M. ISLAM DENTAL COLLEGE

GUJRANWALA

FOUNDATION BLOCK
MODULE-I, II, III

FIRST YEAR BDS, ACADEMIC SESSION 2026-27

BLOCK: I

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 Committee

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-I
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 Shmasa Mohsin	Professor Anatomy	Member
8.	Dr. Rabia Asad	Professor Community Medicine	Member
9.	Dr Shamsa Mohsin	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. 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:

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

Module Outcomes:

5. 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.
6. Highlights information on the contribution of continuous on the student's overall performance.
7. 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.

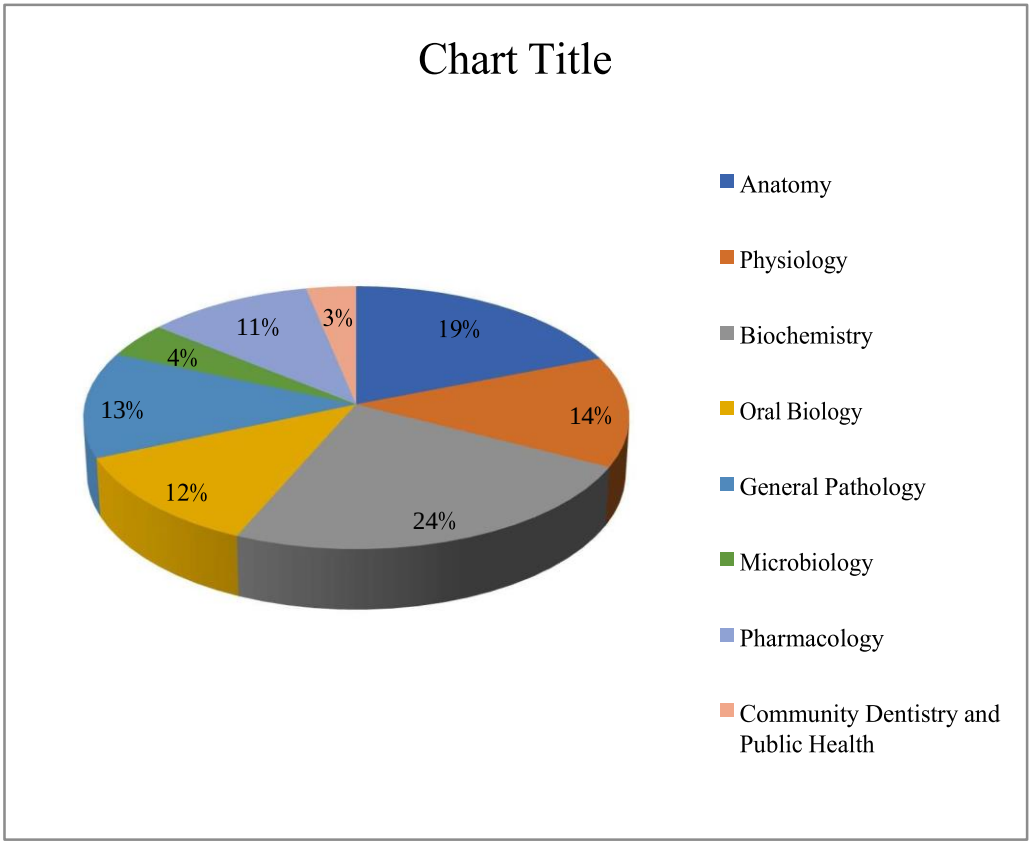
- **Case Based Learning (CBL):**

  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.

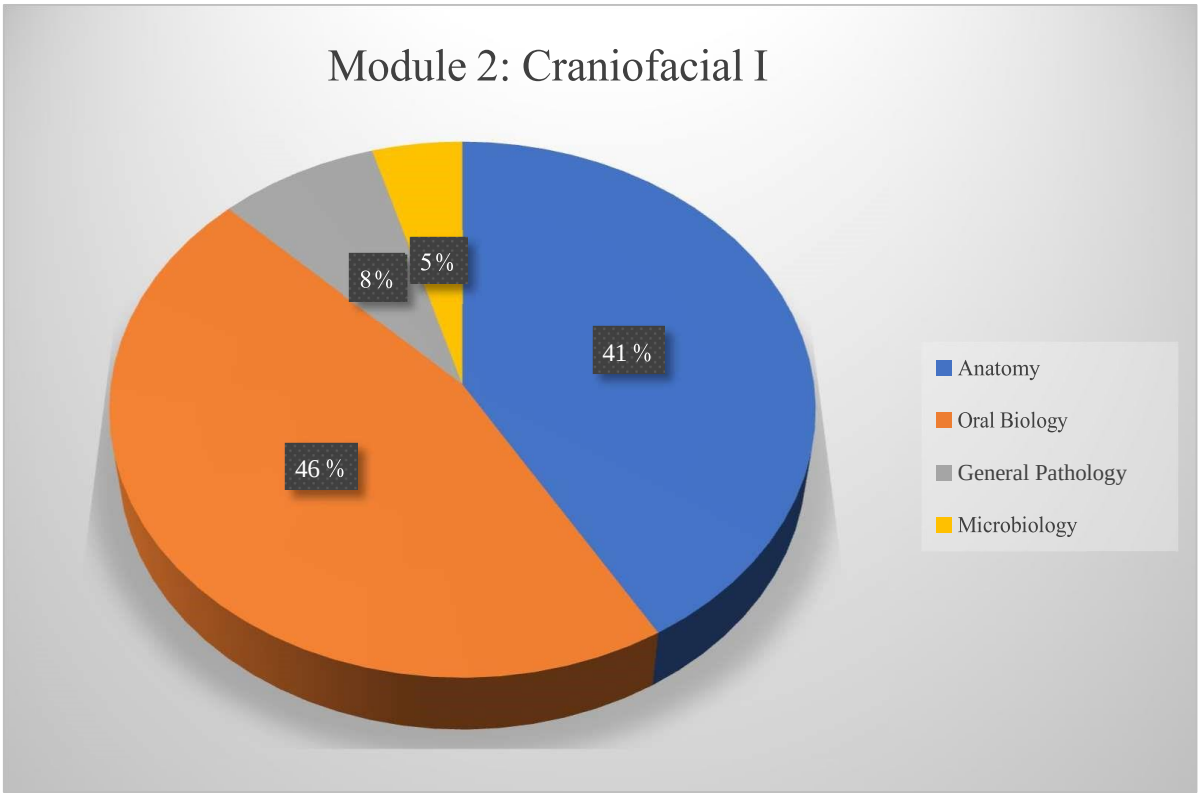
ORGANIZATION OF THE BLOCK

MODULE-I



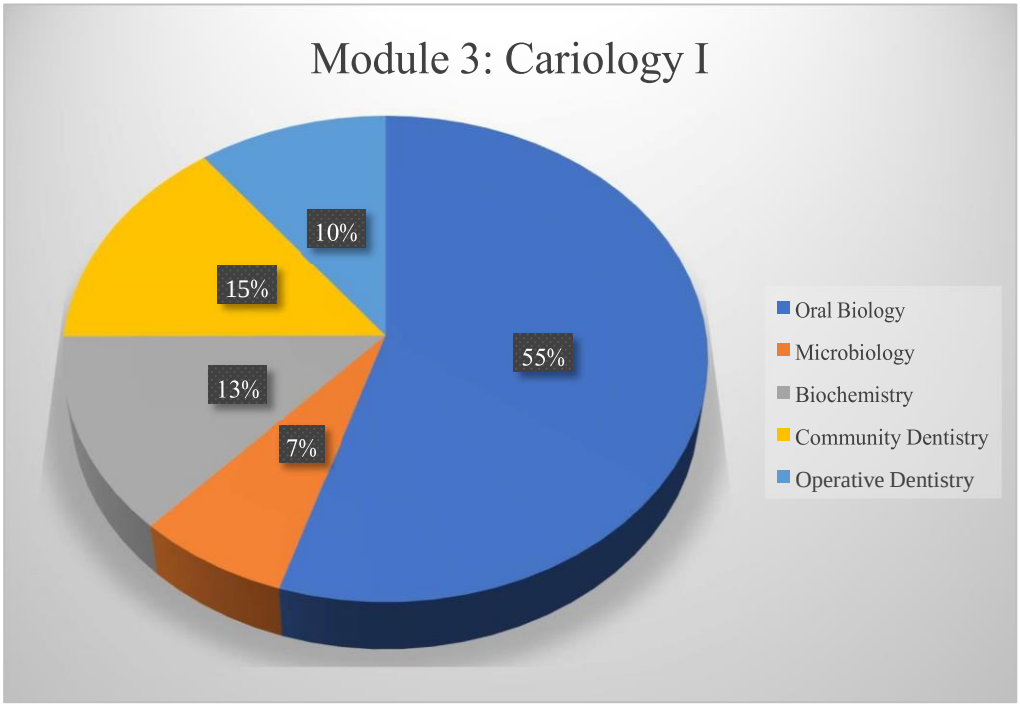
Module Weeks	Recommended Minimum Hours
5.3	180

MODULE-II



Module Weeks	Recommended Minimum Hours
3.1	109

MODULE-III



Module Weeks	Recommended Minimum Hours
1.9	65

ANATOMY				
GROSS ANATOMY				
TOPIC	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Introduction to Human Anatomy: Definitions, Terminology, and Planes	Define different branches of Anatomy	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Describe the "Anatomical Position"		C2	
	Discuss the planes of body		C2	
	Describe the terms related to position, movement and laterality		C2	
Osteology	Discuss the structural characteristics of compact and spongy bones	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Classify bones based on region, size and shape providing examples of each, preferably from the head and neck		C2	
	Describe the general characteristics of an adult typical long bone		C2	
	Define ossification and briefly describe the process of intramembranous and endochondral ossification	SGD (Dissection Hall & Museum	C2	
	Describe rule of ossification		C2	
	Describe the blood supply of various types of bones			
	Describe the features of different views of skull (Anterior, Posterior, Superior, Inferior, Lateral)	SGD (Dissection Hall & Museum	C3	
Joints	Describe the structural classification of Joints (fibrous, cartilaginous and synovial) along with their sub-classifications with examples of each	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Enlist the general characteristics of synovial joints		C1	
	Enlist the factors stabilizing a synovial joint		C2	
	Describe Hilton's Law		C2	
Cartilage	Discuss and differentiate the gross features of hyaline, elastic and fibrocartilage	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
Myology	Describe the types of muscular tissue (skeletal, smooth and cardiac)	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE
	Describe parts of a muscle		C2	
	Classify and exemplify skeletal muscles on the basis of shape, fiber architecture and action		C3	
Integumenta-ry system	Describe the two layers of skin (epidermis and dermis)	SGD (Dissection Hall & Museum)	C2	MCQs, SEQs, OSVE, OSPE

HISTOLOGY				
TOPIC	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Cell	Describe the electron microscopic structure and fluid mosaic model of plasma membrane	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	List the membranous and non-membranous cellular organelles of cell	LGIS	C1	
	Describe the structure of the cellular organelles and correlate with their functions		C2	
	Describe the structure of different types of cell junctions	LGIS	C2	
	Briefly describe the structure of nucleus	LGIS	C2	
Epithelium	Classify and exemplify the epithelia with their histological structure, locations, and functions	LGIS	C3	MCQs, SEQs, OSVE, OSPE
	Draw and label light microscopic diagram of different types of epithelia	LGIS	C3	
	Describe the electron microscopic structure & functions of the following apical cell surface specializations: i. Microvilli ii. Stereocilia iii. Cilia	LGIS	C2	
	Describe the structure of basement membrane		C2	
	Classify and exemplify the exocrine glands on the basis of: Shape of secretory portions and ducts mode of secretion and types of secretion and shape of secretory portions and ducts	LGIS	C2	
Connective Tissue	List the connective tissue cells along with their functions	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Describe the composition of ground substance of connective tissue		C2	
	Describe the structure of fibers of connective tissue	LGIS	C2	
	Classify connective tissue along with their examples	LGIS	C2	
	Draw and label light microscopic diagram of different types of connective tissue	LGIS	C2	
Cartlages	Describe the microscopic and ultramicroscopic structure of all types of cartilages	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Draw and label light microscopic diagram of different types of cartilages	LGIS	C2	
Bones	List the bone cells along with their functions	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Describe the composition of bone matrix (organic, inorganic)		C2	
	Describe the histology of compact and spongy bone	LGIS	C2	
	Draw and label light microscopic diagram of compact and spongy bones		C3	
Muscles	Describe the microscopic structure and	LGIS	C2	MCQs, SEQs,

	ultramicroscopic structure of skeletal, cardiac, and smooth muscles			OSVE, OSPE
Lymphoid System	Draw and label light microscopic diagram of muscles	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the light microscopic structure of lymphoid organs	LGIS	C2	
	Draw and label light microscopic diagram of lymphoid organs	LGIS	C2	
Skin	Describe the composition of epidermis and dermis	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Draw and label light microscopic diagram of thick and thin skin	LGIS	C2	
PHYSIOLOGY				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Homeostais: Control of internal Environment	Define Homeostasis	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe internal environment of the body		C2	
	Differentiate between Extracellular and Intracellular Fluids (with special emphasis on comparing the concentration of sodium, potassium, and calcium ions)	LGIS	C2	
Control systems of the Body	Name control system of body by giving examples	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Explain the positive, negative, and feed-forward mechanisms with examples		C2	
Cell and its Organelles and their Functions	Discuss organization of the cell	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Explain the structure and functions of the cell membrane		C2	
	Enlist the functions of Glycocalyx		C1	
	Name different proteins of the cell membrane with their functions		C1	
	Enlist membranous and non-membranous organelles	LGIS	C1	
	Enlist the self-replicative organelles		C1	
	Differentiate between the functions of smooth and rough endoplasmic reticulum	LGIS	C2	
	Explain the functions of Golgi apparatus		C2	
	Explain the functions of lysosomes		C2	
	Explain the functions of peroxisomes		C2	
	Compare functions of lysosomes and peroxisomes		C3	
	Enlist functions of mitochondria and ribosomes		C1	
	Enumerate the components and functions of the cytoskeleton	SGD	C1	
Functional Systems of Cell	Define and enlist types of endocytosis	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Explain the mechanism of pinocytosis		C2	
Transport of Substance through Cell	Enlist different transport mechanisms	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Discuss the process of simple diffusion across the cell membrane	LGIS	C2	

Membrane	Explain the process of facilitated diffusion	SGD	C2	
	Compare features of simple and facilitated diffusion with examples		C3	
	Classify different types of active transport	LGIS	C1	
	Describe primary and secondary active transport with examples		C2	
	Enlist and explain functions of Na-K pump		C2	
Blood with Special Emphasis on Red Blood Cells, Anemia and Polycythemia	Discuss the components of blood	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Enlist the functions of blood		C1	MCQs, SEQs, OSVE, OSPE
	Enlist plasma proteins		C1	
	Enumerate the different sites of erythropoiesis at different ages	LGIS	C1	
	Enlist the stages of erythropoiesis		C1	
	Discuss characteristics of red cells		C2	
	Give normal range of red cells in blood, also their shape and size		C2	
	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		C2	
	Discuss functions of red cells		C2	
	Discuss the site and mechanism of production of erythropoietin and its role in erythropoiesis	LGIS	C2	
	Explain the significance of vitamin B12 and folic acid in maturation of red blood cells		C2	
	Enumerate and elaborate role of factors/nutrients that are required and regulate erythropoiesis		C2	
	Discuss components/structure of hemoglobin	LGIS	C2	
	Define sickle cell anemia		C2	
	Discuss fate of red cells when they complete their life span		C2	
	Define and classify anemia on the basis of morphology and cause	SGD	C2	
	Discuss its effects on circulation		C2	
	Define and enlist types of polycythemias	LGIS	C2	

BIOCHEMISTRY				
TOPIC	**SPECIFIC LEARNING OUTCOMES**	**Teaching Strategy**	**LEVELS C/P/A**	**Assessment**
Carbohydrate	Define carbohydrates and their general structure.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Classify carbohydrates into monosaccharides, disaccharides, oligosaccharides, and polysaccharides and their biochemical importance		C3	
	Define carbohydrate isomerism, differentiate between aldo-keto isomers, D & L isomers, epimers, and α & β anomers, and provide suitable examples of each relevant to dentistry (dental caries, salivary glycoproteins)		C2	
	Differentiate between reducing and non-reducing sugars.		C2	
	Define blood glucose levels and identify the normal ranges for fasting, random, and postprandial blood glucose measurements.	LGIS	C2	
	Define glycemic index and and evaluate the impact of various dietary carbohydrates on blood sugar levels, highlighting their clinical significance.		C2	
Amino Acid & Protein Classification with Importance	Define amino acids and classify standard aminoacids according to side chain and nutritional importance	LGIS	C3	MCQs, SEQs, OSVE, OSPE
	Define and classify proteins and their biological significance	LGIS	C3	
	Explain the levels of protein organization (primary, secondary, tertiary, and quaternary structures) and their relevance to protein function.	LGIS	C2	
Lipids	Define lipids and their Classification along with their biological importance	LGIS/SGD	C2	MCQs, SEQs, OSVE, OSPE
Vitamins	Define vitamins and their biological role.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Classify the vitamins on the basis of solubility with their sources, active form, biological role, RDA and their disorders		C2	
Acid, Base, pH & Buffers	Define acids, bases, and pH in biological systems.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Explain the concept of pH scale and its importance in body fluids.		C2	
	Enlist the buffer systems of the human body and their role in maintenance of homeostasis.	LGIS	C2	
	Describe the Henderson-Hasselbalch equation and its applications.	LGIS	C2	
Enzymes	Define enzymes and their role in biological reactions.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Classify enzymes with examples of each		C2	
ORAL BIOLOGY				

	Explain the properties and mechanism of enzyme	LGIS	C2	
	Describe the factors affecting enzyme activity and regulation of enzyme	SGD	C2	
Cell	Describe the fluid mosaic model of cell membrane	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the role of cell orgnalles with respect to their biochemical processes including their marker enzymes	LGIS	C2	
Signal Transduction Pathway	Define and classify receptors.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Delineate the sequence of events in the signal transduction pathways involving Gs and Gq proteins.	LGIS	C3	
Cell Energy Metabolism	Differentiate between anabolism and catabolism, and list the metabolic pathways associated with each process.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Outline the steps of glycolysis pathway including regulation of key enzymes with energetics	SGD	C3	
	Differentiate between aerobic and anaerobic glycolysis, highlighting the fate of pyruvate in each condition.		C2	
Hemoglobin Structure, Types, and Functions	Describe the structure of Heme and briefly describe the steps of Heme synthesis with its regulation.	LGIS	C3	MCQs, SEQs, OSVE, OSPE
	How does Heme combine with Globin to form Hemoglobin and Enlist the functions of Hemoglobin	LGIS	C3	
	Enlist the types of hemoglobin along with their percentage and chain composition.		C2	
	Explain the significance of HbA1c		C2	
	Define and explain the biochemical basis of prophyria along with its classification.	LGIS	C2	
	Describe the oral and dental manifestations of porphyria, including erythrodontia, photosensitivity, mucosal lesions, and delayed healing.		C2	
Metabolic Pathways in Red Blood Cells	Explain the significance of anaerobic glycolysis in RBCs.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Define and explain the Rapoport-Luebering cycle as a glycolytic bypass in RBCs, highlighting 2,3- BPG production and its role		C2	
	Describe and outline the steps in Hexose Monophosphate Pathway (HMP) and its significance in RBC's	LGIS	C3	
	Compare and contrast Glycolysis and the HMP Shunt		C3	
	Explain hemolytic anemia due to pyruvate kinase and glucose 6 phophate dehydrogenase deficiencies.	LGIS	C2	

Oxygen Dissociation Curve	Understand the oxygen-binding mechanism of hemoglobin, including the concepts of cooperative binding and allosteric regulation.	SGD	C2	MCQs, SEQs, OSVE, OSPE
	Explain and draw the oxygen-hemoglobin dissociation curve for hemoglobin.	LGIS	C2	
	Give biochemical explanation for abnormally high oxygen affinity of hemoglobin in the stored blood.		C3	
Biochemical Role of Selenium, Iron in RBC function	Describe the biochemical role of Selenium and Iron in RBC function, antioxidant defense, and erythropoiesis.	LGIS	C2	MCQs, SEQs, OSVE, OSPE

Topic	Specific Learning Objectives	Teaching strategy	Levels C/P/A	Assessment
Structure of Oral Tissues (An Brief Introduction	The Tooth	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Supporting Tissues of the Tooth		C2	
	Oral Mucosa		C2	
	Salivary Glands		C2	
	Bones of the Jaw		C2	
	Temporomandibular Joint		C2	
	Hard Tissue Formation		C2	
	Mineralization		C2	
	Hard Tissue Degradation		C2	
	Enamel		C2	
	Dentine		C2	
	Cementum		C2	
	Periodontal Ligament		C2	
Cytoskeleton	Describe the structure, types, and functions of the cytoskeleton, including microfilaments, intermediate filaments, and microtubules, within oral tissues.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Cell Junctions	Classify and explain the functions of intercellular junctions, including tight junctions, adherents junctions, desmosomes, and gap junctions, in oral epithelial tissues.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Illustrate the structural features and functions of desmosomes and hemidesmosomes in maintaining the integrity of oral epithelial tissues.	LGIS	C2	
Fibroblast	Describe the structure, secretory functions, and role of fibroblasts in the maintenance of the extracellular matrix in oral tissues	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Explain the steps involved in collagen synthesis and assembly, highlighting its importance in oral connective tissue.	LGIS	C2	
Extracellular Matrix	Discuss the composition, function, and degradation processes of the extracellular matrix, emphasizing its role in oral tissue integrity and repair.	LGIS	C2	MCQs, SEQs, OSVE, OSPE

Introduction and nomenclature	Name the three major functions of the human dentition	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Describe various ways of classifying human dentition.		C2	
	Define the three dentition periods (deciduous, mixed, permanent).Identify each period's approximate time intervals, initiation, and termination events	LGIS	C2	
	Describe the dental Formula for permeant and Deciduous dentition	LGIS	C2	
	Define "succedaneous" and identify succedaneous teeth	LGIS	C2	
	Describe the eruption pattern of primary and permanent dentition		C2	
	Demonstrate understanding of various dental numbering systems (e.g., universal, FDI, Palmer).		C2	
	Describe the anatomical surfaces and land marks of both anterior and posterior teeth, including the roots, using standardized dental terminology.	LGIS	C2	
	Identify and name tooth surfaces and thirds of tooth surfaces from diagrams or descriptions		C1	
	Differentiate between the crown surfaces of teeth by matching them with their correct general shape (triangular, trapezoidal, or rhomboidal), or by relating the shape to the specific function of the tooth.		C3	
	Identify and name line and point angles based on diagrams or descriptions.	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Define elevations and depressions on the tooth surface.		C2	
	Applications to the type of root structure necessary for proper the function of the different teeth, and the general rules regarding tooth roots and the normal number of branches.		C3	
GENERAL PATHOLOGY				
TOPIC	Specific Learning Outcomes	**Teaching Strategy**	Levels C/P/A	**Assessment**
Pathology	Define the terms: pathology, etiology & pathogenesis	LGIS	C1	MCQs, SEQs, OSVE, OSPE
Cell Injury	Discuss causes of cell injury	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the types and mechanism of cell injury		C2	
	Identify different types of cellular adaptations to stress with examples		C1	

	Discuss the mechanism of cellular adaptations to stress in detail		C2	
Cell Death	Identify the two types of cell death	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Enumerate the differences between them		C1	
Necrosis	Define necrosis	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Identify its various types with examples		C1	
Apoptosis	Define apoptosis with examples	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Describe its mechanism and pathways in detail		C2	
Intracellular accumulations	Discuss mechanism & types of intracellular accumulations	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Pigmentation	Define pigmentation and identify various endogenous & exogenous pigments	LGIS/SGD	C2	MCQs, SEQs, OSVE, OSPE
Calcification	Define calcification and differentiate between dystrophic & metastatic calcification	LGIS/SGD	C2	MCQs, SEQs, OSVE, OSPE
Aging	Explain the changes taking place due to aging at the cellular level	LGIS	C2	MCQs, SEQs, OSVE, OSPE
MICROBIOLOGY				
TOPIC	Specific Learning Outcomes	**Teaching Strategy**	LEVELS C/P/A	**Assessment**
General Microbiology	Enlist microbes that cause infectious diseases along with important features.	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Differentiate between Eukaryotes & Prokaryotes.		C2	
Bacteria	Discuss morphology, structure of bacteria including cell wall, cytoplasmic membrane, and cytoplasmof bacteria.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Discuss important structures outside cell wall & bacterial spores.		C2	
	Differentiate between gram positive & negative bacterial cell wall on the basis of staining.		C2	
	Discuss bacterial growth curve.	**LGIS**	C2	
	Define anaerobic & aerobic growth and discuss fermentation of sugars and iron metabolism.		C2	
	Define mutation and its different types and Define Recombination	LGIS	C2	
	Discuss transfer of DNA within and between bacterial cells including conjugation, transduction, and transformation.		C2	

	Discuss classification of medically important bacteria.		C2	
	Define normal flora, colonizer, dysbiosis, and elaborate significance of normal flora.	**LGIS**	C2	
	Discuss normal flora of different body sites including oral cavity, skin, respiratory tract, intestinal tract, etc		C2	
	Define pathogen, pathogenesis, virulence factors, ID50, LD50.	**LGIS**	C2	
	Discuss principles of pathogenesis.		C2	
	Enlist different types of bacterial infections and Describe stages of bacterial pathogenesis.		C1	
	Discuss determinants of bacterial pathogenesis that includes: • Transmission • Adherence to cell surfaces. • Invasion • Inflammation & intracellular survival • Toxin production Immuno-pathogenesis		C2	
	Enlist different strains of the same bacteria that can produce different diseases.		C1	
	Mechanisms of Antimicrobial Drugs	**LGIS**	C3	
	Define typical stages of an infectious disease.		C2	
	Discuss role of biofilm and glycocalyx in causing infection.		C2	
	Tabulate the differences between sterilization and disinfection.		C2	
Sterilization and Disinfection	Define sterilization and disinfection and Describe the various methods of sterilization.	**LGIS**	C2	MCQs, SEQs, OSVE, OSPE
	Tabulate the differences between sterilization and disinfection.		C2	
PHARMACOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
General Pharmacology	Students should be able to discuss General Concepts of Pharmacology	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Students should be able to define and describe Pharmacokinetics and Pharmacodynamics		C2	
	Mechanisms of Drugs Transport/ Permeation		C3	
Drugs Transport	Sources of Drugs/ Active Principles	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Enumerate advantages and disadvantages of various Routes of drug		C1	

	Administration			
	Define drug absorption & Bioavailability and factocs affecting		C2	
	Define and explain Distribution and Volume of Distribution		C2	
	Define and explain Redistribution and Plasma Protein Binding		C2	
	Explain the concept of Metabolism & Biotransformation		C2	
Enzyme Induction and Enzyme Inhibition	Define Enzyme Induction & Enzyme Inhibition	**LGIS**	C2	MCQs, SEQs, OSVE, OSPE
	Describe the clinical significance of enzyme induction and enzyme inhibition with their examples		C2	
	Define drug excretion		C2	
Drug Excretion	Enlist routes of drug excretion	LGIS	C1	MCQs, SEQs, OSVE, OSPE
	Describe processes of drug excretion through the kidneys		C2	
	Describe factors affecting glomerular filtration & tubular reabsorption		C2	
	Describe the Clinical Significance of Glomerular Filtration, Active Tubular Secretion and Passive Tubular Reabsorption of Drugs		C2	
	Define first pass elimination		C2	
Plasma Half-Life	Define and enlist factors affecting Plasma Half-Life		C2	MCQs, SEQs, OSVE, OSPE
	Explain clinical significance of plasma half-life		C2	
	Explain steady state plasma concentration		C2	
Order Kinetics	Define & Explain Elimination and Orders of Elimination – First & Zero Order Kinetics with examples	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Tabulate differences between First order kinetics and Zero Order Kinetics		C2	
Maintainance Dose	Define, explain & calculate maintenance dose and loading dose using appropriate formula	**LGIS**	C2	MCQs, SEQs, OSVE, OSPE
Drug Clearance	Understand the concept of drug clearance	**LGIS**	C3	MCQs, SEQs, OSVE, OSPE
	Describe factors affecting drug clearance Explain the Clinical Significance of different values of Drug Clearance		C2	
Signaling Pathways	Elaborate Transmembrane signaling pathways	**LGIS**	C2	MCQs, SEQs, OSVE, OSPE
	Name the Effectors controlled by G-proteins		C1	
Pharmacodynamics	Define Pharmacodynamics, Affinity, Efficacy,	LGIS	C2	MCQs, SEQs, OSVE, OSPE

	Potency			
	Explain Agonist, partial agonist, inverse agonist, bias, allosteric agonists and modulators with examples		C2	
	Define Spare receptor and give clinical importance		C2	
	Describe various Drug–antagonism types with examples		C2	
	Compare &Discuss the information derived from Graded and Quantal dose-response curves		C2	
	Define Median Effective (ED50), Median Toxic (TD50) & Median Lethal Dose (LD50) and its clinical relevance		C2	
	Define Therapeutic index and give its clinical importance		C2	
	Define Therapeutic window and give its clinical importance		C2	
	Define Desensitization, Tachyphylaxis, Tolerance, Resistance, super sensitivity, hypersensitivity, super infection, iatrogenic effect, idiosyncrasy, and give examples		C2	
	Describe the Phenomenon of down regulation and up regulation of receptors		C2	
	Enlist factors affecting Dose and action of Drugs		C1	
Pharmacogenetics	Describe Pharmacogenetics and give examples	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Drug development	Illustrate various phases of Drug development	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Drug Interactions	Describe Drug Interactions	LGIS	C2	MCQs, SEQs, OSVE, OSPE

COMMUNITY DENTISTRY AND PUBLIC HEALTH				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Public Health	Define dental public health, health and its dimensions, disease, and illness.	LGIS /SGD	C2	MCQs, SEQs, OSVE
	Difference Between clinical and public health Dentist.		C2	
	Identify criteria for a disease to be of public health importance.		C2	
	Describe the Concepts of prevention and its levels.		C2	
BEHAVIOURAL SCIENCES				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**

Bio-psycho-social model	Understand the components and significance of the bio-psycho-social model and systems approach in healthcare	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Appreciate the need for a holistic approach to patient care		C2	
Behavior and Health	Define concepts of normality and abnormality in behavior and health	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Understand how psychology, sociology, and anthropology contribute to health		C2	
	Cultivate an open-minded perspective towards diverse patient behaviors and conditions		C2	
Interdisciplinary Approach	Value the interdisciplinary approach to healthcare	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Behavioral Interventions	Recognize the role of behavior in health outcomes;	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Appreciate the impact of behavioral interventions on patient care	LGIS	C3	
	Understand the neurological basis of behavior	LGIS	C2	
Neurological basis of behavior	Relate brain functions to behavioral outcome	LGIS	C2	MCQs, SEQs, OSVE, OSPE
PRACTICAL/LAB WORK				
PHARMACOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Calculation	Calculations of drug dosing (e.g., IV infusion) & dose of children.	Practical Lab	C2 / P	OSPE
Drug Dosing	Calculations (Mean, Mode, Median, Standard Deviation, and Standard Error), and Metrology.	Practical Lab	C2 / P	

Craniofacial-I

Specific Learning Objectives

ANATOMY				
GROSS ANATOMY				
ENDOCRINOLOGY LOs				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Cell Division	Briefly describe the process of mitosis and meiosis	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Gametogenesis	Describe the process of oogenesis, including the stages and regulatory mechanisms involved.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe spermatogenesis and spermiogenesis, highlighting their roles in male fertility.	LGIS	C2	
	Describe the embryological basis of teratoma.		C2 / P2	
First week of development: Ovulation to implantation	Discuss the ovarian cycle, hormonal regulation and its phases.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Enlist and explain the main outcomes of fertilization and their relevance to early embryonic development.	LGIS	C1	
Second week of Development: Bilaminar Germ Disc	Describe the embryological basis of hydatidiform mole and its pathological significance.	LGIS	C2	
	Describe the formation of embryonic disc, amniotic cavity and yolk sac	LGIS	C2	
Third Week of Development: Trilaminar Germ Disc	Discuss the process of gastrulation	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Discuss the growth and differentiation of the embryonic disc, including the clinical implications of its anomalies.		C2	
	Describe the embryological basis for situs inversus, sirenomelia, holoprosencephaly	LGIS	C2	
	Describe the development of trophoblast during third week of development	LGIS	C2	
Third to Eight Weeks: Embryonic Period	Explain the stages of neurulation and the formation of the neural tube.	LGIS/SGD	C2	MCQs, SEQs, OSVE, OSPE
	Describe the process of vasculogenesis and its role in embryonic vascular development.	LGIS/SGD	C2	
	Discuss craniosynostosis (premature closure of sutures) and its impact on skull and brain growth.	LGIS/SGD	C2	MCQs, SEQs, OSVE, OSPE
Birth Defects	Discuss the clinical presentation of numerical and structural chromosomal abnormalities	LGIS/SGD	C2	MCQs, SEQs, OSVE, OSPE

ORAL BIOLOGY				
Topic	**Specific Learning objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Neural Crest Cells and Head Formation	Describe the origin, migration, and differentiation of neural crest cells, and explain their contributions to the formation of bone, cartilage, connective tissues in craniofacial development and the associated development defects.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Branchial (Pharyngeal) Arches and the Primitive Mouth	Describe the formation, organization, and derivatives (muscles, nerves, skeletal structures) of the five pharyngeal (branchial) arches and its clinical implications	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Identify the embryological contributions of the pharyngeal pouches, grooves, and membranes and its clinical implications (Branchial Cleft Cysts and Fistulas).	LGIS	C1	
Formation of the Face	Describe the key facial prominences (frontonasal, maxillary, and mandibular) and their fusion process in forming the forehead, nose, upper lip, and jaw.	LGIS/SGD	C2	MCQs, SEQs, OSVE, OSPE
	Discuss the critical periods of facial development, teratogenic factors disrupting it, and the clinical implications of improper facial fusion, including anomalies like cleft lip and midline facial clefts	LGIS/SGD	C2	
Formation of the Palate	Describe the development of the primary and secondary palate, including the growth, elevation, and fusion of palatal shelves, and discuss the molecular signals involved in palatal development and its clinical implications due to non- fusion like Cleft Palate including the teratogenic factors that cause it.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Formation of the Tongue	Describe the embryonic development of the tongue, contributions of key structures (lateral lingual swellings, tuberculum impar, copula), muscle derivation, and sensory/motor innervation and Developmental Defects associated with it like ankyloglossia	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Development of the Mandible and Maxilla	Explain the two types of ossification: intramembranous (flat bones) and endochondral (base of the skull).	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the role of Meckel's cartilage in mandibular development and the process of intramembranous ossification in forming the mandible and maxilla.	LGIS	C2	
	Define jaw size anomalies and their embryological basis and clinical impact (Micrognathia and Macrognathia).	LGIS	C2	

Development of the Temporomandi-bular Joint (TMJ)	Describe the development of the temporomandibular joint (TMJ), including the role of secondary cartilage, and potential developmental disorders (congenital dislocation, condylar hypoplasia	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Early Tooth Development	Describe the formation of the primary epithelial band and its role in initiating tooth development.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Explain the process of tooth initiation and the molecular signals involved in odontogenesis.		C2	
	Discuss the determination of different tooth types based on patterning signals in the oral ectoderm.		C2	
Stages of Tooth Development	Describe the histological and morphological changes that occur during the budstage of tooth development	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Explain the bud-to-cap transition and the role of epithelial-mesenchymal interactions in tooth differentiation.	LGIS	C2	
	Describe the histological and morphological changes that occur during the capstage of tooth development.	LGIS	C2	
	Describe the histological and morphological changes that occur during the bellstage of tooth development.	LGIS	C2	
	Describe the role of signaling centers such as the enamel knot in controlling tooth shape and structure.	LGIS	C2	
Neural and Vascular Contributions	Explain the process of hard tissue formation, including enamel, dentin, and cementum development in reference to late bell stage of the tooth development	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Formation of the Permanent Dentition	Describe the role of nerve innervation and vascularization during early tooth development and how they contribute to tissue differentiation.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Hard Tissue and Root Formation	Discuss the mechanisms of root development and the role of Hertwig's epithelial root sheath (HERS) in determining root length and shape.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Describe the formation of the supporting tissues of the tooth, including the periodontal ligament, cementum, and alveolar bone in reference to late bell stage	LGIS	C3	
Primary and Permanent Dentition	Differentiate between the development of primary and permanent dentition and explain the timing of their formation.	LGIS/SGD	C2	MCQs, SEQs, OSVE, OSPE
Developmental Anomalies	Enlist, Define and Identify developmental Anomalies in Tooth Number	LGIS	C1	MCQs, SEQs, OSVE, OSPE

related to Tooth Development and Dental Structures	Enlist, Define and Identify developmental Anomalies related to Tooth Size	LGIS	C1	
GENERAL PATHOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Genetic Disorders: Introduction and causes	Define genetic disorders and explain their causes.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Types of Mutations	Describe different types of mutations (point mutations, insertions, deletions) with examples relevant to dentistry	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Mendel principles and genetic disorders	Explain Mendel's principles and their application to autosomal and X-linked disorder and examples relevant to dentistry	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Chromosomal abnormalities	Describe chromosomal abnormalities (e.g., trisomy, monosomy, translocations) and examples relevant to dentistry	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Congenital Craniofacial Anomalies and Developmental Defects	Define, Identify and Correlate specific syndromes with their embryological defects Down Syndrome Turner Syndrome Treacher Collins Syndrome Pierre Robin Sequence Goldenhar Syndrome Crouzon Syndrome Apert Syndrome Van der Woude Syndrome Hemifacial Microsomia Cleidocranial Dysplasia Nager Syndrome DiGeorge Syndrome	LGIS	C2	MCQs, SEQs, OSVE, OSPE
Genetic Testing	Describe how PCR and sequencing help in genetic testing.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
	Compare different genetic tests and their uses.		C3	
	Differentiate between karyotyping, sequencing, and biochemical tests.		C3	
	Identify the role of genetic tests in prenatal and carrier screening.		C1	

MICROBIOLOGY				
TOPIC	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**

Infectious diseases	Define microbial teratogens and their role in congenital craniofacial and dental anomalies.	LGIS	C1	MCQs, SEQs, OSVE, OSPE
Infectious diseases	Define TORCH infections and identify the impact of maternal infections (TORCH complex) on embryonic development and their dental implications.	LGIS	C1	MCQs, SEQs, OSVE, OSPE
Immunology	Describe the embryological development of the immune system and its relation to congenital immunodeficiencies affecting oral health.	LGIS	C1	MCQs, SEQs, OSVE, OSPE
Salivary glands	Explain how microbial colonization of the oral cavity is influenced by salivary gland development and mucosal immunity.	LGIS	C2	MCQs, SEQs, OSVE, OSPE
PRACTICAL/LAB WORK				
ORAL BIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Development of Human embryo with special emphasis on tooth-related structures.	Identify the congenital defects (cleft lip and palate,) on pictures/models:	Lab	C1	OSPE
	Identify the common tongue anomalies on pictures/models: Aglossia, micro/macroglossia, fissured tongue, cleft tongue, bifid tongue, tongue tie		C1	
Tooth Development	Draw and label different stages of tooth development	Lab	C2	OSPE
	Draw and label the root formation of single-rooted and multi-rooted teeth		C2	

CARIOLOGY-I

THEORY				
ORAL BIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Enamel	Describe the physical & chemical properties of enamel	SGD	C2	MCQs, SEQs, OSPE, OSVE
	Describe the structural organization of enamel and Identify the enamel on radiograph		C2	
	Describe the Differentiation of ameloblasts with reference to reciprocal induction	LGIS	C2	
	Describe the life cycle of Ameloblast		C2	
	Enlist the stages of Amelogenesis and describe the pre secretory stage		C1	
	Describe the secretory stage of amelogenesis and role of Tom's process		C2	
	Describe the maturative stage of amelogenesis and process of modulation		C2	
	Classify enamel proteins according to their function during amelogenesis	LGIS	C1	
	Describe the regulation of pH during enamel formation		C2	
	Describe the structural features of enamel, including: (Hunter-Schreger bands, Incremental lines, Enamel lamellae, Enamel tufts, Enamel spindles, Gnarled enamel)	LGIS	C2	
	Discuss the effects of fluoride on enamel structure and resistance to caries.	SGD	C2	
	Discuss the principles of enamel etching and its importance in restorative dentistry.		C2	
	Describe the age changes & repair/regeneration of enamel		C2	
	Explain how developmental disturbances can affect enamel formation.		C2	
Dentin	Describe the composition and structure of dentin	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Describe the process of dentinogenesis, including the role of the molecular factors.	SGD	C2	

	Differentiate between the three main types of dentin: primary, secondary, and tertiary, and describe their locations and formation.	LGIS	C3	
	Identify the structure of dentin radiographically		C2	
	Describe the mechanisms that control dentin mineralization, and differentiate between the pattern of mineralization in mantle dentin and circumpulpal dentin.	LGIS	C2	
	Explain the processes of secondary and tertiary dentinogenesis, including the stimuli that trigger their formation.	SGD	C2	
	Describe the structure and function of dentinal tubules.	LGIS	C2	
	Differentiate between peritubular and intertubular dentin, and explain their respective compositions and roles.	LGIS	C3	
	Explain the formation and significance of sclerotic dentin and interglobular dentin.		C2	
	Describe the structural features of dentin, including incremental growth lines and granular layer of Tom's.		C2	
	Describe the cellular contents of the dental pulp	LGIS	C2	
	Discuss the innervations, vascular supply & lymphatic supply of the dentin-pulp complex		C2	
	Explain the mechanisms of dentin sensitivity, focusing on the hydrodynamic theory.		C2	
	Describe the formation and clinical significance of pulp stones (denticles).	LGIS	C2	
	Explain how developmental disturbances can affect Dentine formation (Denitnogenesis Imperfecta and dysplasias)		C2	
	Explain the age-related changes that occur in the dentin-pulp complex.		C2	
Saliva	List down the components of saliva. State the functions of saliva.	LGIS	C1	MCQs, SEQs, OSPE, OSVE
Tooth Morphology	Differentiate between the following terms: Lobe, Axial Position, Contact Area, Interproximal space, Embrasure,	LGIS	C3	MCQs, SEQs, OSPE, OSVE

	Height of Contour, Cervical Line, Gingival Line, Epithelial Attachment.			
	Describe the number and names of the lobes of the anterior and posterior teeth	LGIS	C2	
	Describe and differentiate contact areas and height of contours including their location, size, function, age related changes, and clinical significance	LGIS	C2	
	Describe the components, boundaries and functions of interproximal space and embrasures	LGIS	C2	
	Describe the depressions on tooth surface (pit, fissures, and developmental groves)	LGIS	C2	
PRACTICAL/LAB				
ORAL BIOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Enamel	Draw and label "Enamel rods: fish scale pattern & keyhole pattern	Practical Lab	C2 / P	OSPE
	Ameloblasts (life cycle)		C2 / P	
	DEJ with organic defects		C2 / P	
	Draw and label Enamel rods, striae of retzius, bands of Hunter & Schreger, gnarled enamel, DEJ, tufts, lamella, spindles & neonatal lines.		C2 / P	
	Identify amelogenesis imperfacta (hypoplastic, hypocalcified &hypomaturative types) & fluorosis.		C1	
	Identify enamel on x-rays.		C1	
	Prepare the ground section of the tooth, mount it on a microscopic slide & identify the structural details of enamel & dentin		C3	
Dentin	Draw & label primary, secondary & tertiary dentin, dentinal tubules in crown & root portions, dentin-pulp complex showing dentinal tubules, pre dentin & zones of dental pulp showing its different cells, odontoblast with different developmental shapes, peritubular and intra tubular dentin, inter globular dentin, dead tracts, pulp stones.	Practical Lab	C2	OSPE
	Identify dentin genesis imperfect, identify dentin & pulp cavity on x-rays.		C1	

Theory				
Biochemistry				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Biochemical Role of carbohydrates in Dental Caries	Explain the biochemical properties of sucrose, glucose, and fructose.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Compare the cariogenic potential of sucrose, glucose, and starch,		C3	
Biofilm Formation and Plaque Biochemistry	Define dental plaque and explain its composition.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Discuss the role of sucrose in synthesizing extracellular polysaccharides (e.g., glucans via glucosyltransferases) and their contribution to plaque biofilm adhesion and stability		C2	
	Discuss the impact of diet, pH, and host factors on plaque development.	LGIS	C2	
Carbohydrate Metabolism and Acidogenesis in relation to Dental Caries	Illustrate the glycolytic pathway in cariogenic bacteria and its role in acid production.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Explain the process of lactic acid fermentation, including the conversion of pyruvate into organic acids.	LGIS	C2	
	Explain the concept of acidogenicity and aciduricity in cariogenic bacteria.	LGIS	C2	
pH and Buffering Systems in Oral Health	Define Critical pH. Relate the critical pH for enamel demineralization (5.5 for enamel and 6.2 for dentine) to acid production and the role of saliva in buffering pH and supplying calcium/phosphate for remineralization.	SGD	C2	MCQs, SEQs, OSPE, OSVE
Saliva's Biochemical Role	Identify and analyze the components of saliva (salivary proteins, enzymes, bicarbonate, statherin, lysozyme, lactoferrin, amylase, histatins) and their functions in mainating oral pH and enamel repair	LGIS	C1	MCQs, SEQs, OSPE, OSVE
	Describe the buffering action of saliva (bicarbonate, phosphate, and protein buffers).		C2	
	Discuss factors that affect salivary flow and pH regulation.	LGIS	C2	
	Explain the role of carbonic anhydrase in maintaining oral pH.			
Fluoride's Biochemical Mechanism	Discuss how fluoride disrupts bacterial glycolysis and acid production.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
Biochemistry of Artificial Sweeteners and Sugar	Compare the metabolism of sugar alcohols (xylitol, sorbitol) versus fermentable sugars in the oral cavity.	LGIS	C3	MCQs, SEQs, OSPE, OSVE
	Explain the mechanism by which	LGIS	C2	MCQs, SEQs,

Substitutes	xylitol inhibits Streptococcus mutans growth and acid production.			OSPE, OSVE

Community Dentistry and Public Health				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Dental Caries	Discuss the importance and role of diet in caries.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Discuss the concept and importance of Stephen curve in dental caries		C2	
	Role of dental biofilm in acid production		C2	
	Discuss the concept of Demineralization and the remineralization process		C2	
	Describe the importance of oral hygiene and its effects on caries.		C2	
	Explain the concept of Keye's Circles in the etiology of dental caries		C2	
Prevention of dental caries	Classify Basic types of toothbrushing	LGIS	C1	MCQs, SEQs, OSPE, OSVE
	The clinical effect of tooth cleaning		C2	
	The effect of dental flossing		C2	
	Identify the basic concept and importance of fluoride in caries prevention		C1	
	Discuss preventive measures, such as fluoride treatments, improved oral hygiene practices, and dietary modifications.		C2	

PRACTICAL/LAB WORK				
COMMUNITY DENTISTRY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Prevention of Dental Caries	Identify fluoride gel and procedure to apply it	Practical Lab	C2	OSPE

THEORY				
ORAL PATHOLOGY				
Topic	**Specific Learning Objectives**	**Teaching strategy**	**Levels C/P/A**	**Assessment**
Microbiology and Pathogenesis of Caries	Define phenomenon of dental caries.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Identify the etiological factors and explain their effects (pathogenesis) in the development of caries.		C1	
	Describe the microbiological aspect of caries; the role and characteristics of cariogenic bacteria.		C2	
	Define plaque and stages of plaque development		C1	
	Describe the changes that develop in enamel and dentin of erupted teeth in association with microorganisms.		C2	
Pit and Fissure Caries	Describe the anatomical features of pits and fissures and their role in caries susceptibility.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Explain the preventive strategies, including using sealants and fluoride applications.		C2	
Smooth Surface Caries	Discuss the factors that increase caries risk on smooth surfaces, such as poor oral hygiene and dietary habits.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Describe the appearance of smooth surface caries and its progression pattern.		C2	
	Recognize the role of fluoride in preventing smooth surface caries.		C1	
Root Caries	Identify the unique etiological factors associated with root carries, including gingival recession and xerostomia.	LGIS	C1	MCQs, SEQs, OSPE, OSVE
	Describe the clinical features and progression of root caries.		C2	
Active Caries	Describe the characteristics of active caries, including appearance, texture, and progression.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Understand the clinical significance of active caries in its potential to progress and cause further tooth damage.		C3	
	Develop strategies to manage active caries, focusing on preventive, minimally invasive, and restorative approaches.		C3	

Arrested Caries	Define arrested caries and describe their clinical features, such as smooth, shiny surfaces and hardness upon probing.	LGIS	C2	MCQs, SEQs, OSPE, OSVE
	Understand the biological process of caries arrest and remineralization.		C3	
	Identify the factors that promote caries arrest.		C1	

Assessment Parameters

Sr. No.	Assessment Parameter	Questions	Marks	Time
1.	MCQs	90	90	90 minutes
2.	SEQs	10	70	90 minutes
3.	OSPE/OSCE	8 Stations	40	
4.	OSVE	8 Stations	40	

Sr. No	Internal Assessment	Marks
1.	Theory 20% of 200	40
2.	OSPE/OSVE (Practical) 20% of 200	20

Sr. No	Assessment	Mark Distribution of paper to be conducted		Internal Assessment	Total Marks
1.	Theory	MCQs=90	SEQs=70	40	200
2.	Practical	OSPE/OSCE=40	OSVE=40	20	100
TOTAL					300

DISTRIBUTION OF QUESTIONS

Sr. No	MCQs	Questions
1.	Foundation Module	45
2.	Craniofacial-I	18
3.	Cariology-I	27

SEQs Subject Wise(Block Based)	10

BLOCK 1- ASSESSMENT PARAMETERS AND DIVISION OF MARKS

SUBJECT	THEORY EXAM			ORAL/PRACTICAL EXAM		
	MCQs 1 Mark Each (90 minutes)	SEQs 7 Marks Each (110 minutes)	Marks	Unobserved OSPE stations (5 Marks Each) (5 Minutes Each)	OSVE Stations (5 Marks Each) (5 Minutes Each)	Marks
Anatomy	13	1	20	2	1	15
Physiology	10	1	17	1	1	10
Biochemistry	10	1	17	-	1	5
Oral Biology	29	1	36	3	1	20
General Pathology	5	1	12	1	1	10
Microbiology/OP	6	1	13			
Pharmacology	6	1	13	-	1	5
Community Dentistry	5	1	12		1	5
Behavioral Sciences	1	1	8	-		
Oral Pathology/Operative Dentistry	5	1	12	1	1	10
Internal Assessment*	-	-	40	-	-	20
TOTAL	**90**	**10**	**200**	**8**	**8**	**100**

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

- 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