M. ISLAM DENTAL COLLEGE

GUJRANWALA

FOUNDATION BLOCK
MODULE- IV, V, VI

FIRST YEAR BDS, ACADEMIC SESSION 2026-27

BLOCK: II
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-II
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. Zahid	Professor Microbiology	Member
11.	Dr. Sobia Siddique	Professor Oral Pathology	Member
12.	Dr Ahmed Mehmood	Associate Professor Behavioral Science	Member
13.	Dr. Sadaf Saeed	Assistant Professor Periodontology	Member
14.	Dr Nadeem Tarique	Associate Professor Dental Radiology	Member
15.	Dr. Nivish	DME	Developer Block-II

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.

CRANIO-FACIAL-II
MODULE 04

ORAL BIOLOGY				
TOPIC	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Bone	Describe the organic and inorganic components of the bone matrix	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Distinguish between compact and spongy bone, and their locations and functions.		C2	
	Describe the origin of bone cells and the molecular factors involved		C2	
	Describe the functions of osteoblasts, osteocytes, and osteoclasts in Bone Formation and Remodeling		C2	
	Understand the processes of intramembranous and endochondral ossification.		C3	
	Describe the microscopic Structure of Bone: (Osteon, central canal, lamellae, lacunae, canaliculi, and blood vessels).		C2	
	Relate bone histology to dental procedures such as tooth extraction, implant placement, and bone grafting.		C3	
Temporoman--dibular joint	Describe the histology of the temporomandibular joint (temporal and condylar bone, muscles, capsule, disk, synovial membrane, and ligaments)	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Muscle contraction (TMJ)	Describe the concept of muscle contraction illustrating the role of the motor unit, muscle spindles, and Golgi tendon organs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the nerve supply of the joint emphasizing the role of nerve endings		C2	
	Describe the biomechanics of TMJ		C2	
	Identify the common TMJ associated clinical manifestations		C2	
Maxillary sinus	Describe the anatomy and histology of the maxillary sinus	LGIS	C2	MCQS, SEQS, OSPE, OSVE

GROSS ANATOMY				
TOPIC	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Skull	Describe the features and structures of different views of skull (Anterior, Posterior, Superior, Inferior, Lateral)	LGIS/ Dissection Hall	C3	MCQS, SEQS, OSPE, OSVE
	Discuss the sutures and fontanelles of skull, their age changes and clinical significance.		C3	

	Identify and enlist all the formina of the skull along with their neurovascular contents		C2	
Scalp	List the layers of scalp and describe the anatomical features with neurovascular supply and lymphatic drainage of scalp.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Give anatomical justification of spread of scalp infections, profuse bleeding in superficial scalp lacerations, gaping of scalp wounds		C3	
Face	Enlist in tabulated manner the muscles of facial expression, giving their nerve supply and actions.	LGIS/ Dissection Hall	C2	MCQS, SEQS, OSPE, OSVE
	Describe the extracranial course, branches, and distribution of the facial nerve. Explain the causes and clinical consequences of damage to the nerve.		C2	
	Describe the extracranial course, branches, and distribution of trigeminal nerve. Explain the causes and clinical consequences of damage to the nerve.		C2	
	Describe the innervation of the maxillary and mandibular teeth, and their supporting structures and the anatomical basis of common variations in sensory innervation of the teeth.		C2	
	Describe the vascular supply and lymphatic supply of face.		C2	
	Describe the danger area of face with it its clinical significance. Define the routes of spread of infection from face and scalp to brain		C2	
Vision	Define the boundaries and openings of orbital cavity. List the structures traversing these openings.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	In a tabulated manner enlist the extraocular and intraocular muscles of eyeball and eyelid muscles giving their nerve supply and actions		C2	
	List and define the movements of eyeball with special reference to the axis		C2	
	List the parts of Lacrimal apparatus giving their location and anatomical features. Describe the nerve supply of lacrimal gland		C2	
	Describe the extracranial course, distribution and branches of oculomotor, trochlear and abducent nerves. Describe the location, roots and distribution of ciliary		C3	

	ganglion			
	Give the clinical correlates of nerves supplying the muscles of the eyeball		C3	
	Describe the course and branches of ophthalmic artery mentioning its origin and termination		C2	
	Give the anatomical structure of eyeball emphasizing on its three coats and their neurovascular supply		C3	
Mandible & Temporoman--dibular joint	Describe the bony features of mandible.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe temporomandibular joint mentioning its ligaments, nerve supply and movements.		C2	
	Identify and describe the muscles of mastication along with origin, insertion, action, and innervation of each muscle		C2	
Temporal, Infratemporal &Pterygopalat--ine fossa	Describe the boundaries contents and primary communications of temporal, infratemporal and pterygopalatine fossa	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the location, roots and distribution of pterygopalatine ganglion		C2	
Ear	Describe the anatomical features and neurovascular supply of external ear	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the boundaries, contents, neurovascular supply and communications of middle ear cavity		C2	
	Describe the anatomical features of auditory tube		C2	
	Describe the parts, anatomical features and neurovascular supply of internal ear		C2	
	Describe the course and distribution of vestibulocochlear nerve		C2	
Nose	Describe the anatomical features and neurovascular supply of external nose	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the boundaries of nasal cavity: nasal septum, lateral wall of nose, roof and floor. Give their anatomical features and neurovascular supply		C2	
	List the paranasal sinuses giving their locations, openings, neurovascular supply and clinical significance.		C2	
	Discuss the clinical correlates of nose: Epistaxis, Foreign body in the nose.		C3	
Applied Anatomy	Identify and classify fractures of the maxilla based on anatomical patterns (Le Fort classification)	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Identify and classify fractures of the mandible based on anatomical regions		C2	
BIOCHEMISTRY				
Topic	**Specific Learning objectives**	**Teaching**	**Levels**	**Assessment**

		strategy	C/P/A	
Biochemistry and Structural Basis of Muscle Function and Integrity	Describe the structure and function of myoglobin, its role in oxygen storage and delivery in muscle tissue and its significance as a biochemical marker in muscle injury and how is it different from hemoglobin.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the structure, types, and functions of collagen and elastin, and explain their roles in maintaining the mechanical strength and elasticity of muscle connective tissue.		C2	
	Identify disorders associated with collagen and elastin defects, particularly those affecting muscle support structures and connective tissue integrity.		C3	
	Explain the composition and function of the extracellular matrix (ECM) in muscle tissue, including the roles of proteoglycans, collagen, fibronectin, and integrins in muscle cell adhesion, signaling, and repair.		C3	
	Differentiate muscle fiber types (Type I, IIa, IIb) based on structure, metabolism, and functional properties.		C2	
Energy production in Muscles	Describe the mechanism of glucose uptake into tissues through glucose transporters and explain its role in cellular energy availability.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Explain the function and regulation of the pyruvate dehydrogenase (PDH) complex in linking glycolysis to the tricarboxylic acid (TCA) cycle.		C3	
	Describe the TCA cycle and explain how it generates reduced coenzymes (NADH, $FADH_2$) that fuel oxidative metabolism.		C2	
	Explain the structure and function of the electron transport chain (ETC) and describe how oxidative phosphorylation, utilizing ATP synthase, generates ATP through the proton motive force.		C2	
	Identify the effects of ETC inhibitors and uncouplers on electron transport and ATP synthesis, and discuss their implications for cellular energy production.		C2	
	Explain the processes of glycogenesis and glycogenolysis in muscle tissue, including their regulation, the role of key enzymes, and their contribution to ATP production during exercise.		C3	
	Discuss the role of muscle glycogen as an energy source during different exercise		C3	

	intensities, its depletion and recovery, and how regular exercise influences glycogen storage capacity and muscle adaptation.			
	Describe the ATP-PC system, its role in providing immediate energy during high-intensity activities, and the regeneration of ATP through phosphocreatine breakdown.		C2	
MICROBIOLOGY				
TOPIC	**SPECIFIC LEARNING OUTCOMES**	**Teaching Strategy**	**LEVELS C/P/A**	**Assessment**
Culture Media	Describe the composition and types of culture media (e.g., selective, differential enrichment).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Compare & contrast the applications of different culture media in microbiology lab.		C3	
Pathogenecity of microoeganism	Identify the factors influencing microbial pathogenicity, such as host & immune evasion.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Mode of actions of chemotherap-eutic agents	Summarize the mechanism of action of major classes of chemotherapeutic agents (e.g., B-Lactams, aminoglycosides).	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Identifying the appropriate chemotherapeutic agent for specific bacterial infections		C2	
Mechanism of resistance in bacteria	Explain the genetic and biochemical mechanisms of bacterial resistance to antibiotics	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Osteomyelitis	Define osteomyelitis. Enlist various osteomyelitis causing Microorganisms	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Gram Positive Rods	Discuss Actinomycetes with its epidemiology, virulence factors, pathogenesis	LGIS	C2	MCQS, SEQS, OSPE, OSVE

PHARMACOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
ANS	Classify skeletal muscle relaxants according to their mechanism of action..	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	ii. Describe the mechanism of action of non-depolarizing skeletal muscle relaxants		C2	

	iii. Explain the pharmacological actions of non-depolarizing skeletal muscle relaxant		C3	
	iv. Describe the mechanism of action of succinylcholine. Enumerate therapeutic uses of peripherally acting skeletal muscle relaxants.		C2	
PHYSIOLOGY				
TOPIC	Specific Learning Outcomes	**Teaching Strategy**	Levels C/P/A	**Assessment**
Membrane potentials & Action potentials (Nerve)	Describe the physiological anatomy of a neuron, including its structure and function.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Myelinated & Unmyelinated Nerve Fibers	Enlist the neuroglia cells responsible for myelination in Central Nervous System (CNS) & Peripheral Nervous System (PNS)	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist the steps of myelination in peripheral nervous system.		C2	
	Define Multiple sclerosis		C2	
Membrane Potentials	Explain Nernst potential of Na & K.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Derive the Nernst equation.		C3	
	Explain the physiological basis of the Goldman equation and write the equation.		C2	
Resting membrane potential	Describe the resting membrane potential of a nerve fiber and the role of various ion channels.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss Role of different channels in calculating Resting membrane potential of a nerve fiber		C3	
Action Potentials	Define Action potential and ionic basis.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss the role of voltage-gated channels in generating action potentials		C2	
	Define threshold stimulus		C2	
	Define the All-or-None Law.		C2	
	Define absolute refractory period, and relative refractory period also mention their		C2	

	physiological basis			
	Discuss the effects of hypocalcemia on nerve excitability		C2	
Propagation of the action potential	Explain the mechanism of local anesthetics on nerve excitability	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Define Saltatory conduction and its benefits?		C2	
	Explain mechanism of tetany		C2	
Contraction of Skeletal Muscle	Describe the physiological anatomy of skeletal muscles	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the structure of Sarcomere		C2	
General mechanism of muscle Contraction	Explain general mechanism of skeletal muscle contraction	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Characteristics of whole muscle Contraction	Define and differentiate isotonic and isometric contraction with 2 examples of each	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Give physiological basis of tetanization and multiple fiber summation		C3	
	Define motor unit		C2	
	Give physiological basis of Rigor mortis Explain muscle fatigue		C3	
Neuromuscular Transmission and Excitation-Contraction Coupling	Describe the physiological anatomy of Neuro Muscular Junction (NMJ)	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain Mechanism of Neuromuscular transmission & generation of End Plate Potential		C3	
	Give pathophysiology of Myasthenia Gravis		C3	
Excitation and Contraction of Smooth Muscle	Differentiate between types of smooth muscles. Give their physiological anatomy	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe mechanism of smooth muscle contraction in comparison to skeletal muscle.		C3	
	Explain latch phenomenon of smooth muscles and its benefits		C3	

PRACTICALS

ORAL BIOLOGY & TOOTH MORPHOLOGY

Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Bone	Draw and label the histological factor of compact and spongy bone	LGIS	C2	OSPE
Microscopic structure analysis	Identify and interpret histological sections of bone tissue under a microscope.	LGIS	C2	OSPE

Image analysis	Analyze and interpret microscopic images of bone to identify its components and features.	LGIS	C3	OSPE
Temporomandibular Joint	Draw & label the histological section of the temporomandibular joint, showing temporal bone, disc, condylar bone, capsule, articular disc, and synovial membrane.	LGIS	C3	OSPE

ANATOMY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Skull	Demonstrate the ability to accurately orient a dry human skull in normal verticals, occipitalis, frontalis, lateralis, and basalis views; and identify key anatomical and surface landmarks, sutures, and foramina with their content relevant to each view	Dissection Hall	C3	OSPE
	Identify and describe the anatomical features, boundaries, and foramina of the anterior, middle, and posterior cranial fossae, including the grooves of the dural venous sinuses		C2	
Mandible	Identify and locate the major anatomical landmarks, foramina (with their contents), and surface features of the mandible; articulate it the skull; recognize surrounding anatomical relations (anterior, posterior, medial, and lateral);and demonstrate basic functional mandibular movements and differentiate the role of muscles of Mastication and accessory muscles in protrusion, lateral excursion, opening, and closing.	Dissection Hall	C2	OSPE
Surface Anatomy	Demonstrate and systematically identify major arteries, veins, and nerves on anatomical models or cadaveric dissections; locate their course, branches, and anatomical relations; and correlate their clinical significance with surrounding structures	Dissection Hall	C3	OSPE
Jaw Muscle	Identify and demonstrate the origin, insertion, nerve supply, and actions of the muscles of mastication and facial expression on models or cadaveric specimens	Dissection Hall	C3	OSPE
Neurovascular Supply of face	Demonstrate surface marking of extracranial branches of the facial nerve and trigeminal nerve in relation to relevant structures, and identify their anatomical pathways and clinical relevance.	Dissection Hall	C3	OSPE

NEUROSCIENCES
MODULLE 05

THEORY				
PHYSIOLOGY				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Organization of the Nervous System, Basic Functions of Synapses, and Neurotransmit-ters	Describe the general organization of nervous system. Classify synapse and explain the physiological anatomy of chemical synapse.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Elaborate the role of synapse in processing information.		C2	
	Classify the substances that act as neurotransmitters or synaptic transmitters. Enlist functions related to dentistry of each group.		C2	
	Define Excitatory and inhibitory postsynaptic potential and explain their mechanism of generation		C2	
	Explain spatial and temporal summation Explain the mechanism of synaptic fatigue (its significance) and synaptic delay Discuss the effects of hypoxia, acidosis and alkalosis on synaptic transmission		C3	
Sensory Receptors, Neuronal Circuits for Processing Information	Define and classify the sensory receptors in the body on the basis of stimuli they detect. Discuss tonic and phasic receptors with 2 to 3 examples of each.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Sensory Receptors Transduction of sensory stimuli into nerve impulses	Classify the nerve fibers on the basis of diameter and speed of conduction	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Somatosensory	Classify somatic sensations. Explain two main ascending pathways (DCML and	LGIS	C2	MCQS, SEQS, OSPE, OSVE

cortex	Anterolateral system) for transmitting sensation to CNS . Enlist sensations carried by dorsal column medial Lemniscal system and Anterolateral Pathway with special reference to Trigeminal sensory system. Trace these pathways from receptors to sensory cortex and compare their features.			
	Give location and functions of Primary somesthetic area and sensory association area of sensory cortex. Name the sensations perceived by these areas. Describe the sensations lost when there is damage to somesthetic areas. Discuss representation of body parts in sensory cortex	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Pain, Headache, and Thermal Sensations	Classify pain. Discuss location and stimulation of pain receptors	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Discuss dual pain pathway of spinal cord and brain for transmission of pain signals into CNS with especial reference to tooth pain compare the features of dual pain pathways		C3	
	Explain Analgesia system/pain suppression system of brain and spinal cord. Discuss its significance		C3	
	Define and give physiological basis of referred pain with two examples. Define Trigeminal Neuralgia and describe its clinical features, basic causes, and dental relevance.		C2	
Cortical and Brain Stem Control of Motor Function	Name the motor areas of cerebral cortex and give representation of body parts. Discuss the functions of motor areas	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist the functions of brain stem		C2	
	Name the descending motor tracts. Describe the functions of corticospinal tract.		C2	
Spinal Cord Motor Functions; the Cord Reflexes	Give Functional organization of spinal cord. Define motor unit.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Define reflex action and identify the components of a reflex arc. Define, classify and enlist components of stretch reflex with special reference to jaw reflex).		C2	
Effect of Lesions in the	Explain the features of upper motor neuron lesion.	LGIS	C3	MCQS, SEQS,

Motor Cortex or in the Corticospinal Pathway	Explain the features of lower motor neuron lesion. Define and give types of cerebrovascular accident along with their salient features.			OSPE, OSVE
The Limbic System and the Hypothalamus	Enlist the components of limbic system and its general functions. Enlist functions of different portions hypothalamus Explain the physiological basis and features of Alzheimer's disease	LGIS	C2 C2	MCQS, SEQS, OSPE, OSVE
Memory	Define memory. Classify memory on the basis of duration and information stored. Define retrograde and anterograde amnesia	LGIS	C2	MCQS, SEQS, OSPE, OSVE
The Autonomic Nervous System and the Adrenal Medulla	Explain the effects of sympathetic and parasympathetic on various organs/ system of body Enlist types of autonomic receptors present in heart, blood vessels, smooth muscles, GIT, & EYE. Give features of Alarm or stress response	LGIS	C3 C2	MCQS, SEQS, OSPE, OSVE
Cerebral circulation	Enlist the functions of CSF Define hydrocephalus	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Sleep	Give types and features of sleep. Also mention the neurotransmitters involved in sleep	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Cerebellum and Basal Ganglia Contributions to Overall Motor Control	Give functional divisions of cerebellum along with their functions Enlist cerebellar nuclei Enlist features of cerebellar dysfunction	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Contributions to Overall Motor Control	Enlist components of basal ganglia in relation to other structures of the brain Discuss functions of basal ganglia Discuss pathophysiology and features of Parkinson's disease. Elaborate the role of Dopamine in basal ganglia	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Special senses Optics of the eye Fluid system of the eye—	Discuss functional anatomy of the eye. Enlist refractive surfaces of the eye and elaborate mechanism of image formation on retina	LGIS	C3	MCQS, SEQS, OSPE, OSVE

intraocular fluid	Define cataract and glaucoma			
Central Neurophysiology of Vision	Describe the principal visual pathway from retina to visual cortex. Define the physiological blind spot and describe its location. Explain Pupillary Light Reflex.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
The sense of Hearing **Tympanic membrane and the Ossicular system**	Discuss how sound is conducted from tympanic membrane to cochlea? Describe the mechanism of impedance matching and its significance Describe the mechanism of attenuation reflex and its significance	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Functional anatomy of the cochlea Auditory nervous pathways	Describe the physiological anatomy and function of basilar membrane & organ of corti Give the normal range of frequency for hearing Describe the role of Place principle in determination of sound frequency	LGIS	C3	MCQS, SEQS, OSPE, OSVE
The Chemical Senses— Taste and Smell	Enlist the primary taste sensations. Describe the physiological anatomy and location of taste buds. Trace the taste pathway	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist the primary sensations of smell	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe the physiological anatomy and location of olfactory membrane and olfactory receptors		C3	
Anatomy				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Nervous System Overview	Briefly describe general organization of nervous system	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Neuron	Define neuron and describe its structure	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Neuron Classification	Classify neurons morphologically and functionally with examples	LGIS	C2	MCQS, SEQS, OSPE, OSVE
CNS & PNS Overview	Briefly describe components of central and peripheral nervous system	LGIS	C3	MCQS, SEQS, OSPE, OSVE

Neuroglia	Describe the supporting cells in central and peripheral nervous system	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Receptors and Effectors	Define receptors and effectors	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Receptor Classification	Describe classification of receptors	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Sympathetic vs. Parasympathetic System	describe the major subdivisions of ANS into sympathetic and parasympathetic nervous system with comparison of anatomical differences.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Cranial Nerves Overview	Describe the structural and functional features of cranial nerves.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Cranial Nerve Functions	Enlist all cranial nerves and describe their functions	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Spinal Nerve Anatomy	Explain the classification, structure, and functions of peripheral nerve fibers in a typical spinal nerve.	LGIS/ Dissection Hall	C2	MCQS, SEQS, OSPE, OSVE
Dermatome	Define dermatome	LGIS/ Dissection Hall	C2	MCQS, SEQS, OSPE, OSVE
Brain Regions	Enlist the parts of the brain.	LGIS/ Dissection Hall	C2	MCQS, SEQS, OSPE, OSVE
Cerebral Cortex Anatomy	Identify the lobes, sulci & gyri and cortical areas of cerebrum	LGIS/ Dissection Hall	C2	MCQS, SEQS, OSPE, OSVE
Functional Cortex	Describe functional areas of cerebrum	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Cerebral Hemisphere Structure	Describe internal structure of cerebral hemisphere (white matter, basal ganglia, lateral ventricle)	LGIS/ Dissection Hall	C3	MCQS, SEQS, OSPE, OSVE
Ventricular System	Describe ventricular system (Lateral, 3rd & 4th ventricles)	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Internal Capsule	Describe various parts of internal capsule	LGIS/ Dissection Hall	C2	MCQS, SEQS, OSPE, OSVE
Brainstem CrossSectional Anatomy	Label, and identify the key structures in cross-sectional anatomy of the brainstem at the levels of the midbrain, pons, and medulla, highlighting the distribution of grey and white matter.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Cranial Nerve Nuclei and Pathways	Describe the location of cranial nerve nuclei, their functional components, and distribution, and trace the course of cranial nerve V, VII, VIII, IX, and XII from its intracranial origin to the respective skull foramina.	LGIS	C3	MCQS, SEQS, OSPE, OSVE

Cerebellar Lobes	Identify the lobes of cerebellum	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Cerebellar Functions	Discuss the functional classification of cerebellum	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Cerebellar Clinical Correlates	Define important clinical correlates, vermis syndrome, ataxia, dysarthria, dysdiadochokinesia, nystagmus, and vertigo.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Spinal Cord Overview	Identify the location, extent, coverings, and blood supply of spinal cord	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Spinal Cord Nuclei	Discuss & tabulate nuclear organization at different levels of spinal cord	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Spinal Cord Cross-Section	Describe, draw & label the transverse section of spinal cord at mid cervical level showing ascending & descending tracts	LGIS/ Dissection Hall	C3	MCQS, SEQS, OSPE, OSVE
Spinal Cord Gray & White Matter	Elaborate the cross-sectional details of white and gray matter of cervical and thoracic segments of spinal cord	LGIS/ Dissection Hall	C3	MCQS, SEQS, OSPE, OSVE
Ascending Tracts	Tabulate the sensory nerve endings, and anatomical sites of first, second, third order neurons of ascending tracts	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Descending Tracts	Tabulate first, second, third order neurons of descending tracts	LGIS	C2	MCQS, SEQS, OSPE, OSVE
UMN vs. LMN Lesions	Differentiate clearly between upper and lower motor neuron lesions	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Circle of Willis	Discuss/Draw and label the formation of Circle of Willis	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Dural Venous Sinuses	Discuss the location, origin and termination of dural venous sinuses.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Cavernous Sinus	Discuss the important structures associated with the cavernous sinus and its clinical significance in relation to the danger area of the face	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Intracranial Hemorrhages	Discuss the anatomical basis of extradural, subdural and subarachnoid hemorrhages	LGIS	C3	MCQS, SEQS, OSPE, OSVE
CSF Physiology	Explain the formation, circulation and absorption of CSF (Cerebrospinal fluid)	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Brain Blood Supply	Discuss the origin, course, branches and distribution of internal carotid and vertebral artery	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Reticular System	Basal Reticular System	LGIS	C2	MCQS, SEQS, OSPE, OSVE

Thalamus & Hypothalamus Overview	Thalamus and hypothalamus in relation to limbic system	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Thalamus & Hypothalamus Connections	Discuss the blood supply, nuclei and major connections of thalamus and hypothalamus	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Hypophyseal Portal System	Describe the Hypothalamo-Hypophyseal Portal System	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Thalamic & Hypothalamic Clinical Correlates	Discuss the clinical correlates of thalamus and hypothalamus (Thalamic Pain, Thalamic Hand, Diabetes Insipidus)	LGIS	C2	MCQS, SEQS, OSPE, OSVE

BIOCHEMISTRY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Osmotic diuretic	Elaborate the structure of mannitol & give its clinical uses.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Glutamine Metabolism	Briefly describe the metabolism & importance of glutamine in human body.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Hyperammonemia	Enlist inherited & acquired causes of hyperammonemia. Describe the effects of hyperammonemia on brain. Outline the management options for hyperammonemia.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Neuropathies	Discuss chemistry, sources, RDA, biochemical role, deficiency & toxicity of B1, B6 & B12.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Neurotransmitters	Explain the biosynthesis, mechanism of action, and physiological role of acetylcholine, and discuss the clinical consequences of its deficiency	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Outline the reactions involved in biosynthesis of catecholamines. Elaborate the mechanism of action of catecholamines. Give the cause & management of Parkinson		C3	

	disease.			
	Describe the synthesis & biochemical importance of serotonin, melatonin & GABA.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Inherited disorders of amino acid metabolism	Briefly describe the cause, clinical features & management of Phenylketonuria.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Outline the metabolism of branched chain amino acids (BCAA). Briefly describe the cause, clinical features & management of maple syrup urine disease (MSUD).	LGIS	C3	MCQS, SEQS, OSPE, OSVE

PHARMACOLOGY & THERAPEUTICS				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Sedative/Hypnotics	Classify sedative-hypnotics Illustrate GABAA receptor-chloride ion channel macromolecular Complex and identify site of action of various sedativehypnotics	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	List their clinical uses and adverse Effects		C2	
	Outline the management of overdose of sedativehypnotics		C3	
	Compare BZD, barbiturates; and BZD, Buspirone Identify the distinctive properties of buspirone, eszopiclone, ramelteon, zaleplon, zolpidem and suvorexant		C3	
Local Anesthetics	Classify local anesthetics Describe their mechanism of action Outline various methods of giving local anesthesia	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain the relationship among tissue pH, drug pKa, and the rate of onset of local anesthetic action Discuss 4 factors that determine the susceptibility of nerve fibers to local anesthetic blockade		C3	

	Describe the major toxic effects of the local anesthetics Explain how hyperkalemia facilitates the cardiac toxicity of local anesthetics			
General Anesthetics	Name the major inhalation and intravenous anesthetic drugs.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Define the terms blood:gas partition coefficient and minimum alveolar concentration (MAC), and explain their significance in the pharmacology of inhalational anesthetics.		C2	
	Enlist the molecular targets of action of anesthetic drugs and describe their associated toxicities.		C2	
	List main pharmacokinetic characteristics of commonly used intravenous and inhaled anesthetic agents.		C2	
Opioid Analgesics	Write pharmacodynamic classification of Opioid analgesics. Identify 3 opioid receptor subtypes and describe ionic mechanisms that result from their activation.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Describe cardinal signs and treatment of opioid drug overdose and of the withdrawal syndrome.		C3	
	Describe the classification, mechanism of action, therapeutic uses, and adverse effects of opioid analgesics.		C3	
Antiseizure drugs	Classify antiseizure drugs List the drugs of choice for partial seizures, generalized tonic-clonic seizures, absence and myoclonic seizures, and status epilepticus	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Identify the mechanisms of antiseizure drug action at the levels of specific ion channels and/or neurotransmitter systems Highlight the uses, adverse effects and drug interactions of carbamazepine, phenytoin, and valproic acid		C2	
	Identify the distinctive toxicities of new antiseizure drugs Outline the management of status epilepticus		C2	
Introduction to ANS	Enlist types and sub types of various ANS receptors along with their locations in	LGIS	C2	MCQS, SEQS,

	different structures and organ systems of the body			OSPE, OSVE
	Describe the synthesis, storage, release and degradation of the neuro-transmitters of the ANS Explain the negative and positive feedback controls of neurotransmitter release		C3	
Cholinergic Drugs (agonists)	Classify cholinomimetics according to chemistry & mechanism of action. Describe actions of acetylcholine on different organ systems of body. Enumerate the adverse effects of acetylcholine & cholinergic drugs	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Explain the salient pharmacological properties of cholinesterases with their appropriate clinical uses. Differentiate between cholinergic and myasthenic crisis Describe the management of myasthenia gravis. Explain the role of Pilocarpine in glaucoma		C2	
Anti-Cholinergic Drugs	Enumerate the signs and symptoms of organophosphate poisoning due to cholinergic excess. Enlist steps in the management of organophosphate Compound (OPC) poisoning Describe aging and role of oximes in the management. Explain the prevention of OPC poisoning	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Classify anti-cholinergic drugs (on the basis of therapeutic uses) Describe pharmacological actions of atropine		C3	
	Differentiate between atropine and hyoscine		C3	

	Enlist therapeutic uses of atropine Enumerate adverse effects of anti-cholinergic drugs			
Skeletal Muscle Relaxants	Classify skeletal muscle relaxants according to their mechanism of action. Describe mechanism of action and adverse effects of non-depolarizing skeletal muscle relaxants	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Describe mechanism of action and adverse effects of depolarizing skeletal muscle relaxants. Enumerate therapeutic uses of peripherally acting skeletal muscle relaxants. Define and give pharmacological basis and treatment of malignant hyperthermia		C3	
Sympathomimectic Drugs	Classify sympathomimetics on the basis of chemistry & receptor selectivity. Explain the mechanism of action of adrenaline, the prototype drug of the group. Describe the important pharmacological actions of adrenaline on different organ systems of the body. Enlist and explain the therapeutic uses of adrenaline	LGIS	C3	MCQS, SEQS, OSPE, OSVE
	Enumerate important adverse effects& contraindications of the drug. Explain the differences in response, therapeutic uses& side-effects of other catecholamines with reference to adrenaline Differentiate between catecholamines and noncatecholamines		C2	
	Explain the pharmacological actions of		C3	

	important noncatecholamines in light of their mode of action Enlist important therapeutic uses and side-effects of important non-catecholamines. Classify sympathomimetics according to their clinical indications			
Alpha Receptor Blocking drugs	Classify alpha blockers according to receptor selectivity. Explain the pharmacological actions of alpha blockers	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Enlist and important clinical uses and side-effects of this drug group. Describe their role in benign prostatic hyperplasia & pheochromocytoma		C2	
Beta Receptor Blocking drugs	Classify beta blockers according to receptor selectivity, ISA, MSA, lipid solubility & duration of action. Describe the pharmacological actions of beta blockers on different systems of the body.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
	Explain important pharmacokinetic features of the group		C3	
	Enlist and explain important clinical uses of beta blockers especially with reference to CVS		C2	
	Enlist non-cardiac clinical uses of beta blockers Enlist important side effects and contraindications of beta blockers		C2	
Centrally Acting Sympathoplegic Drugs	Name central Sympathoplegics and centrally acting alpha-2 agonists. Explain mechanism of action, uses and side effects of alpha methyl Dopa & clonidine Differentiate between alpha methyl Dopa & clonidine	LGIS	C2	MCQS, SEQS, OSPE, OSVE

PATHOLOGY & MICROBIOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Infections of CNS (meninges)	Define meningitis. Identify different types of meningitis according to etiology.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Trauma to CNS	Define concussion and contusion Enlist their clinical features	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Demyelinating diseases of CNS	Enumerate various demyelinating diseases of CNS Enlist clinical features and diagnosis of Multiple Sclerosis & Guillain-Barre syndrome	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Viruses	Introduction to viruses, structure of virus, classification of DNA and RNA viruses	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Herpes Simplex Virus infection related to CNS	Discuss herpes simplex virus with its epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Varicella Zoster Virus infection related to CNS	Discuss varicella zoster virus with its epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Polio virus infections	Discuss Polio virus with its virulence factors, pathogenesis, lab diagnosis & prevention	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Clostridium tetani & Clostridium botulinum infections	Discuss Clostridium tetani and Clostridium botulinum with its virulence factors, pathogenesis, lab diagnosis	LGIS	C3	MCQS, SEQS, OSPE, OSVE

PRACTICAL				
PHYSIOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Sensory System	Examination of Olfactory nerve	LGIS	C2/P2	OSPE
CN III, IV, VI	Examination of 3rd, 4th and 6th nerve	LGIS	C2/P2	OSPE
CN V	Examination of trigeminal nerve	LGIS	C2/P2	OSPE
CN VII	Examination of facial nerve	LGIS	C2/P2	OSPE
CN IX, X, XI, XII Motor System	Examination of 9th, 10th, 11th & 12th nerve	LGIS	C2/P2	OSPE
	Demonstrate following superficial reflexes: Corneal Reflex, Conjunctival Reflex & Plantar reflex.	LGIS	C2/P2	OSPE
Deep Reflexes Hypothalamus	Examination of Deep tendon reflexes	LGIS	C2/P2	OSPE
	Recording body temperature		C2/P2	
NEUROANATOMY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Nervous system	Demonstrate gross neuroanatomical knowledge of the brain and brainstem with particular focus on the cranial nerves, including identification of their origin, course, nuclei, associated foramina, functional components, and clinical correlations using anatomical models and dissected cadaveric specimens Define meningitis.	Dissection Hall	C2/P2	OSPE

ALVEO-CEMENTAL COMPLEX
MODULE 06

THEORY				
ORAL BIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Periodontium Overview	Define the alveolo-cemental complex (periodontium) and explain its role in dental support.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Components of Periodontium	Identify its components (cementum, PDL, alveolar bone, gingiva) and their diagrammatic arrangement around the tooth.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Periodontium Terminology	Recognize and define key terms (e.g., cementoid, Sharpey's fibers, proprioception) related to alveolocemental complex	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Development of Supporting Tissues	Discuss the development of Supporting Tissues	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Periodontal Ligament Structure	Enlist the structure and function of the periodontal ligament.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Periodontal Ligament Fiber Groups	Describe the different groups of fibers in the periodontal ligament.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Functional Adaptation of Periodontal Ligament	Describe the adaptation of the periodontal ligament to the functional demands.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Periodontal Ligament Clinical Relevance	Relate the study of the periodontal ligament with developmental disturbances and clinical implications.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Cellular vs Acellular Cementum	Differentiate between the structure of cellular and acellular cementum.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Types of Cementum	Classify and explain the structure of different types of cementum and their properties.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Cementum in	Describe the role of cementum in the attachment apparatus.	LGIS	C2	MCQS, SEQS,

Attachment Apparatus				OSPE, OSVE
Cementum Resorption and Repair	Describe resorption and repair of cementum and age changes.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Cementum Clinical Relevance	Relate the study of cementum with developmental disturbances and clinical implications.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Bone Cells and Molecular Regulation	Describe the histology of bone cells and their molecular regulation.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Alveolar Bone Structure and Function	Describe the structure and functions of alveolar bone.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Alveolar Bone Age Changes and Clinical Relevance	Elaborate its changes with age and its clinical considerations.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Gingival Histology	Describe the histological aspects of gingiva.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Gingival Fibers	Enumerate gingival fibers & their functions.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Gingival Blood and Nerve Supply	Tabulate blood and nerve supply of gingiva.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Gingival Epithelium	Describe the structural and functional characteristics of different areas of Gingival epithelium	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Dentogingival Junction	Explain the structure of dentogingival junction.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Mucogingival Junction	Explain the structure of mucogingival junction.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Tooth Eruption Phases	Describe eruption and phases of tooth movement.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Pre-eruptive Tooth Movement	Elaborate pre-eruptive tooth movement.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Eruptive Tooth Movement Mechanisms	Discuss the mechanism and factors responsible for eruptive tooth movement.	LGIS	C2C	MCQS, SEQS, OSPE, OSVE

Post-eruptive Tooth Movements	Describe the types of movement a tooth makes posteruption to maintain its functional position in the jaw in terms of mechanism and significance.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Tooth Shedding	Discuss histology and causes of tooth shedding.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Abnormal Tooth Movements	Describe the factors involved in abnormal tooth movement.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Bone Modeling and Remodeling	Describe modeling and remodeling of bone.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Orthodontic Tooth Movement	Explain orthodontic tooth movement.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Investing Layer of Unerupted Teeth	Describe the investing layer associated with the crowns of unerupted teeth.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Periodontium Overview	Define the alveolo-cemental complex (periodontium) and explain its role in dental support.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
COMMUNITY DENTISTRY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Periodontal Indices	Define the key periodontal indices used in epidemiological studies, including indices for gingivitis, periodontitis, and plaque assessment.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Periodontal Indices	Explain the principles and methodology for measuring periodontal diseases in population-based studies.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Gingivitis Indices in Community Health	Describe various indices used for measuring gingivitis (e.g., Löe & Silness Gingival Index) and their significance in assessing community oral health.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Periodontitis Measurement Methods	Discuss the different periodontitis measurement methods, including the Community Periodontal Index (CPI) and clinical attachment loss (CAL).	LGIS	C3	MCQS, SEQS, OSPE, OSVE

Theory				
DENTAL RADIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**

Role of Radiology in Periodontal Disease Diagnosis	Define the role of radiology in diagnosing and assessing periodontal diseases.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Radiographic Features of Health and Disease	Explain the radiographic features of healthy periodontium and pathological changes seen in gingivitis and periodontitis.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Interpretation of Radiographic Signs in Periodontal Disease	Interpret key radiographic signs of periodontal disease, including crestal bone loss, widening of the periodontal ligament space, and calculus deposits.	LGIS	C3	MCQS, SEQS, OSPE, OSVE

PERIODONTOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Periodontal Disease Terminology	Define key terminologies related to periodontal diseases: Gingivitis, periodontitis, periodontal pockets, clinical attachment level and periodontal bone loss	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Healthy Microbial Composition and Periodontal Homeostasis	Identify the microbial composition of healthy gingival and periodontal tissues. Explain the role of commensal bacteria in maintaining periodontal homeostasis.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Pathogenic Bacterial Species in Periodontal Disease	List key bacterial species involved in periodontal disease (e.g., Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola).	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Role of Bacterial Enzymes and Toxins in Tissue Destruction	Explain how bacterial enzymes, toxins, and metabolic byproducts contribute to tissue destruction.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Plaque Biofilm Formation and Role in Disease	What is Plaque biofilm and how is it form and what is its role in periodontal diseases.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Biofilm-Host Interaction and Risk Factors	Describe dental plaque biofilm as the major factor contributing to development of periodontal disease, and its relationship with host, genetic	LGIS	C3	MCQS, SEQS, OSPE, OSVE

	and local predisposing factors in exacerbating periodontal conditions.			
Plaque Visualization, Disclosure, and Mechanical Removal	Demonstrate the adherent nature of plaque and the inability to visualize easily. Describe why it is important to disclose plaque; and demonstrate the need for mechanical plaque removal both by the patient and professionally.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Dental Calculus Formation, Composition, and Role in Disease	Explain the role of dental calculus in periodontal disease, differentiate between supragingival and subgingival calculus, describe the formation, mineralization, and microbial composition of calculus, and explain how calculus acts as a plaque-retentive surface contributing to periodontal disease progression.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Other Predisposing Factors for Plaque Formation	Enlist other predisposing factors (other than calculus) that predispose to plaque formation and consequent periodontal disease like gingivitis.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Scurvy and Vitamin C Role in Periodontal Health	Describe the etiology and pathogenesis of scurvy with emphasis on the biochemical role of Vitamin C in collagen synthesis and its clinical implications on periodontal tissue integrity	LGIS	C3	MCQS, SEQS, OSPE, OSVE

PATHOLOGY-IMMUNOLOGY BASICS				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Acute Inflammation in Dental Conditions	Define acute inflammation and its pathological basis relevant to dental conditions.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Stimuli of Acute Inflammation in Oral Health	Enlist stimuli for acute inflammation, including microbes, trauma, and chemical irritants relevant to oral infections.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Chemical Mediators of Acute Inflammation in Dentistry	Classify chemical mediators of acute inflammation and their role in dental diseases such as dental abscess formation.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Vascular and Cellular Events in Acute Inflammation	Explain vascular and cellular events in acute inflammation and its relation to dental conditions like pulpitis and periodontitis.	LGIS	C3	MCQS, SEQS, OSPE, OSVE

Systemic Effects of Acute Inflammation	Describe systemic effects of acute inflammation, such as fever and leukocytosis, and their impact on dental treatment.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Microbes Causing Dental Infections	Recognize microbes causing acute inflammation in dental infections like Streptococcus mutans and Porphyromonas gingivalis.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Morphological Patterns of Acute Inflammation in Oral Diseases	Analyze morphological patterns of acute inflammation, such as purulent or fibrinous types, in oral diseases.	LGIS	C3	MCQS, SEQS, OSPE, OSVE
Chronic Inflammation and Its Oral/Systemic Significance	Define chronic inflammation and its significance in persistent oral and systemic conditions.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Chronic Inflammatory Cells and Mediators	Identify chronic inflammatory cells, such as macrophages and lymphocytes, and mediators like TNF-α and IL-1.	LGIS	C2	MCQS, SEQS, OSPE, OSVE
Pathogenesis of Porphyromonas and Fusobacterium	Discuss Porphyromonas and Fusobacterium with its pathogenesis.	LGIS	C3	MCQS, SEQS, OSPE, OSVE

PRACTICALS				
ORAL BIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Periodontal Ligament Cross-Section	Draw and label the periodontal ligament in a crosssection between teeth.	LGIS	C2	OSPE
Principal Fiber Groups Arrangement	Draw and label the arrangement of principal fiber groups within the periodontium.	LGIS	C2	OSPE
Cementoblast Differentiation and HERS Fragmentation	Draw and label the differentiation of cementoblasts from ectomesenchymal cells & the fragmentation of Hertwig's epithelial root sheath.	LGIS	C3	OSPE
Cementoena-mel Junction	Draw and label the cementoenamel junction.	LGIS	C2	OSPE

Cellular Cementum	Draw and label cellular cementum.	LGIS	C2	OSPE
Alveolar and Bundle Bone	Draw and label alveolar bone and bundle bone.	LGIS	C2	OSPE
Anatomical Zones of Gingiva and Gingival Fibers	Draw and label different anatomical zones of gingiva; mucocutaneous junction, mucogingival junction, dentogingival junction & gingival group of fibers (gingival ligament).	LGIS	C3	OSPE

DENTAL RADIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Normal Periodontal Structures on Radiographs	Identify normal periodontal structures on radiographs (OPG and periapical).	LGIS	C2	OSPE
Alveolar Bone Observation and Level Assessment	Observe alveolar bone and assess bone levels.	LGIS	C2	OSPE
Periodontal Ligament Space Identification	Identify the periodontal ligament (PDL) space on radiographs.	LGIS	C2	OSPE
Lamina Dura Identification	Identify the lamina dura on radiographs.	LGIS	C2	OSPE
Cementoena-mel Junction Recognition	Recognize the cementoenamel junction (CEJ) on radiographs.	LGIS	C2	OSPE
Cortical vs. Cancellous Bone Differentiation	Differentiate between cortical and cancellous bone on radiographs.	LGIS	C2	OSPE

PERIODONTOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Plaque Disclosure and Visualization	Demonstrate plaque disclosure and visualization techniques.	LGIS	C3	OSPE

PATHOLOGY IMMUNOLOGY BASICS				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Histological Identification of Acute Inflammation	Identify histological slides of acute inflammation.	LGIS	C2	OSPE
Brushing and Flossing Techniques	Demonstrate plaque removal techniques including proper brushing and flossing.	LGIS	C2	OSPE
Professional Plaque Removal	Observe professional plaque removal techniques including scaling (formative observation only, not assessed).	LGIS	C2	OSPE
Clinical Examination for Acute Inflammation	Perform a clinical examination to detect signs of acute inflammation.	LGIS	C3	OSPE
Differentiation of Granulomatous and Non-Granulomatous Inflammation	Distinguish between granulomatous and nongranulomatous inflammation in histological slides.	LGIS	C3	OSPE
Clinical Identification of Chronic Inflammation Signs	Identify clinical signs of chronic inflammation such as ulcers, gingival swelling, and oral lesions.	LGIS	C2	OSPE

COMMUNITY DENTISTRY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Indices in Community dentistry	CPITN.	LGIS	C3	OSPE

BLOCK 2 - ASSESSMENT PARAMETERS AND DIVISION OF MARKS

BDS Integrated Curriculum 2K25, 1st Professional Exam		
BLOCK 2 - 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	18	2	26	1	0	1	15
Physiology	14	2	22	0	1	1	15
Biochemistry	6	1	10	0	0	1	6
Oral Biology	14	2	22	2	0	1	24
General Pathology & Microbiology	12	1	16	1	0	1	15
Pharmacology	9	1	13	0	0	1	6
Community Dentistry/ Dental Radiology	3	0	3	1	1	1	24
Oral Pathology- Periodontology	4	1	8	1	0	1	15
Total Questions	80	10		6	2	8	
Net Total	80x1=80	10x4=40	120	6x9=54	2x9=18	8x6=48	120
Internal Assessment Marks*	30			30			
Grand Total	150			150			

Block 2 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 2 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 85 % = Eligible
2. if > 90% ≤ 93 % = 3 marks
3. if > 93% ≤ 95 % = 5 marks
4. 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

Anatomy

- Snell Clinical Anatomy 10th ed
- B.D Churasia
- Nelter Atlas
- Langman Embryology (12th Edi)
- Laiq Hassain Basic Histology (8th Ed)
- Difore Atlas Histology

Physiology

- Guyton and Hall physiology (14th Ed)
- Essentials of Medical Physiology by Mushtaq Ahmed

Biochemistry

- Harpers Illustrated Biochemistry (32nd Ed)
- Lippincott's Biochemistry
- Essentials of Medical Biochemistry vol 1&2 by Mushtaq Ahmed.

Community Medicine:

- Parks Textbook of Preventive and Social Medicine. K. Park (Editor)

Pathology:

- Vinary Kumar, Abdul K. Abbas and Nelson Fausto Robbins and Cotran, Pathologic basis of disease. WB Saunders.

Pharmacology:

- Basic and Clinical Pharmacology by Katzung, McGraw-Hill.

Behavioral Sciences:

- Handbook of Behavioral Sciences by Prof. Mowaddat H.Rana, 3rd Edition

Apart from these resource learning, students can consult books available in library or recommended by the specialty experts.