of gastritis and Pernicious anemia.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Define & enumerate the causes and pathophysiology of peptic ulcer	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Movements of small intestine General	Enumerate the types of movements taking place in small intestine and mention their function.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	What is peristaltic rush and enteritis?	LGIS	C1	MCQS, SEQS, OSPE, OSVE
Movements of Colon	Enumerate the types of movements taking place in colon and give their functions	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss defecation reflex.	LGIS	C2	MCQS, SEQS, OSPE, OSVE

BIOCHEMISTRY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Saliva	Elaborate the composition and functions of saliva.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Give etiology and clinical features of xerostomia.		C2	
	Suggest the management options for		C3	

	patients suffering from xerostomia.			
	Give biochemical explanation for rampant caries in cases of xerostomia.		C2	
Gastric secretions	Give composition and functions of gastric juice. Correlate chronic use of NSAIDs with development of peptic ulcer	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Pancreatic juice, bile and succus entericus	Give composition and functions of pancreatic juice, bile and succus entericus	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Digestion & Absorption	Describe the mechanism of digestion and absorption of dietary carbohydrates	LGIS/SGD	C3	MCQS, SEQS, OSPE, OSVE
	Give cause, clinical features, diagnosis and management of lactose intolerance.		C2	
	Describe the mechanism of digestion and absorption of dietary proteins.		C3	
	Give the causes and clinical features of: • Hartnup Disease • Cystinuria		C2	
	Explain the process of digestion and absorption of dietary lipids.			

PHARMACOLOGY & THERAPEUTICS				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
APD	Classify the drugs used for the treatment of Acid-Peptic Disease (APD).	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Explain their mechanism of action, uses and adverse effects.		C3	
	Correlate chronic use of NSAIDS with development of peptic ulcer.		C3	
	Write down Tripple and Quadruple regimen for APD.		C2	
Antiemetics & Prokinetics	Classify antiemetics.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the mechanism of action, clinical uses, and adverse effects of metoclopramide.		C3	

	Compare metoclopramide and Domperidone . Name the drugs used in the prevention of chemotherapy- or radiation-induced emesis.		C2	
	List prokinetic agents.		C2	
Laxatives & Antidiarrheals	Classify Laxatives.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Classify antidiarrheals.		C2	

GENERAL PATHOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
GERD	Define heartburn and describe its pathophysiology as a symptom of gastroesophageal reflux disease (GERD).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enumerate the etiology and clinical features of GERD and peptic ulcer disease.		C2	
Peptic ulcer	Define peptic ulcer disease (PUD) and distinguish between gastric and duodenal ulcers. Discuss H. Pylori as Peptic Ulcer Disease causing organism, its epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.	LGIS/SGD	C2	MCQS, SEQS, OSPE, OSVE
	Enlist causes of PUD Explain the pathogenesis of PUD		C2	
IBD	Discuss the pathophysiology of irritable bowel syndrome	LGIS	C2	MCQS, SEQS, OSPE, OSVE
MICROBIOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Oral Lesions	Enlist different organisms causing oral lesions.	LGIS	C1	MCQS, SEQS, OSPE, OSVE
	Briefly discuss HPV, EBV, as disease causing organisms, their epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.		C3	
Diarrhea causing organisms	Define terms as: constipation, Acute Diarrhea &	LGIS	C1	MCQS, SEQS,

	Chronic Diarrhea, Vomiting and Dysentry			OSPE, OSVE
	Enlist different Diarrhea causing organisms.		C1	
	Briefly discuss E. coli with its epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.		C3	
	Briefly discuss Salmonella as diarrhea and typhoid causing organism, its epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.		C3	
ORAL PATHOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Abnormalities of Salivary Secretions	Discuss clinical abnormalities of Salivary secretions.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Give etiology and clinical features of xerostomia.		C1	
Aphthous Ulcers	Define and enlist the types of aphthous ulcers (minor, major, herpetiform). Enlist their distinguishing features.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss the potential etiological factors, including stress, trauma, and nutritional deficiencies.		C3	

COMMUNITY DENTISTRY & PUBLIC HEALTH				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Epidemiology of Obesity & Related issues	Define obesity, classify obesity	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Outline the epidemiology of obesity and related issues in respect of oral health.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Understand hazards, prevention and control of obesity	LGIS	C3	MCQS, SEQS, OSPE, OSVE

PRACTICALS				
MICROSCOPIC ANATOMY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Microscopic structure	Identify under light microscope and draw	Practical/Lab	C2/P	OSPE

of a Lip.	and label the light microscopic structure of lip.			
Microscopic structure of Tongue.	Identify under light microscope and draw and label the light microscopic structure of tongue.	Practical/Lab	C2/P	OSPE
PHARMACOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Preparation of Carminative Mixtures	Demonstrate the preparation and dispensing of three doses of Carminative mixture under supervision.	Practical/Lab	C3/P	OSPE
Preparation of Oral Rehydration Solution	Demonstrate the preparation and dispensing of four doses of ORS solution under supervision.	Practical/Lab	C3/P	OSPE
Preparation of IV Solutions	Demonstrate the preparation of Normal Saline or Dextrose Water solution under supervision.	Practical/Lab	C3/P	OSPE

PHYSIOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Cranial Nerve V (Trigeminal) Examination	Demonstrate the examination of the sensory and motor parts of the Trigeminal nerve under supervision.	Practical/Lab	C2/P	OSPE
Cranial Nerve IX (Glossopharyngeal) Examination	Demonstrate the examination of the sensory and motor parts of the Glossopharyngeal nerve under supervision.	Practical/Lab	C2/P	OSPE
Cranial Nerve X (Vagus) Examination	Demonstrate the examination of the sensory and motor parts of the Vagus nerve under supervision.	Practical/Lab	C2/P	OSPE
Cranial Nerve XII (Hypoglossal) Examination	Demonstrate the examination of the sensory and motor parts of the Hypoglossal nerve under supervision.	Practical/Lab	C2/P	OSPE
ORAL HISTOLOGY & ORAL PHYSIOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Oral Epithelium and Specialized Mucosa	Draw and label the keratinized and non-keratinized oral epithelium, specialized mucosa including tongue papillae and mucocutaneous junction.	Practical/Lab	C2/P	OSPE
Taste Bud Structure and Tongue Sensory Map	Draw and label the histological structure of the taste bud, and mention the specificity of the tongue for different taste sensations.	Practical/Lab	C2/P	OSPE
Tongue Papillae and Taste Bud	Identify in images or slides the histological section of the tongue showing different	Practical/Lab	C1/P	OSPE

Identification	tongue papillae and the location of taste buds.			
Salivary Gland Histology	Draw and label the histological section of major salivary glands, showing serous and mucous acini, serous demilunes, and cells of intercalated, striated, and excretory ducts.	Practical/Lab	C3/P	OSPE
Swallowing Mechanism Stages	Identify the correct stage of swallowing on provided images or models.	Practical/Lab	C2/P	OSPE

OCCLUSION-I
MODULE 09

THEORY				
ORAL BIOLOGY & TOOTH MORPHOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**

Occlusion	Describe the basic concepts of occlusion and its importance and relevance in dentistry.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Deciduous & Permanent incisors.	Describe the crown morphology of deciduous & permanent incisors.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe the key identification points of deciduous & permanent incisors	LGIS	C2	
	Describe the normal root and pulpal morphology of maxillary and mandibular incisors	LGIS	C3	
	Identify and classify common structural anomalies of incisors	LGIS	C2	
	Interpret periapical radiographs of incisors, recognizing normal anatomy and common anomalies.	LGIS	C2	
Deciduous & Permanent Canines	Describe the crown morphology of deciduous & permanent canines	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe the normal root and pulpal morphology of maxillary and mandibular canines	LGIS	C3	
	Describe the key identification points of deciduous & permanent canines	LGIS	C2	
	Identify and classify common structural anomalies of canines	LGIS	C2	
	Interpret periapical radiographs of canines, recognizing normal anatomy and common anomalies.	LGIS	C2	
	Define and differentiate between overjet and overbite, and explain their clinical significance.	LGIS	C2	
Forensic Odontology	Define forensic odontology and explain the significance of forensic odontology in dental identification and legal investigations.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
PRACTICALS				
ORAL BIOLOGY & TOOTH MORPHOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Deciduous & Permanent incisors.	Draw the outlines of all deciduous & permanent incisors: labial, lingual, mesial, distal & incisal aspects	Practical/Lab	C2/P	OSPE
	Label each aspect pointing their morphological features (Incisal corners, marginal ridges, fossa, cingulum, pit, developmental depressions, imbrication lines & contact points)		C2/P	
	Carve anatomically accurate models of		C3/P	

	incisors from soap blocks.			
	Identification on models (Permanent Incisors)		C2/P	
Deciduous & Permanent Canines	Draw the outlines of all deciduous & permanent canines: labial, lingual, mesial, distal & incisal aspects	Practical/Lab	C2/P	OSPE
	Label each aspect pointing their morphological features (Incisal slopes, labial/lingual ridges, marginal ridges, fossa, cingulum, developmental depressions, imbrication lines & contact points)		C2/P	
	Identification on models (Permanent Canines)		C2/P	
	Carve anatomically accurate models of canines from soap blocks.		C3/P	
	Describe the principles and purpose of preparing ground sections of teeth.		C2/P	
	Prepare a ground section of a tooth with appropriate thickness for microscopic examination.		C3/P	
	Recognize key structural details of enamel, dentin, and cementum in the sectioned sample.		C3/P	

PRISME

PRISME				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
	Demonstrates academic honesty and respectful conduct	LGIS	C2	OSCE

Professionalism	To independently develop understanding and demonstration of professional patient communication by exploring relevant literature, observing rolemodel behavior in clinical environments, and reflecting on their interactions during simulated or observed patient encounters	LGIS	C2	OSCE
	Recognizes the importance of accountability in learning	LGIS	C2	OSCE
Foundations of Artificial Intelligence	Define what a "Prompt" is in the context of generative AI and identify its role in influencing the model's response.	LGIS	C2	OSCE
	Explain how different types of prompts (instructional, role-based, and descriptive) affect the tone and content of AI outputs.	LGIS	C2	OSCE
	Identify and explain key parameters that are use when designing a prompt which influence AIgenerated responses—temperature, top-k, top-p, max tokens, frequency penalty, and presence penalty—and how are they applied appropriately to control creativity, coherence, and specificity.	LGIS	C2	OSCE
Ethical, Social and Legal Implications of AI	Identify and critically analyse the major risks posed by use of AI in healthcare—including hallucination, dataset bias, patient-data privacy breaches, lack of explainability (Black Box), automation bias, adversarial attacks, and model drift.	LGIS	C2	OSCE
	List key mitigation strategies that help prevent hallucination, dataset bias, patient-data privacy breaches, lack of explainability (Black Box), automation bias, adversarial attacks, and model drift	LGIS	C2	OSCE
Generative AI	Demonstrate the ability to adjust at least three prompt modulation techniques (e.g., temperature, contextual framing, and presence penalty) in a generative AI tool (e.g., ChatGPT, DALL-E, or GPT-4o etc) to produce two accurate and context-appropriate visual or textual outputs related to oral histology or tooth morphology.	LGIS	C2	OSCE
Ethics	Write a clear, step-by-step plan for handling an ethical problem—such as being asked to create a fake radiograph with AI for a case report— showing how they would check the rules, seek guidance, and choose a safe and honest action and would comply with legal and ethical standards.	LGIS	C2	OSCE
	Differentiate between equality and equity in dental care access.	LGIS	C2	OSCE

Social Responsibility, Cultural Sensitivity & Accountability including Ethics and Jurisprudence	Compare rural and urban oral health challenges.		C2	
	Recommend strategies to promote fair and equitable dental services.		C2	
	Identify structural and policy barriers limiting access to dental care in underserved populations.		C2	
	Articulate health as a fundamental human right.	LGIS	C2	OSCE
	Explain confidentiality obligations in community dental programs.			
	Summarize dentists' legal responsibilities during public health initiatives.			
	Provide examples of patient legal protections in community dental services.			
	Apply effective verbal and non-verbal communication strategies to enhance clarity, teamwork, and decision-making in clinical and administrative dental settings.	LGIS	C2	OSCE
Management & Entrepreneurship	Describe the characteristics of effective teams and basic communication strategies for collaboration.	LGIS	C2	OSCE
Evidence-Based Dentistry.	Define and explain the concept and importance of Evidence-Based Dentistry. Differentiate between levels of evidence and types of research (e.g., RCTs, cohort studies, case reports).	LGIS	C2	OSCE

BLOCK 3 - ASSESSMENT PARAMETERS AND DIVISION OF MARKS

BDS Integrated Curriculum 2K25, 1st Professional Exam

BLOCK 3 - ASSESSMENT PARAMETERS AND DIVISION OF MARKS							
Subject	Written Exam			Oral/Practical Exam			
	MCQ (1 mark and I minute each)	SEQ (4 marks each and 11 minutes for each SEQ)	Marks	OSPE (9 Marks Each and 6 minutes each)	OSCE (9 Marks Each and 6 minutes each)	OSVE (6 Marks Each and 6 minutes each)	Marks
Anatomy	10	1	14	1	0	1	15
Physiology	22	2	30	1	1	1	24
Biochemistry	6	1	10	0	0	1	6
Oral Biology	12	1	16	3	0	1	33
General Pathology & Microbiology	12	2	20	2	0	1	24
Pharmacology	17	1	21	0	0	1	6
Community Dentistry	0	1	4	0	0	1	6
Oral Pathology	1	1	5	0	0	1	6
Total Questions	80	10		7	1	8	
Net Total	80x1=80	10x4=40	120	7x9=63	1x9=9	8x6=48	120
Internal Assessment Marks*	30			30			
Grand Total	150			150			

Block 3 Internal Assessment for Theory Examination - 30 Marks		
Scoring Parameter	Percentage Allocation	Marks Allocation
Attendance in lectures*	20%	6
Block Examination (Theory)	50%	15

Continuous Assessment (Class Tests, Mock Exam, Assignments, Attitudes)	30%	9
Total	100%	30
* Attendance Marks will be according to the following criteria: 1. if 85 % = Eligible 2. if > 90% ≤ 93 % = 3 marks 3. if > 93% ≤ 95 % = 5 marks 3. if > 95% = 6 marks		
Block 3 Internal Assessment for Practical/ Tutorials Examination - 30 Marks		
Scoring Parameter	Percentage Allocation	Marks Allocation
Attendance in Practicals/ Tutorials*	20%	6
Block Examination (Practical/ Oral Examination)	50%	15
Continuous Assessment/ Log Books- Portfolio for PRISME / Practical Notebooks/ Assignments / Attitudes	30%	9
Total	100%	30
* Attendance Marks will be according to the following criteria 1. if 80 % = Eligible 2. if > 90% ≤ 93 % = 3 marks 3. if > 93% ≤ 95 % = 5 marks 3. if > 95% = 6 marks		

Time Tables:

The timetables for the module will be shared via WhatsApp groups and the notice boards in advance.

Assessment Tools

Theoretical knowledge is tested by a written examination system constituted by multiple choice

questions (MCQ) and SEQs. The assessment of practical knowledge involves oral, spot, or objective structured practical examinations (OSPE).

Multiple Choice Questions (MCQ/SEQs):

Multiple choice questions (MCQ/SEQs) are a form of assessment for which students are asked to select the best choice from a list of answers.
MCQ/SEQ consists of a stem and a set of options. The stem is usually the first part of the assessment that presents the question as a problem to be solved; the question can be an incomplete statement which requires to be completed and can include a graph, a picture or any other relevant information. The options are the possible answers that the student can choose from, with the correct answer called the key and the incorrect answers called distractors.
Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.

Students mark their responses on specified computer-based sheet designed for the college.
The block exam will comprise of 85 MCQ/ 7 SEQs each of 5 marks and will be compiled according to the shared blueprint.

Short Essay Questions (SEQ)

Short Essay questions generally ask for brief, text-based responses. They can be used to assess students' understanding of and ability to think with subject matter content, discourage guessing of answers, in-depth knowledge of concepts, and formulation of an answer.

Objective Structured Practical or Clinical Examination (OSCE / OSPE)

- The content may assess application of knowledge, or practical skills.
- Student will complete task in define time at one given station.
- All the students are assessed on the same content by the same examiner in the same allocated time.
- A structured examination will have observed, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Rest station is a station where there is no task given, and in this time student can organize his/her thoughts.
- The Block OSPE / OSCE will be comprise of 12 examined stations. The stations will be assigned according to the shared blueprint.

Internal Evaluation:

Internal evaluation is a process of quality review undertaken within an institution for its own ends. Internal evaluation criteria will be shared with faculty and 10 % on internal assessment will be observed in each module.

Attendance Requirement:

A minimum of 85% attendance is mandatory to sit for the examinations.

Professional Examination:

Criteria for appearing in Professional examination are according to rules and regulations shared by UHS which are available on their website. The criteria is;

- At least 85 % cumulative attendance in all blocks.
- An average 50 % minimum score in all blocks

- Certificate of good conduct from college
- Certificate of having appeared in all block exams conducted by the college

Learning Resources for Students

Subject	Learning Resources
Oral Biology & Tooth Morphology	1. Nanci, A. Ten Cate's Oral Histology, Development, Structure, and Function (10th ed.) 2. Berkovitz, B. K., Holland, G. R., & Moxham, B. J. Oral Anatomy, Histology, and Embryology (5th ed.) 3. Kumar, G. S. Orban's Oral Histology & Embryology (13th ed.) 4. Rajkumar, K. Oral Anatomy, Histology, Physiology & Tooth Morphology (2nd ed.)
Physiology	1. Guyton & Hall. Textbook of Medical Physiology (14th ed.)
Gross Anatomy	1. Snell's Clinical Anatomy by Regions (12th ed.)
Embryology	1. Langman's Medical Embryology
Histology	1. Siddiqui, L. H. Medical Histology: Text and Atlas
Biochemistry	1. Rodwell, V. W., et al. Harper's Illustrated Biochemistry (32nd ed.) 2. Abali, E. E., et al. Lippincott Illustrated Reviews: Biochemistry (8th ed.)
Behavioral Sciences	1. Hand book of Behavioral sciences, by MH Rana, 3rd ed. 2. Humayun A., Herbert M. (2010). Integrating behavioural sciences in healthcare. Islamabad: HEC.

Subject	Learning Resources
Histology	1. Siddiqui, L. H. Medical Histology: Text and Atlas
General Anatomy	1. Siddiqui, L. H. General Anatomy
Biochemistry	1. Rodwell, V. W., et al. Harper's Illustrated Biochemistry (32nd ed.) 2. Abali, E. E., et al. Lippincott Illustrated Reviews: Biochemistry (8th ed.)
Physiology	1. Guyton & Hall. Textbook of Medical Physiology (14th ed.)
Pathology	1. Kumar, V., et al. Robbins & Cotran Pathologic Basis of Disease (10th ed.)
Microbiology	1. Levinson, W. Review of Medical Microbiology & Immunology (18th ed.)
Pharmacology	1. Katzung & Trevor. Pharmacology Examination & Board Review (12th ed.) 2. Whalen, K. Lippincott Illustrated Reviews: Pharmacology (7th ed.)
Behavioral Sciences	1. Hand book of Behavioral sciences, by MH Rana, 3rd ed. 2. Humayun A., Herbert M. (2010). Integrating behavioural sciences in healthcare. Islamabad: HEC.

Textbooks	1. Fuller, J. L. Concise Dental Anatomy & Morphology (4th ed.) 2. Nelson, S. J. Wheeler's Dental Anatomy, Physiology and Occlusion (1st SAE)
Reference Books	1. Woelfel's Dental Anatomy (Jones & Bartlett Learning) 2. Oral Biology and Tooth Morphology