Study Guide Block-II

M. ISLAM DENTAL COLLEGE
MIDC
KNOWLEDGE HONOUR EXCELLENCE

BDS Year-1

BLOCK: II
Academic Year: 2026-27
Duration: 15 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 COMMITTEE

Sr. No.	Name	Department & Designation	Role
1.	Prof. Dr. Rana Modassir	Principal	Curriculum Director
2.	Prof. Dr. M. Saif Ullah	HOD, DME	Assistant curriculum Director
3.	Prof. Dr Raheela	Assoc. Professor Oral Biology	Coordinator Block-I
4.	Dr. Shahid Saeed	Professor Physiology	Coordinator Block-II
5.	Dr. Shahid Saeed	Professor Physiology Dentistry	Coordinator Block-III
Module Team			
6.	Dr. Shahid Saeed	Professor Physiology	Member
7.	Dr Saveela Sadaqat	AP Biochemistry	Member
8.	Dr. Uzma Riaz	Professor Pharmacology	Member
9.	Dr Shmasa Mohsin	Professor Anatomy	Member
10.	Dr. Rabia Asad	Professor Community Dentistry	Member
11.	Dr Shamsa Mohsin	Professor Anatomy	Member
12.	Dr. Zahid	Professor Microbiology	Member
13.	Dr. Sobia Siddique	Professor Oral Pathology	Member
14.	Dr Ahmed Mehmood	Associate Professor Behavioral Science	Member
15.	Dr. Rabeet Asif	DME	Proof reading & Editing
16.	Dr. Nivish	DME	Developer Block-I

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.
- Definesthe 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.

BLOCK-II

Sr. No.	MODULES	WEEKS
1-	Foundation-II	4
2-	Craniofacial-II	2
3-	Neurosciences-I	5
4-	Alveolocemental Complex-I	4
	Total	15 Weeks

Foundation-II

Specific Learning Objectives:

THEORY				
PHYSIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching Strategy**	**Levels C/P/A**	**Assessment**
Composition and Properties of Blood	**Enlist the composition of blood, its cellular elements, and plasma. (Expanded with hematocrit, PCV, plasma proteins).**	**LGIS (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
Red Blood Cells	**Explain the structure, morphology, and lifespan of red blood cells, including factors affecting RBC production and destruction.**		**C2**	
Anemia and Polycythemias	**Classify anemia; describe mechanisms of iron deficiency anemia, hemolytic anemia, and megaloblastic anemia at a basic level.**		**C2**	
	Define sickle cell anemia		**C1**	
	Discuss the effects of anemia on circulation.		**C2**	
	Define and enlist types of polycythemias		**C1**	
	Discuss the effects of polycythemias on circulation		**C2**	
Erythropoiesis and Its Regulation	**Explain erythropoiesis and regulation by erythropoietin.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Enumerate and elaborate role of factors/nutrients that are required and regulate erythropoiesis		**C1**	

Blood Indices and Diagnostic Interpretation	**Define blood indices mentioned as: MCV (mean corpuscular volume), MCH (mean corpuscular hemoglobin), and MCHC (mean corpuscular hemoglobin concentration). Give their normal values & enumerate the conditions in which these values are disturbed**	**LGIS (LECTURE HALL 1)**	**C1**	**MCQs, OSPE, OSVE**
BIOCHEMISTRY				
Topic	**Specific Learning Objectives**	**Teaching Strategy**	**Levels C/P/A**	**Assessment**
Structure, Synthesis, and Functions of Hemoglobin	**Describe the structure of heme and briefly describe the steps of heme synthesis with its regulation.**	**LGIS (Lecture Hall 1)/ Dissection Hall**	**C3**	**MCQs, OSPE, OSVE**
	Explain the metabolism of iron, including its absorption, transport (transferrin), storage (ferritin, hemosiderin), and regulation.		**C2**	
	How does heme combine with globin to form hemoglobin and enlist the functions of hemoglobin.		**C2**	
	Enlist the types of hemoglobin along with their percentage and chain composition.			
	Understand the oxygen-binding mechanism of hemoglobin, including the concepts of cooperative binding and allosteric regulation.			
	Describe hemoglobin structure, functions, and oxygen dissociation curve. Include hemoglobinopathies (sickle cell anemia, thalassemia).			
	Explain the significance of HbA1c.			

	Describe the structure and functions of myoglobin; compare and contrast with hemoglobin in terms of oxygen-binding and clinical relevance (MI marker).			
Porphyria	**Define and explain the biochemical basis of porphyria along with its classification.**	**LGIS (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
	Describe the oral and dental manifestations of porphyria, including erythrodontia, photosensitivity, mucosal lesions, and delayed healing.		**C2**	
Red Blood Cell Metabolism and Energy Pathways	**Describe RBC metabolism (glycolysis, pentose phosphate pathway, G6PD deficiency) and role of trace elements (iron, selenium).**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Explain RBC metabolism, including glycolysis, pentose phosphate pathway, and G6PD deficiency.		**C2**	
	Describe and outline the steps in hexose monophosphate pathway (HMP) and its significance in RBCs.		**C2**	
	Compare and contrast glycolysis and the HMP shunt.		**C3**	
	Explain hemolytic anemia due to pyruvate kinase and glucose 6 phosphate dehydrogenase deficiencies.		**C2**	
Vitamins	**Describe vitamins (A, B6, B9, B12, E), their active forms, sources, RDA, biochemical roles, and deficiency manifestations.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
ORAL BIOLOGY & TOOTH MORPHOLOGY				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Pulp–Dentin Complex	**Describe the composition and functions of dentin and pulp; correlate structural**	**LGIS (Lecture**	**C2**	**MCQs, OSPE, OSVE**

	features with clinical conditions.	**Hall 1)**		
Extracellular Matrix	**Explain the structure, functions, and degradation of extracellular matrix in oral tissues.**		**C2**	
Dentin	**Describe the process of dentinogenesis.**		**C2**	
	Differentiate between the three main types of dentin: primary, secondary, and tertiary, and describe their locations and formation.		**C2**	
	Describe the mechanisms that control dentin mineralization, and differentiate between the pattern of mineralization in mantle dentin and circumpulpal dentin.		**C2**	
	Explain the processes of secondary and tertiary dentinogenesis, including the stimuli that trigger their formation.			
	Describe the structure and function of dentinal tubules.			
	Differentiate between peritubular and intertubular dentin, and explain their respective compositions and roles.			
	Explain the formation and significance of sclerotic dentin and interglobular dentin.			
	Describe the structural features of dentin, including incremental growth lines and granular layer of Tom's.			
Pulp	**Describe the cellular contents and zones of the dental pulp.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQS, OSPE, OSVE**
	Discuss the innervation, vascular supply, and lymphatic supply of the dentin–pulp complex.		**C2**	
	Explain the mechanisms of dentin sensitivity, focusing on the		**C2**	

	hydrodynamic theory.			
	Describe the formation and clinical significance of pulp stones (denticles).		**C2**	
	Explain the age-related changes that occur in the dentin–pulp complex.		**C2**	
	Analyze the pulp's cellular response to dental caries and the mechanical trauma of cavity preparation.		**C3**	
Developmental Timeline and Chronology of Dentition	**Develop a detailed timeline chart illustrating the calcification stages and eruption periods for deciduous and permanent dentition.**		**C3**	
Pulp Anatomy	**Describe the anatomy of the pulp tissue and pulp cavities in teeth.**		**C2**	
Age-Related Changes in the Pulp	**Explain the age-related morphological and physiological changes occurring in the pulp cavity.**			

PHARMACOLOGY & THERAPEUTICS

Topic	Specific Learning Outcomes	Teaching Strategy	Levels C/P/A	Assessment
General Pharmacology	**Define pharmacology along with major branches and explain its scope, importance, and applications in dentistry and medicine.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Describe sources of drugs and active principles.		**C2**	
	Enumerate advantages and disadvantages of various routes of administration.		**C1**	
Drug Transport	**Describe drug absorption and factors affecting it.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Describe drug distribution, including concepts of volume of distribution and plasma protein binding.			

Drug Metabolism	**Describe drug metabolism (biotransformation, first-pass metabolism, phase I and II reactions, enzyme induction & inhibition, clinical relevance).**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Drug Excretion	**Describe drug excretion, elimination, and clearance mechanisms (renal, biliary, other routes) and factors affecting them.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Plasma HalfLife	**Define half-life, loading dose, maintenance dose, and steady-state concentration; explain their clinical relevance.**	**LGIS (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
Pharmacodynamics	**Explain pharmacodynamics: dose-response relationships, graded vs quantal response.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Describe types of drug receptors, cell signaling and mechanisms of receptor action.			
	Differentiate between agonists, antagonists, and partial agonists with examples.			
	Define therapeutic index and/or therapeutic window, and explain its clinical significance.			
	Identify factors that alter drug response (age, genetics, disease, pregnancy).			
	Describe adverse drug reactions and their classification.			

PATHOLOGY				
Topic	**Specific Learning**	**Teaching**	**Levels**	**Assessment**

	objectives	Strategy	C/P/A	
Intracellular Accumulations and Calcification	**Describe intracellular accumulations (lipids, proteins, glycogen, pigments).**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Define calcification; differentiate between dystrophic and metastatic calcification.		**C1**	
Pigmentation and Amyloidosis	**Define pigmentation; describe endogenous (melanin, hemosiderin) and exogenous pigments (carbon, tattoos).**	**LGIS (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
	Define amyloidosis; describe pathogenesis and morphology			
Cellular Adaptations	**Define and explain cellular adaptations: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia.**	**LGIS (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
Aging	**Define aging; describe theories of aging and morphological features.**	**LGIS (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
Inflammation	**Define acute and chronic inflammation and enlist cardinal signs.**	**LGIS (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
	Enumerate the differences between acute and chronic inflammation			
Wound healing	**Define wound healing (primary vs secondary intention).**	**LGIS (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
MICROBILOGY				
Topic	**Specific Learning objectives**	**Teaching Strategy**	**Levels C/P/A**	**Assessment**

Introduction to Microbiology	**Define microbes and describe their role in health and disease.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Differentiate between prokaryotic and eukaryotic microorganisms.		**C1,C2**	
	Classify bacteria according to morphology and staining characteristics.			
	Describe bacterial structure, spores, and growth curve.			
	Describe the composition and types of culture media (selective, differential, enrichment).			
	Compare and contrast applications of different culture media used in microbiology and oral diagnostic labs.			
Microbial Physiology and Genetics	**Define sterilization, disinfection, cross infection and antisepsis.**	**LGIS (Lecture Hall 1)**	**C1,C2**	**MCQs, OSPE, OSVE**
	Describe common methods of sterilization and disinfection (physical and chemical).			
	Explain the application of these methods in dental clinical practice to prevent cross-infection .			
Normal Flora and Host Interaction	**Define normal flora, colonizer, and dysbiosis.**	**LGIS (Lecture Hall**	**C1**	**MCQs, OSPE, OSVE**

	Discuss the normal flora of different body sites, especially the oral cavity and skin.	**1)**		
	Describe their distribution, beneficial roles, and contribution to opportunistic infections.			
PRACTICALS / LAB WORK				
RAL BIOLOGY & TOOTH MORPHOLOGY				
Topic	**Specific Learning objectives**	**Teaching Strategy**	**Levels C/P/A**	**Assessment**
Dentin & Pulp	**Draw and label dentin types (primary, secondary, tertiary), tubules, pulp zones, odontoblasts, interglobular dentin, dead tracts, pulp stones.**	**Practical Lab**	**C2**	**OSPE**
	Identify the dentin and pulp radiographically		**C1**	
	Identify the Dento-enamel junction radiographically		**C2**	
PHARMACOLOGY & THERAPEUTICS				
Topic	**Specific Learning objectives**	**Teaching Strategy**	**Levels C/P/A**	**Assessment**
Aging	**Define aging; describe theories of aging and morphological features.**	**Practical Lab**	**C1**	**OSPE**
Inflammation	**Define acute and chronic inflammation and enlist cardinal signs.**	**Practical Lab**	**C1**	**OSPE**
	Enumerate the differences between acute and chronic inflammation			

Wound healing	**Define wound healing (primary vs secondary intention).**	**Practical Lab**	**C1**	**OSPE**
PATHOLOGY				
Topic	**Specific Learning objectives**	**Teaching Strategy**	**Levels C/P/A**	**Assessment**
Microscopic Identification	**Identify cellular adaptations (metaplasia) in pictures.**	**Practical Lab**	**C1**	**OSPE**
	Perform Gram staining on bacterial smears and identify Gram-positive and Gram-negative bacteria & ZN for MTB under the microscope.	**Practical Lab**	**C1**	**OSPE**
Disinfection & Sterilizatiom	**Demonstrate appropriate disinfection methods for dental instruments and materials.**	**Practical Lab**	**C1**	**OSPE**
	Demonstrate appropriate sterilization methods (autoclave, dry heat, & moist heat) for dental instruments.			

Cranifacial-II

Specific Learning Objectives:

THEORY				
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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Describe the nerve supply of the joint		**C2**	

	emphasizing the role of nerve endings			
	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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Describe the extracranial course, branches, and distribution of the facial nerve. **Explain the causes and clinical**		**C2**	

	consequences of damage to the nerve.			
	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 (Lecture Hall 1)**	**C1**	**MCQs, OSPE, OSVE**
	In a tabulated manner enlist the extraocular and intraocular muscles of eyeball and eyelid muscles giving their nerve supply and actions		**C2**	
	Define the movements of eyeball with special reference to the axis		**C1**	
	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 ganglion		**C3**	
	Give the clinical correlates of nerves		**C3**	

	supplying the muscles of the eyeball			
	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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Describe the location, roots and distribution of pterygopalatine ganglion		**C2**	
Ear	**Describe the anatomical features and neurovascular supply of external ear**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Describe the boundaries of nasal cavity: nasal septum, lateral wall of nose, roof and floor. Give their anatomical		**C2**	

	features and neurovascular supply			
	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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Identify and classify fractures of the mandible based on anatomical regions		**C2**	
BIOCHEMISTRY				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQs, 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 intensities, its depletion and recovery, and how regular exercise influences glycogen storage capacity and muscle adaptation.		**C3**	
	Describe the ATP-PC system, its role in		**C2**	

	providing immediate energy during high-intensity activities, and the regeneration of ATP through phosphocreatine breakdown.			
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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Osteomyelitis	**Define osteomyelitis. Enlist various osteomyelitis causing Microorganisms**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Gram Positive Rods	**Discuss Actinomycetes with its epidemiology, virulence factors, pathogenesis**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)	C2	MCQs, 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 (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Myelinated & Unmyelinated Nerve Fibers	Enlist the neuroglia cells responsible for myelination in Central Nervous System (CNS) & Peripheral Nervous System (PNS)	LGIS (Lecture Hall 1)	C2	MCQs, 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 (Lecture Hall 1)	C3	MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 physiological basis		**C2**	
	Discuss the effects of hypocalcemia on nerve excitability		**C2**	
Propagation of the action potential	**Explain the mechanism of local anesthetics on nerve excitability**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Describe the structure of Sarcomere		**C2**	
General mechanism of muscle Contraction	**Explain general mechanism of skeletal muscle contraction**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Characteristics of whole muscle Contraction	**Define and differentiate isotonic and isometric contraction with 2 examples of each**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Give physiological basis of tetanization and multiple fiber summation		**C3**	
	Define motor unit		**C2**	
	Give physiological basis of Rigor mortis		**C3**	

	Explain muscle fatigue			
Neuromuscular Transmission and Excitation-Contraction Coupling	**Describe the physiological anatomy of Neuro Muscular Junction (NMJ)**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**OSPE**
Microscopic structure analysis	**Identify and interpret histological sections of bone tissue under a microscope.**	**LGIS (Lecture Hall 1)**	**C2**	**OSPE**
Image analysis	**Analyze and interpret microscopic images of bone to identify its components and features.**	**LGIS (Lecture Hall 1)**	**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 (Lecture Hall 1)**	**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**	**Dissection Hall**	**C3**	**OSPE**

	the muscles of mastication and facial expression on models or cadaveric specimens			
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-I

Specific Learning Objectives:

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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Sensory Receptors Transduction of sensory	**Classify the nerve fibers on the basis of diameter and speed of conduction**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**

stimuli into nerve impulses				
Somatosensory cortex	**Classify somatic sensations. Explain two main ascending pathways (DCML and 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.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	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 (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Pain, Headache, and Thermal Sensations	**Classify pain. Discuss location and stimulation of pain receptors**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, 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	**Name the motor areas of cerebral cortex**	**LGIS**	**C2**	**MCQs, OSPE,**

Brain Stem Control of Motor Function	**and give representation of body parts. Discuss the functions of motor areas**	**(Lecture Hall 1)**		**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 (Lecture Hall 1)**	**C2**	**MCQs, 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 Motor Cortex or in the Corticospinal Pathway	**Explain the features of upper motor neuron lesion. Explain the features of lower motor neuron lesion. Define and give types of cerebrovascular accident along with their salient features.**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
The Limbic System and the Hypothalamus	**Enlist the components of limbic system and its general functions. Enlist functions of different portions hypothalamus**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Explain the physiological basis and features of Alzheimer's disease		**C2**	
Memory	**Define memory. Classify memory on the basis of duration and information stored. Define retrograde and anterograde amnesia**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
The Autonomic Nervous System and the Adrenal	**Explain the effects of sympathetic and parasympathetic on various organs/ system of body**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
	Enlist types of autonomic receptors present		**C2**	

Medulla	**in heart, blood vessels, smooth muscles, GIT, & EYE. Give features of Alarm or stress response**			
Cerebral circulation	**Enlist the functions of CSF** **Define hydrocephalus**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Sleep	**Give types and features of sleep. Also mention the neurotransmitters involved in sleep**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Cerebellum and Basal Ganglia Contributions to Overall Motor Control	**Give functional divisions of cerebellum along with their functions** **Enlist cerebellar** **Enlist features of cerebellar dysfunction**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Special senses Optics of the eye Fluid system of the eye— intraocular fluid	**Discuss functional anatomy of the eye.** **Enlist refractive surfaces of the eye and elaborate mechanism of image formation on retina** **Define cataract and glaucoma**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Central Neurophysiolo-gy 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 (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
The sense of Hearing	**Discuss how sound is conducted from tympanic membrane to cochlea?** **Describe the mechanism of impedance**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**

Tympanic membrane and the Ossicular system	matching and its significance Describe the mechanism of attenuation reflex and its significance			
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 (Lecture Hall 1)	C3	MCQs, 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 (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
	Enlist the primary sensations of smell	LGIS (Lecture Hall 1)	C2	MCQs, 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 (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Neuron	Define neuron and describe its structure	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Neuron Classification	Classify neurons morphologically and functionally with examples	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
CNS & PNS Overview	Briefly describe components of central and peripheral nervous system	LGIS (Lecture Hall	C3	MCQs, OSPE,

		1)		OSVE
Neuroglia	Describe the supporting cells in central and peripheral nervous system	LGIS (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Receptors and Effectors	Define receptors and effectors	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Receptor Classification	Describe classification of receptors	LGIS (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Sympathetic vs. Parasympathetic System	describe the major subdivisions of ANS into sympathetic and parasympathetic nervous system with comparison of anatomical differences.	LGIS (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Cranial Nerves Overview	Describe the structural and functional features of cranial nerves.	LGIS (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Cranial Nerve Functions	Enlist all cranial nerves and describe their functions	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Spinal Nerve Anatomy	Explain the classification, structure, and functions of peripheral nerve fibers in a typical spinal nerve.	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Dermatome	Define dermatome	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Brain Regions	Enlist the parts of the brain.	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Cerebral Cortex Anatomy	Identify the lobes, sulci & gyri and cortical areas of cerebrum	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Functional Cortex	Describe functional areas of cerebrum	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Cerebral Hemisphere	Describe internal structure of cerebral hemisphere	LGIS (Lecture Hall	C3	MCQs, OSPE,

Structure	**(white matter, basal ganglia, lateral ventricle)**	**1)**		**OSVE**
Ventricular System	**Describe ventricular system (Lateral, 3rd & 4th ventricles)**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Internal Capsule	**Describe various parts of internal capsule**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Cerebellar Lobes	**Identify the lobes of cerebellum**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Cerebellar Functions	**Discuss the functional classification of cerebellum**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Cerebellar Clinical Correlates	**Define important clinical correlates, vermis syndrome, ataxia, dysarthria, dysdiadochokinesia, nystagmus, and vertigo.**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Spinal Cord Overview	**Identify the location, extent, coverings, and blood supply of spinal cord**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Spinal Cord Nuclei	**Discuss & tabulate nuclear organization at different levels of spinal cord**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Spinal Cord Cross-Section	**Describe, draw & label the transverse section of spinal cord at mid cervical level**	**LGIS (Lecture Hall**	**C3**	**MCQs, OSPE,**

	showing ascending & descending tracts	**1) Dissection Hall**		**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 (Lecture Hall 1)/ Dissection Hall**	**C3**	**MCQs, OSPE, OSVE**
Ascending Tracts	**Tabulate the sensory nerve endings, and anatomical sites of first, second, third order neurons of ascending tracts**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Descending Tracts	**Tabulate first, second, third order neurons of descending tracts**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
UMN vs. LMN Lesions	**Differentiate clearly between upper and lower motor neuron lesions**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Circle of Willis	**Discuss/Draw and label the formation of Circle of Willis**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Dural Venous Sinuses	**Discuss the location, origin and termination of dural venous sinuses.**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Intracranial Hemorrhages	**Discuss the anatomical basis of extradural, subdural and subarachnoid hemorrhages**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
CSF Physiology	**Explain the formation, circulation and absorption of CSF (Cerebrospinal fluid)**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Brain Blood Supply	**Discuss the origin, course, branches and distribution of internal carotid and vertebral artery**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Reticular System	**Basal Reticular System**	**LGIS (Lecture Hall**	**C2**	**MCQs, OSPE,**

		1)		OSVE
Thalamus & Hypothalamus Overview	Thalamus and hypothalamus in relation to limbic system	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Thalamus & Hypothalamus Connections	Discuss the blood supply, nuclei and major connections of thalamus and hypothalamus	LGIS (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Hypophyseal Portal System	Describe the Hypothalamo-Hypophyseal Portal System	LGIS (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Thalamic & Hypothalamic Clinical Correlates	Discuss the clinical correlates of thalamus and hypothalamus (Thalamic Pain, Thalamic Hand, Diabetes Insipidus)	LGIS (Lecture Hall 1)	C2	MCQs, 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 (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Glutamine Metabolism	Briefly describe the metabolism & importance of glutamine in human body.	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Hyperammonemia	Enlist inherited & acquired causes of hyperammonemia. Describe the effects of hyperammonemia on brain. Outline the management options for hyperammonemia.	LGIS (Lecture Hall 1)	C2	MCQs, OSPE, OSVE
Neuropathies	Discuss chemistry, sources, RDA, biochemical role, deficiency & toxicity of B1, B6 & B12.	LGIS (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Neurotransmitters	Explain the biosynthesis, mechanism of action, and physiological role of	LGIS	C3	MCQs,

	acetylcholine, and discuss the clinical consequences of its deficiency	(Lecture Hall 1)		OSPE, OSVE
	Outline the reactions involved in biosynthesis of catecholamines. Elaborate the mechanism of action of catecholamines. Give the cause & management of Parkinson disease.		C3	
	Describe the synthesis & biochemical importance of serotonin, melatonin & GABA.	LGIS (Lecture Hall 1)	C3	MCQs, OSPE, OSVE
Inherited disorders of amino acid metabolism	Briefly describe the cause, clinical features & management of Phenylketonuria.	LGIS (Lecture Hall 1)	C3	MCQs, 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 (Lecture Hall 1)	C3	MCQs, 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 (Lecture Hall 1)	C2	MCQs, 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,		C3	

	ramelteon, zaleplon, zolpidem and suvorexant			
Local Anesthetics	**Classify local anesthetics** **Describe their mechanism of action** **Outline various methods of giving local anesthesia**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQS, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 different structures and organ systems of the body**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, 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.**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**

	Enumerate the adverse effects of acetylcholine & cholinergic drugs			
	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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
	Classify anti-cholinergic drugs (on the basis of therapeutic uses) **Describe pharmacological actions of atropine**		**C3**	
	Differentiate between atropine and hyoscine **Enlist therapeutic uses of atropine** **Enumerate adverse effects of anti-cholinergic drugs**		**C3**	
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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C3**	**MCQs, 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 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**		**C3**	
Alpha Receptor	**Classify alpha blockers according to**	**LGIS**	**C2**	**MCQs,**

Blocking drugs	**receptor selectivity.** **Explain the pharmacological actions of alpha blockers**	**(Lecture Hall 1)**		**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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, 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 (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**

Trauma to CNS	**Define concussion and contusion** **Enlist their clinical features**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Demyelinating diseases of CNS	**Enumerate various demyelinating diseases of CNS** **Enlist clinical features and diagnosis of Multiple** **Sclerosis & Guillain-Barre syndrome**	**LGIS (Lecture Hall 1)**	**C2**	**MCQs, OSPE, OSVE**
Viruses	**Introduction to viruses, structure of virus, classification of DNA and RNA viruses**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Herpes Simplex Virus infection related to CNS	**Discuss herpes simplex virus with its epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Varicella Zoster Virus infection related to CNS	**Discuss varicella zoster virus with its epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Polio virus infections	**Discuss Polio virus with its virulence factors, pathogenesis, lab diagnosis & prevention**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**
Clostridium tetani & Clostridium botulinum infections	**Discuss Clostridium tetani and Clostridium botulinum with its virulence factors, pathogenesis, lab diagnosis**	**LGIS (Lecture Hall 1)**	**C3**	**MCQs, OSPE, OSVE**

PRACTICAL				
PHYSIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching Strategy**	**Levels C/P/A**	**Assessment**
Sensory System	**Examination of Olfactory nerve**	**LGIS (LECTURE HALL 1)**	**C2/P2**	**OSPE**

CN III, IV, VI	**Examination of 3rd, 4th and 6th nerve**	**LGIS (LECTURE HALL 1)**	**C2/P2**	**OSPE**
CN V	**Examination of trigeminal nerve**	**LGIS (LECTURE HALL 1)**	**C2/P2**	**OSPE**
CN VII	**Examination of facial nerve**	**LGIS (LECTURE HALL 1)**	**C2/P2**	**OSPE**
CN IX, X, XI, XII Motor System	**Examination of 9th, 10th, 11th & 12th nerve**	**LGIS (LECTURE HALL 1)**	**C2/P2**	**OSPE**
	Demonstrate following superficial reflexes: Corneal Reflex, Conjunctival Reflex & Plantar reflex.	**LGIS (LECTURE HALL 1)**	**C2/P2**	**OSPE**
Deep Reflexes Hypothalamus	**Examination of Deep tendon reflexes**	**LGIS (LECTURE HALL 1)**	**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-I

Specific Learning Objectives:

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 (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Components of Periodontium	**Identify its components (cementum, PDL, alveolar bone, gingiva) and their diagrammatic arrangement around the tooth.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Periodontium Terminology	**Recognize and define key terms (e.g., cementoid, Sharpey's fibers, proprioception) related to alveolocemental complex**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Development of Supporting Tissues	**Discuss the development of Supporting Tissues**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Periodontal Ligament Structure	**Enlist the structure and function of the periodontal ligament.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Periodontal Ligament Fiber Groups	**Describe the different groups of fibers in the periodontal ligament.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Functional Adaptation of Periodontal Ligament	**Describe the adaptation of the periodontal ligament to the functional demands.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Periodontal Ligament	**Relate the study of the periodontal ligament with developmental**	**LGIS (LECTURE**	**C3**	**MCQS, OSPE, OSVE**

Clinical Relevance	**disturbances and clinical implications.**	**HALL 1)**		
Cellular vs Acellular Cementum	**Differentiate between the structure of cellular and acellular cementum.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Types of Cementum	**Classify and explain the structure of different types of cementum and their properties.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Cementum in Attachment Apparatus	**Describe the role of cementum in the attachment apparatus.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Cementum Resorption and Repair	**Describe resorption and repair of cementum and age changes.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Cementum Clinical Relevance	**Relate the study of cementum with developmental disturbances and clinical implications.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Bone Cells and Molecular Regulation	**Describe the histology of bone cells and their molecular regulation.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Alveolar Bone Structure and Function	**Describe the structure and functions of alveolar bone.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Alveolar Bone Age Changes and Clinical Relevance	**Elaborate its changes with age and its clinical considerations.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Gingival Histology	**Describe the histological aspects of gingiva.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Gingival Fibers	**Enumerate gingival fibers & their functions.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Gingival Blood and Nerve Supply	**Tabulate blood and nerve supply of gingiva.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**

Gingival Epithelium	**Describe the structural and functional characteristics of different areas of Gingival epithelium**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Dentogingival Junction	**Explain the structure of dentogingival junction.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Mucogingival Junction	**Explain the structure of mucogingival junction.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Tooth Eruption Phases	**Describe eruption and phases of tooth movement.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Pre-eruptive Tooth Movement	**Elaborate pre-eruptive tooth movement.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Eruptive Tooth Movement Mechanisms	**Discuss the mechanism and factors responsible for eruptive tooth movement.**	**LGIS (LECTURE HALL 1)**	**C2C**	**MCQS, 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 (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Tooth Shedding	**Discuss histology and causes of tooth shedding.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Abnormal Tooth Movements	**Describe the factors involved in abnormal tooth movement.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Bone Modeling and Remodeling	**Describe modeling and remodeling of bone.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Orthodontic Tooth Movement	**Explain orthodontic tooth movement.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Investing Layer of	**Describe the investing layer associated with the crowns of**	**LGIS (LECTURE**	**C3**	**MCQS, OSPE, OSVE**

Unerupted Teeth	**unerupted teeth.**	**HALL 1)**		
Periodontium Overview	**Define the alveolo-cemental complex (periodontium) and explain its role in dental support.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Periodontal Indices	**Explain the principles and methodology for measuring periodontal diseases in population-based studies.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, 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 (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Periodontitis Measurement Methods	**Discuss the different periodontitis measurement methods, including the Community Periodontal Index (CPI) and clinical attachment loss (CAL).**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**

THEORY				
DENTAL RADIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Role of Radiology in Periodontal Disease	**Define the role of radiology in diagnosing and assessing periodontal diseases.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**

Diagnosis				
Radiographic Features of Health and Disease	**Explain the radiographic features of healthy periodontium and pathological changes seen in gingivitis and periodontitis.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, 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 (LECTURE HALL 1)**	**C3**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Role of Bacterial Enzymes and Toxins in Tissue	**Explain how bacterial enzymes, toxins, and metabolic byproducts contribute to tissue destruction.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**

Destruction				
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 (LECTURE HALL 1)**	**C2**	**MCQS, 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 and local predisposing factors in exacerbating periodontal conditions.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
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 (LECTURE HALL 1)**	**C3**	**MCQS, 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 (LECTURE HALL 1)**	**C3**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Scurvy and Vitamin C Role in	**Describe the etiology and pathogenesis of scurvy with emphasis on the biochemical role of**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**

Periodontal Health	**Vitamin C in collagen synthesis and its clinical implications on periodontal tissue integrity**			

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 (LECTURE HALL 1)**	**C2**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, 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 (LECTURE HALL 1)**	**C3**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Microbes Causing Dental Infections	**Recognize microbes causing acute inflammation in dental infections like Streptococcus mutans and Porphyromonas gingivalis.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, 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 (LECTURE HALL 1)**	**C3**	**MCQS, OSPE, OSVE**
Chronic Inflammation and Its Oral/Systemic Significance	**Define chronic inflammation and its significance in persistent oral and systemic conditions.**	**LGIS (LECTURE HALL 1)**	**C2**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**MCQS, OSPE, OSVE**
Pathogenesis of Porphyromonas and Fusobacterium	**Discuss Porphyromonas and Fusobacterium with its pathogenesis.**	**LGIS (LECTURE HALL 1)**	**C3**	**MCQS, 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 (LECTURE HALL 1)**	**C2**	**OSPE**
Principal Fiber Groups Arrangement	**Draw and label the arrangement of principal fiber groups within the periodontium.**	**LGIS (LECTURE HALL 1)**	**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 (LECTURE HALL 1)**	**C3**	**OSPE**

Cementoenamel Junction	Draw and label the cementoenamel junction.	LGIS (LECTURE HALL 1)	C2	OSPE
Cellular Cementum	Draw and label cellular cementum.	LGIS (LECTURE HALL 1)	C2	OSPE
Alveolar and Bundle Bone	Draw and label alveolar bone and bundle bone.	LGIS (LECTURE HALL 1)	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 (LECTURE HALL 1)	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 (LECTURE HALL 1)	C2	OSPE
Alveolar Bone Observation and Level Assessment	Observe alveolar bone and assess bone levels.	LGIS (LECTURE HALL 1)	C2	OSPE
Periodontal Ligament Space Identification	Identify the periodontal ligament (PDL) space on radiographs.	LGIS (LECTURE HALL 1)	C2	OSPE
Lamina Dura Identification	Identify the lamina dura on radiographs.	LGIS (LECTURE HALL 1)	C2	OSPE
Cementoenamel Junction	Recognize the cementoenamel junction (CEJ) on radiographs.	LGIS (LECTURE	C2	OSPE

Recognition		**HALL 1)**		
Cortical vs. Cancellous Bone Differentiation	**Differentiate between cortical and cancellous bone on radiographs.**	**LGIS (LECTURE HALL 1)**	**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 (LECTURE HALL 1)**	**C3**	**OSPE**
Plaque Index Recording	**Record plaque index using standard methods.**	**LGIS (LECTURE HALL 1)**	**C3**	**OSPE**
Brushing and Flossing Techniques	**Demonstrate plaque removal techniques including proper brushing and flossing.**	**LGIS (LECTURE HALL 1)**	**C2**	**OSPE**
Professional Plaque Removal Observation	**Observe professional plaque removal techniques including scaling (formative observation only, not assessed).**	**LGIS (LECTURE HALL 1)**	**C2**	**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 (LECTURE HALL 1)**	**C2**	**OSPE**
Clinical Examination for Acute	**Perform a clinical examination to detect signs of acute inflammation.**	**LGIS (LECTURE HALL 1)**	**C3**	**OSPE**

Inflammation				
Differentiation of Granulomatou s and Non-Granulomatou s Inflammation	**Distinguish between granulomatous and nongranulomatous inflammation in histological slides.**	**LGIS (LECTURE HALL 1)**	**C3**	**OSPE**
Clinical Identification of Chronic Inflammation Signs	**Identify clinical signs of chronic inflammation such as ulcers, gingival swelling, and oral lesions.**	**LGIS (LECTURE HALL 1)**	**C2**	**OSPE**

COMMUNITY DENTISTRY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Indices in Community dentistry	**CPITN.**	**LGIS (LECTURE HALL 1)**	**C3**	**OSPE**

CFR-C

Sr. No.	CFR-C	Teaching Strategy	Levels C/P/A	Assessment
1.	Infection Control & Management	SGD (Skills Lab)	C3/P	OSPE
2.	Communication Skills	SGD (Skills Lab)	C3/P	OSPE
3.	Temperature Recording	SGD (Skills Lab)	C3/P	OSPE

ASSESSMENT POLICY

BLOCK-II								
Sr. No.	**Theory**			**Practical**				**Total**
1-	**Foundation-II**	**36 MCQs**	**120 Marks**	**Practical Clinical Examination**	**07 OSPE (9Marks each)**	**07 Stations *9= 63 Marks**	**120 Marks**	**300 Marks**
2-	**Craniofacial-II**	**30 MCQs**			**01 OSCE (9 Marks each)**	**01 Station *9= 09 Marks**		
3-	**Neurosciences-I**	**36 MCQs**			**08 OSVE (9 Marks each)**	**08 Station *6= 48 Marks**		
	Alvelocemental complex-I	**18 MCQs**						
Internal Assessment 10%			**Internal Assessment 10%**					

BLOCK EXAM TOTAL = 300 MARKS			
Theory Exam	**120 Marks**	**Practical/Clinical Exam**	**120 Marks**
Internal Assessment 10%	**30 Marks**	**Internal Assessment 10%**	**30 Marks**

Theory Exam = Internal Assessment	**150 Marks**	**Practical/Clinical Exam + Internal Assessment**	**150 Marks**

INTERNAL ASSESSMENT

It shall constitute 20% of the total assessment at the end of the academic year

	SCORING PARAMETER	WEIGHTAGE (PERCENTAGE)
Theory 10%	Attendance	75% attendance -1% >85% attendance -2%
	Block exam	5%
	Continuous assessment	3%
Practical 10%	Attendance	75% attendance -1% >85% attendance -2%
	Block Exam	5%
	Portfolio-Clinical Logbooks (CFRC,PRISME)	3%

Time Tables:

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

ASSESSMENT TOOLS

In order to ensure transparency, validity, and reliability in student assessment, it is hereby notified that the following assessment tools shall be used as integral components of the BDS Assessment Program.

These assessment tools have been selected in accordance with the examination and assessment framework prescribed by University of Health Sciences Lahore

The following tools shall be employed for both **formative and summative assessments** of BDS students:

1. **Multiple Choice Questions (MCQs)** – to assess cognitive knowledge, clinical reasoning, and application of concepts.
2. **Short Answer Questions (SAQs)** – to evaluate analytical thinking, interpretation, and written expression of knowledge.
3. **Objective Structured Practical Examination (OSPE)** – to assess laboratory and practical competencies in basic and pre-clinical sciences.
4. **Objective Structured Clinical Examination (OSCE)** – to evaluate clinical skills, communication skills, professionalism, and patient-centered competencies.
5. **Objective Structured Viva Examination (OSVE)** – to assess conceptual understanding, clinical reasoning, and professional judgment through structured viva stations.

All HODs are directed to incorporate the above-mentioned tools in their internal assessments, send-up examinations, and professional examination preparation processes.

LEARNING RESOURCES FOR STUDENTS

ANATOMY

- Color Atlas of Anatomy by Mc Minn
- Clinically Oriented Development Anatomy by K. L. Moore
- Anatomy for Dental Students by D. R. Johnson & K. L. Moore
- Clinical Neuroanatomy by R. Snell
- High Yeild Neuroanatomy by James D Fix
- Last's Anatomy by R.M.H. McMinn
- Cunningham's Manual of Practical Anatomy
- Gray's Text Book of Anatomy
- Text Book of Anatomy by Hamilton
- Langman's Medical Embryology by Thomas W. Sadler

HISTOLOGY

- Colour Textbook of Histology (2nd Ed) 2001. Gartner & Hiatt. Published by Saunders. ISBN 0721688063
- Basic Histology (10th Ed) Junqueira, Carneiro Contopoulos. Published by Appleton & Lange. ISBN 0838503764
- Essential Histology (1993 Ed. Rev.) Published by Lippincott. ISBN 0397510624
- Wheater Functional Histology Text & Colour Atlas (4th Ed) 2000. Wheater, Burkitt, Young & Heath. Published by Churchill Livingstone. ISBN 0443056129
- Atlas of Functional Histology 1999 Kerr. Published by Mosby ISBN 0723430721
- Human Histology (2nd Ed) 1996 Stevens & Lowe. Published by Mosby. ISBN 0723424853

PHYSIOLOGY

- Textbook of Medical Physiology (10th Ed) Sept.2000 Guyton. Published by Saunders. ISBN 072168677X.
- Review of Medical Physiology (20th Ed) 2001 Ganong. Published by Appleton & Lange. ISBN 0838582826
- Physiology (2nd Revised Ed) 1998 Linda S Costanzo. Published by W B Sanders, ISBN 0721666116
- Lecture Notes on Human Physiology (4th Ed) Bray JJ, Cragg, PA, MacKnight ADC, Mills RG & Taylor D W. Published by Blackwell, ISBN 0865427755.
- Human Physiology (8th Ed) 1998. Vander, Sherman & Luciano. Published by McGraw Hill. ISBN 0071182543

- Principles of Physiology (3rd Ed)2000 Berne RM & Levy MW. Published by Mosby (HBJ). ISBN 0-323-00813-5
- Physiology (4th Ed) 1998. Berne R M & Levy M W. Published by Mosby (HBJ). ISBN 0815109520.
- Guyton and Hall - Physiology Review (MCQ Book)

BIOCHEMISTRY

- Lippincots illustrated Reviews, Biochemistry
- Basic and Applied Dental Biochemistry by Williams & Elliott Harper's Biochemistry
- Berg, Tymoczko & Stryer, 5th edition (2002). Biochemistry
- Essentials of Medical Biochemistry Vol 1,2 by Mushtaq Ahmed

ORAL BIOLOGY & TOOTH MORPHOLOGY

- Oral Histology Development, Structure & Function by Richard Ten Cate
- Orban's Oral Histology & Embryology by Orban
- Tooth Morphology by Fuller
- Wheeler's Atlas of Tooth Form by Wheeler
- Oral Physiology by Levalle

PATHOLOGY & MICROBIOLOGY

- Robbins & Cotran Pathologic Basis of Disease
- Review of Medical Microbiology and Immunology by Levinson
- Textbook of Pathology by Walter & Israel

COMMUNITY & PREVENTIVE DENTISTRY

- Textbook of Preventive and Community Dentistry by S.S. Hiremath
- Community Oral Health by Cynthia Pine & Rebecca Harris