BDS INTEGRATED CURRICULUM
2k25

1st Year BDS

(Session 2025-2026)

STUDY GUIDE
BLOCK-1

Module 1	Module 2	Module 3
Foundation-I	Craniofacial-I	Cariology-I

Dental Section, MMDC Multan

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MISSION AND VISION OF UHS

Vision Statement:

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 Statement:

UHS shall continue to strive for producing a human resource par at excellence to cater for the health needs of the people of Punjab and Pakistan.

MISSION AND VISION OF MMDC

(Dental Section) MMDC Vision

To be a leading dental institution in South Punjab, recognized for excellence in education, research, and healthcare services, while developing competent and compassionate healthcare professionals and addressing health disparities through research and community-focused initiatives.

(Dental Section) MMDC Mission

To produce professionally competent and ethical dental graduates equipped with knowledge, clinical skills and technological competence to address emerging global health challenges through research, innovative educational approaches and lifelong learning.

PROGRAM OUTCOME

The students of Bachelor of Dental Surgery (BDS) of MMDC at the end of the program will be able to:

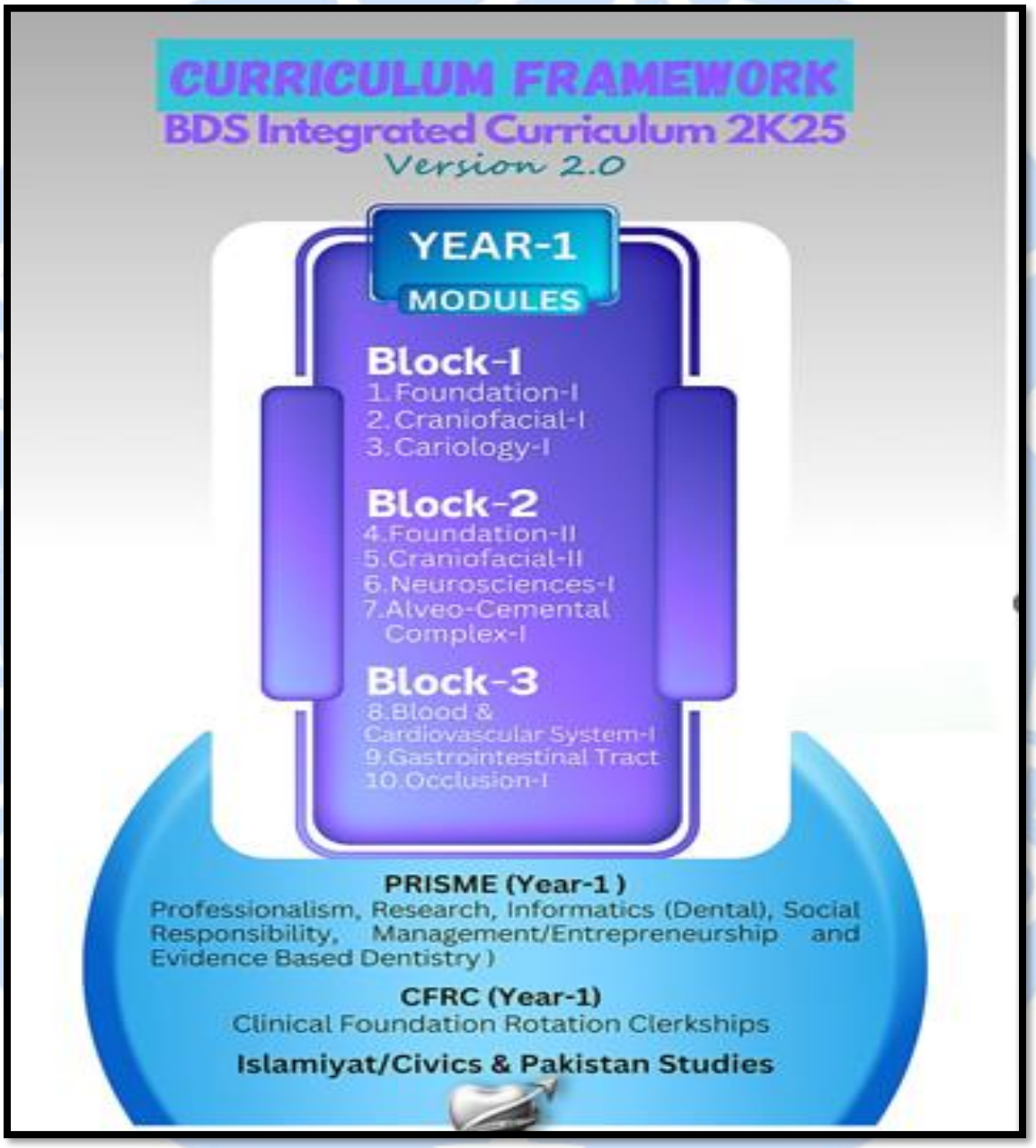
- Dental Graduates will apply the knowledge, skills and technological competencies to practice dentistry in primary care setting and provide comprehensive patient care.
- The graduates will promote dental health care within the community, utilizing the latest research, critical thinking and making evidence informed decisions and apply relevant evidence to address emerging oral and global health challenges.
- Dental graduates will uphold professional values and demonstrate emotional intelligence, social responsibility, and engage in lifelong learning, leadership, and innovation.

LIST OF ABBREVIATION

Abbreviations	Subjects
UHS	University of Health Sciences
BDS	Bachelor of Dental Surgery
PRISME	Professionalism, Research, Informatics, Social Responsibility and Accountability, Management & Entrepreneurship, Ethics Evidence Based Dentistry
MIT	Mode of information Transfer
AT	Assessment Tool
WHO	World Health Organization
A	Anatomy
AI	Artificial Intelligence
B	Biochemistry
GDC	General Dental Council
Ph	Pharmacology
P	Physiology
Pa	Pathology
OB	Oral Biology
OP	Oral Pathology
CD	Community Dentistry
OD	Operative Dentistry
AMIA	American Medical Informatics Association
AMEE	Association of Medical Education in Europe
BhS	Behavioral Sciences
CNS	Central Nervous System
GIT	Gastrointestinal Tract
CVS	Cardiovascular System
TMJ	Temporomandibular Joint
CBC	Complete Blood Count
ESR	Erythrocyte Sedimentation Rate
PCR	Polymerase Chain Reaction
ED50	Median Effective Dose

LD50	Median Lethal Dose
TD50	Median Toxic Dose
AUC	Area Under Curve
MCV	Mean Corpuscular Volume
MCH	Mean Corpuscular Hemoglobin

***Mode of information Transfer (MIT)**
Assessment Tool (AT)


CURRICULUM FRAMEWORK
BDS Integrated Curriculum 2K25
Version 2.0
YEAR-1
MODULES
Block-I
1.Foundation-I
2.Craniofacial-I
3.Cariology-I
Block-2
4.Foundation-II
5.Craniofacial-II
6.Neurosciences-I
7.Alveo-Cemental Complex-I
Block-3
8.Blood & Cardiovascular System-I
9.Gastrointestinal Tract
10.Occlusion-I
PRISME (Year-1)
Professionalism, Research, Informatics (Dental), Social Responsibility, Management/Entrepreneurship and Evidence Based Dentistry)
CFRC (Year-1)
Clinical Foundation Rotation Clerkships
Islamiyat/Civics & Pakistan Studies

INTRODUCTION TO STUDY GUIDE

As you enter the 1st year of your Bachelor of Dental Surgery (BDS) program, this study guide is designed to help you navigate this crucial stage of your education. It focuses on consolidating your knowledge, clinical skills, and preparing you for your future career in dentistry.

Objectives of BDS 1st Year:

1. **Integration of Knowledge**: Reinforce and integrate the knowledge gained in previous years across all dental disciplines, including clinical dentistry, oral surgery, periodontology, prosthodontics, orthodontics, and pediatric dentistry.
2. **Clinical Exposure:** Gain foundational understanding of clinical dentistry by observing real patient interactions and procedures. Emphasis is placed on recognizing diagnostic steps, treatment planning, and familiarizing them with clinical protocols.
3. **Professional Development**: Enhance your understanding of the ethical, legal, and professional responsibilities of a dentist. Prepare for the transition from student to practitioner.
4. **Exam Preparation**: Equip yourself with effective study strategies and resources to excel in final examinations and assessments.

ACADEMIC SCHEDULE OF BLOCK-1

Block-1 Start Date	9th March 2026
Midblock Exam Block-1	13th April 2026
Block-1 Exam	8th – 14th June 2026
Block-1 Ends Date	5th June 2026

TIME TABLE

DENTAL SECTION, MULTAN MEDICAL & DENTAL COLLEGE, MULTAN

Time Table For 1st Year BDS (Session 2025-2026)
BLOCK-1 (Integrated Modular 2k25)

Day	08:30-09:30	09:30-10:20	10:20-11:10	11:10-12:00	12:00-12:50	12:50-1:20	01:20-02:10	02:10-03:00
Monday	Test/ Discussion	Test/ Discussion	Anatomy Interactive Lecture	Oral Biology Interactive Lecture	Physiology Interactive Lecture	Break	CFRC Interactive Lecture	PRISME Interactive Lecture
Tuesday	Anatomy Interactive Lecture	Biochemistry Interactive Lecture	G. Pathology & Microbiology Interactive Lecture	Community Dentistry Interactive Lecture	Community Dentistry Interactive Lecture		Pharmacology 1-8 Week / Operative Dentistry 9-11 Week Interactive Lecture	Oral Biology Interactive Lecture
Wednesday	Biochemistry Interactive Lecture	Anatomy Interactive Lecture	Operative Dentistry Interactive Lecture	Oral Biology Interactive Lecture	Psychiatry & Behavioral Science Interactive Lecture		Islamiyat Interactive Lecture	Anatomy Interactive Lecture
Thursday	Biochemistry Interactive Lecture	Oral Biology Interactive Lecture	Oral Biology Practical	Biochemistry Interactive Lecture	Anatomy Interactive Lecture		Anatomy Practical	Pak Studies Interactive Lecture
Friday	Test	Anatomy Interactive Lecture	Operative Dentistry Interactive Lecture	Oral Biology Interactive Lecture	Oral Pathology 1-8 Week / Islamiyat 9-11 Week Interactive Lecture		Oral Biology Interactive Lecture	Anatomy Interactive Lecture

COORDINATORS

BDS-1 Anatomy Year Coordinator	Prof Dr. Faiza Mehboob
Dental Education / Block Coordinator	Dr. Asad Ali

BLOCK-2 SUBJECT INCHARGES

Operative Dentistry	Prof Dr Sharina Naz
Community Dentistry	Prof Dr Ejaz Hussain Sahu
Anatomy	Prof Dr Faiza Mehboob
Oral Biology	Dr Abu Bakar
Physiology	Prof Dr Maria Gill
Prosthodontics	Dr Nadia Wajdan
Biochemistry	Dr Jamal
Pharmacology	Prof Dr Muhammad Ali
Oral Pathology	Prof Dr Basil Khalid
Behavioral Science	Prof Dr Qurat ul Ain
General Pathology	Prof Dr Rizwan Akhtar
Islamiat / Quran/ Pak Studies	Usman Jan
PRISME **Domain Professionalism, Social Science** **Domain Research** **Domain Management & Entrepreneurship** **Domain Informatics**	Behavioral Science Community Dentistry Clinical Prosthodontics Dental Education

MODULE NO. 1

FOUNDATION I

MODULE RATIONALE

The Foundation I module establishes the basic scientific framework necessary for understanding the structure and function of the human body in health and disease, with relevance to dental practice. It introduces students to the core principles of anatomy, histology, physiology, biochemistry, and oral biology, providing an integrated view of how the human body is organized and maintained.

Students also gain an early appreciation of pathology and community dentistry, fostering an understanding of disease processes and preventive strategies from a population perspective. By building connections between foundational biomedical sciences and their clinical applications, the module prepares students to approach oral health within the broader context of general health, patient care, and community well-being.

Module Outcomes

- Describe the normal structure and function of the human body, with emphasis on head and neck anatomy and oral tissues.
- Explain the basic physiological mechanisms that maintain homeostasis and support body function relevant to dental practice.
- Correlate biochemical structures and pathways with cellular functions, emphasizing their role in oral and systemic health.
- Identify microscopic features of cells, tissues, and organs, and relate them to their physiological and functional significance.
- Recognize the basic mechanisms of cell injury, necrosis, and apoptosis as foundations for understanding disease processes.
- Apply fundamental knowledge of community and preventive dentistry to concepts of health promotion and disease prevention at both individual and population levels.
- Integrate concepts from basic medical sciences to explain the relationship between general body function and oral health.
- Demonstrate professional attitudes and curiosity toward scientific learning, teamwork, and
- ethical conduct in foundational medical and dental sciences.

Subjects Integrated in the Module
• Anatomy • Physiology • Biochemistry • Oral Biology & Tooth Morphology • Community & Preventive Dentistry • General Pathology & Microbiology • Pharmacology & Therapeutics

THEORY

GENERAL ANATOMY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
F1-A-001	Define the various branches of Anatomy.	Introduction to Human Anatomy: Definitions, Terminology, and Planes	LGIS/ SGD	MCQs / VIVA
	Describe the anatomical position, anatomical planes of the body, and anatomical terms related to position, movement, and laterality.		LGIS/ SGD	MCQs / VIVA
F1-A-002	Classify bones based on region, size and shape providing examples of each from the head and neck	Osteology	LGIS/ SGD	MCQs / VIVA
	Discuss the structural characteristics of compact and spongy bones		LGIS/ SGD	MCQs / VIVA
	Describe the structure of an adult long bone. Define ossification and rule of ossification. Describe the blood supply of various types of long bones		LGIS/ SGD	MCQs / VIVA
F1-A-003	Describe the structural classification of Joints (fibrous, cartilaginous and synovial) along with their sub-classifications with examples of each Enlist the general characteristics of synovial joints Enlist the factors stabilizing a synovial joint Describe Hilton's Law	Joints	LGIS/ SGD	MCQs / VIVA
F1-A-004	Discuss and differentiate the gross features of hyaline, elastic and fibrocartilage	Cartilage	LGIS/ SGD	MCQs / VIVA

HISTOLOGY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**
F1-A-005	List the membranous and non-membranous organelles of the cell, describe their structure, and correlate each with its function	Cell	LGIS/ SGD	MCQs / VIVA
	Describe the structure of different types of cell junctions		LGIS/ SGD	MCQs / VIVA
F1-A-006	Classify and exemplify the epithelia with their histological structure, locations, and functions	Epithelia	LGIS/ SGD	MCQs / VIVA
	Describe apical specializations of epithelia (microvilli, stereocilia and cilia) and the basement membrane.		LGIS/ SGD	MCQs / VIVA
	Classify and exemplify the exocrine glands on the basis of the shape of secretory portions and ducts, mode of secretion, and type of secretion		LGIS/ SGD	MCQs / VIVA
F1-A-007	List the cells of connective tissue with their functions.	Connective Tissue	LGIS/ SGD	MCQs / VIVA
	Describe the composition of the ground substance and the types and structure of fibers in connective tissue.		LGIS/ SGD	MCQs / VIVA
	Classify connective tissue and describe its functions and provide relevant examples.		LGIS/ SGD	MCQs / VIVA

EMBRYOLOGY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**
F1-A-008	Briefly describe mitosis and meiosis.	Cell Division and Gametogene sis	LGIS/ SGD	MCQs / VIVA
	Describe oogenesis, spermatogenesis, spermiogenesis, and embryological basis of teratoma.		LGIS/ SGD	MCQs / VIVA
F1-A-009	Define fertilization, phases of fertilization, capacitation and acrosomal reaction.	Fertilization and Early Development	LGIS/ SGD	MCQs / VIVA
	Explain outcomes of fertilization.		LGIS/ SGD	MCQs / VIVA
	Describe cleavage, morula, blastocyst formation, and implantation.		LGIS/ SGD	MCQs / VIVA
F1-A-010	Describe embryonic disc, amniotic cavity, yolk sac, and gastrulation.	Formation of the Embryonic Disc and Germ Layers	LGIS/ SGD	MCQs / VIVA
	Explain gastrulation and derivatives of the three germ layers.		LGIS/ SGD	MCQs / VIVA
	Explain derivatives of ectoderm, mesoderm, and endoderm.		LGIS/ SGD	MCQs / VIVA

PHYSIOLOGY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**
F1-P-001	Define homeostasis and explain its importance in maintaining the internal environment.	Homeostasis Control of Internal Environment	LGIS/ SGD	MCQs / VIVA
	Differentiate between extracellular and intracellular Fluids (with special emphasis on comparing the concentration of sodium, potassium, and calcium ions)		LGIS/ SGD	MCQs / VIVA
F1-P-002	Explain the principles of positive, negative, and feed-forward control mechanisms with examples.	Control Systems of the Body	LGIS/ SGD	MCQs / VIVA
F1-P-003	Describe the functions of cell organelles, including nucleus, endoplasmic reticulum, Golgi apparatus, lysosomes, peroxisomes, mitochondria, and ribosomes.	Cell and its Organelles and their Functions	LGIS/ SGD	MCQs / VIVA
	Differentiate between the functions of smooth and rough endoplasmic reticulum		LGIS/ SGD	MCQs / VIVA
F1-P-004	Enumerate the components and functions of the cytoskeleton	Cell Structure and Membrane Organization	LGIS/ SGD	MCQs / VIVA
	Describe the structure of the cell membrane and fluid mosaic model.		LGIS/ SGD	MCQs / VIVA
F1-P-005	Explain the mechanisms of endocytosis and exocytosis, including pinocytosis and phagocytosis.	Functional Systems of Cell	LGIS/ SGD	MCQs / VIVA
F1-P-006	Describe the mechanisms of simple diffusion, facilitated diffusion, osmosis,	Transport of	LGIS/ SGD	MCQs / VIVA

	and active transport, and ion channels	Substance through Cell Membrane		
	Compare features of simple and facilitated diffusion with examples		LGIS/ SGD	MCQs / VIVA
	Describe primary and secondary active transport with examples		LGIS/ SGD	MCQs / VIVA
F1-P-007	Enlist the composition of blood, its cellular elements, and plasma. (Expanded with hematocrit, PCV, plasma proteins).	Composition and Properties of Blood	LGIS/ SGD	MCQs / VIVA
F1-P-008	Explain the structure, morphology, and lifespan of red blood cells,including factors affecting RBC production and destruction.	Red Blood Cells	LGIS/ SGD	CQs / VIVA
F1-P-009	Classify anemia; describe mechanisms of iron deficiency anemia, hemolytic anemia, and megaloblastic anemia at a basic level.	Anemias and Polycythemias	LGIS/ SGD	MCQs / VIVA
	Define sickle cell anemia		LGIS/ SGD	MCQs / VIVA
	Discuss the effects of anemia on circulation		LGIS/ SGD	MCQs / VIVA
	Define and enlist types of polycythemias		LGIS/ SGD	MCQs / VIVA
	Discuss the effects of polycythemias on circulation		LGIS/ SGD	MCQs / VIVA
F1-P-010	Explain erythropoiesis and regulation by erythropoietin.		LGIS/ SGD	MCQs / VIVA
	Enumerate and elaborate role of factors/nutrients that are required and regulate erythropoiesis	Erythropoiesis and Its Regulation	LGIS/ SGD	MCQs / VIVA

F1-P-011	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	Blood Indices and Diagnostic Interpretation	LGIS/ SGD	MCQs / VIVA

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
F1-B-001	Define and classify carbohydrates.	Carbohydrates	LGIS/ SGD	MCQs / VIVA
	Draw the straight chain and pyranose form of D-glucose.		LGIS/ SGD	MCQs / VIVA
	Define and quote suitable examples of the followings: • Aldo-keto isomers • D & L isomers (Enantiomers) • Epimers • Alpha and beta Anomers		LGIS/ SGD	MCQs / VIVA
	Define and quote suitable examples of: • Reducing sugars • Non-reducing sugars		LGIS/ SGD	MCQs / VIVA
	Give sources, structure and importance of glucose, galactose, fructose and ribose. Give normal fasting blood sugar level. Enumerate types of Diabetes mellitus and give cause of hyperglycemia in each type.		LGIS/ SGD	MCQs / VIVA
	Describe the formation, hydrolysis, naming and types of glycosidic bond (N and O -glycosidic bonds). Give importance of glycosidic bond.		LGIS/ SGD	MCQs / VIVA
	Enumerate sources, linkages and building blocks of maltose, iso-maltose, lactose, lactulose and sucrose.Give importance of maltose, iso-maltose, lactose, lactulose and sucrose.		LGIS/ SGD	MCQs / VIVA

	Give significance of oligosaccharides in cell membrane.		LGIS/ SGD	MCQs / VIVA
	Give sources, structure and importance of dextrins and dextrans.		LGIS/ SGD	MCQs / VIVA
	Enlist sources of starch. Elaborate the structure of starch. Give importance of starch in human diet.		LGIS/ SGD	MCQs / VIVA
	Elaborate the structure of glycogen.		LGIS/ SGD	MCQs / VIVA
	Give importance of glycogen in human body.		LGIS/ SGD	MCQs / VIVA
	Give structure and sources of cellulose.		LGIS/ SGD	MCQs / VIVA
	Appraise the role of dietary fiber in health and disease.		LGIS/ SGD	MCQs / VIVA
	Elaborate the structure and enlist the functions of Glycosaminoglycans (GAGs).		LGIS/ SGD	MCQs / VIVA
	Define glycemic index.		LGIS/ SGD	MCQs / VIVA
	Evaluate the effect of various dietary carbohydrates on blood sugar level (BSL) and appraise their clinical significance.		LGIS/ SGD	MCQs / VIVA
F1-B-002	Define lipids and give their Classification along with biological importance of main classes	Lipids	LGIS/ SGD	MCQs / VIVA
F1-B-003	Define vitamins and classify vitamins according to their solubility	Vitamins	LGIS/ SGD	MCQs / VIVA
F1-B-004	Describe the biochemical structures of cell membranes	Cell	LGIS/ SGD	MCQs / VIVA
	Explain biochemical compartmentalization.		LGIS/ SGD	MCQs / VIVA
F1-B-005	Describe receptors and signal transduction pathways (Gs, Gq).	Signal Transduction Pathways	LGIS/ SGD	MCQs / VIVA

ORAL BIOLOGY & TOOTH MORPHOLOGY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**
F1-OB-001	Describe the oral tissues including oral mucosa, salivary glands, bones of the jaws temporomandibular joint, enamel, dentin, cementum and periodontal ligament.	Structure of Oral Tissues (A Brief Introduction)	LGIS/ SGD	MCQs / VIVA
F1-OB-002	Describe the structure, types, and functions of the cytoskeleton, including microfilaments, intermediate filaments, and microtubules, within oral tissues.	Cytoskeleton	LGIS/ SGD	MCQs / VIVA
F1-OB-003	Describe intercellular junctions, including tight junctions, adherens junctions, desmosomes, gap junctions, and the role of desmosomes and hemidesmosomes in oral epithelium.	Cell Junctions	LGIS/ SGD	MCQs / VIVA
F1-OB-004	Describe the structure, secretory functions, and role of fibroblasts in the maintenance of the extracellular matrix in oral tissues	Fibroblast	LGIS/ SGD	MCQs / VIVA
	Describe briefly collagen synthesis and assembly highlighting its importance in oral connective tissue.		LGIS/ SGD	MCQs / VIVA
F1-OB-005	Name the three major functions of the human dentition	Introduction and Nomenclature of dentition	LGIS/ SGD	MCQs / VIVA
	Describe various ways of classifying human dentition.		LGIS/ SGD	MCQs / VIVA
	Define the three dentition periods (deciduous, mixed, permanent). Identify each period's approximate time intervals, initiation, and termination events		LGIS/ SGD	MCQs / VIVA

	Differentiate primary vs permanent dentition, including timing.		LGIS/ SGD	MCQs / VIVA
	Describe the dental Formula for permanent and Deciduous dentition		LGIS/ SGD	MCQs / VIVA
	Define "succedaneous" and identify succedaneous teeth		LGIS/ SGD	MCQs / VIVA
	Describe the eruption pattern of primary and permanent dentition		LGIS/ SGD	MCQs / VIVA
	Demonstrate understanding of various dental numbering systems(e.g., universal, FDI, Palmer).		LGIS/ SGD	MCQs / VIVA

PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
F1-Pa-001	Define the terms: pathology, etiology & pathogenesis	Introduction	LGIS/ SGD	MCQs / VIVA
F1-Pa-002	Define cell injury. Differentiate between reversible and irreversible cell injury. Discuss mechanism of cell injury	Cell Injury	LGIS/ SGD	MCQs / VIVA
F1-Pa-003	Define necrosis with examples; classify; describe briefly morphological features of coagulative, liquefactive, caseous, and fat necrosis. give their pathway.	Cell Death	LGIS/ SGD	MCQs / VIVA
	Define apoptosis with examples; describe mechanisms and morphological features. give their pathway.		LGIS/ SGD	MCQs / VIVA

COMMUNITY & PREVENTIVE DENTISTRY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**
F1-CD-001	Define dental public health and describe its scope and importance.	Introduction to Dental Public Health	LGIS/ SGD	MCQs / VIVA
F1-CD-002	Describe the dimensions of health (physical, mental, social, etc.) and differentiate between illness and disease.	Concepts of Health and Disease	LGIS/ SGD	MCQs / VIVA
F1-CD-003	Differentiate between clinical dentistry and public health dentistry.	Public Health vs Clinical Practice	LGIS/ SGD	MCQs / VIVA
F1-CD-004	Describe criteria that make a disease important from a public health perspective.	Disease Importance in Public Health	LGIS/ SGD	MCQs / VIVA
F1-CD-005	Explain levels of prevention (primordial, primary, secondary, tertiary) with relevant dental examples.	Levels of Prevention	LGIS/ SGD	MCQs / VIVA
F1-CD-006	Define and explain the principles of health promotion and disease prevention strategies at individual and community levels.	Health Promotion Principles	LGIS/ SGD	MCQs / VIVA
F1-CD-007	Apply principles of health promotion and health education to oral and dental health contexts.	Health Education and Promotion	LGIS/ SGD	MCQs / VIVA

F1-CD-008	Describe methods of health education and communication in community dentistry; explain their importance and application.	Health Education and Communication	LGIS/ SGD	MCQs / VIVA
F1-CD-009	Describe school oral health programs and preventive strategies at the community level.	School and Community-Based Programs	LGIS/ SGD	MCQs / VIVA

PHARMACOLOGY & THERAPEUTICS

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
F1-PH001	Define pharmacology along with major branches and explain its scope, importance, and applications in dentistry and medicine.	General Pharmacology	LGIS/ SGD	MCQs / VIVA
	Describe sources of drugs and active principles.		LGIS/ SGD	MCQs / VIVA
	Enumerate advantages and disadvantages of various routes of administration.		LGIS/ SGD	MCQs / VIVA
F1-PH002	Define Pharmacokinetics. Briefly explain Mechanisms of Drugs Transport/ Permeation Sources of Drugs/ Active Principles Drugs Enumerate advantages and disadvantages of various Routes of drug Administration	Pharmacokinetics & Drug Transport/ Permeation	LGIS/ SGD	MCQs / VIVA
F1-PH-003	Define drug absorption & Bioavailability and factors affecting them. Define and explain Distribution and Volume of Distribution Define and explain Redistribution and Plasma Protein Binding	Drug Absorption & Bioavailability	LGIS/ SGD	MCQs / VIVA

F1-PH-004	Explain the concept of Metabolism & Biotransformation Describe the clinical significance of enzyme induction and enzyme inhibition with their examples	Drug Metabolism & Bio transformation	LGIS/ SGD	MCQs / VIVA
F1-PH-005	Define drug excretion. Enlist routes & processes of drug excretion through the kidneys Describe factors affecting glomerular filtration & tubular reabsorption Describe the Clinical Significance of Glomerular Filtration, Active Tubular Secretion and Passive Tubular	Drug excretion & its clinical significance of glomerular filtration	LGIS/ SGD	MCQs / VIVA
F1-PH-006	Describe Reabsorption of Drugs Explain steady state plasma concentration	Drug Reabsorption	LGIS/ SGD	MCQs / VIVA
F1-PH-007	Define & Explain Elimination and Orders of Elimination – First & Zero Order Kinetics with examples Order Kinetics	Drug Elimination	LGIS/ SGD	MCQs / VIVA
F1-PH-008	Define, explain & calculate maintenance dose and loading dose using appropriate formula Maintenance dose	Drug Maintenance	LGIS/ SGD	MCQs / VIVA

PRACTICALS / LAB WORK

HISTOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
F1-A-011	Draw and label light microscopic diagram of epithelia	Epithelium		
F1-A-012	Draw and label light microscopic diagram of different types of Connective Tissue	Connective Tissue		

ORAL BIOLOGY & TOOTH MORPHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
F1-OB-006	Identify, draw, and label structures of the tooth on models.	Structures of Tooth		
F1-OB-007	Draw & label the diagram of cytoskeletal elements.	Cytoskeleton		
F1-OB-008	Draw & label the diagram of tight junctions, desmosomes, hemidesmosomes, and gap junctions.	Junctions		

PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
F1-Pa-004	Identify necrosis.	Necrosis		

Module no. 2
Craniofacial I

MODULE RATIONALE

The Craniofacial I module lays the foundation for understanding the structural, developmental, and biochemical basis of the craniofacial region. It integrates anatomy, embryology, histology, biochemistry, oral biology, and pathology to help students appreciate how normal development and structure underpin oral and maxillofacial health. By studying the skull, mandible, tooth development, and related anomalies, students gain essential knowledge for clinical dental practice and future modules focusing on oral and systemic diseases.

MODULE OUTCOMES

- Describe the gross anatomy of the skull and mandible, including their foramina, sutures, and applied clinical relevance.
- Explain the embryological processes involved in the formation of the head, neck, skull, meninges, and craniofacial structures.
- Identify and interpret microscopic features of bone, cartilage, muscle, and skin.
- Describe and relate the biochemical pathways of carbohydrates, proteins, and vitamins to cellular function and oral health.
- Explain the stages of tooth development, formation of supporting tissues, and developmental anomalies of the craniofacial region.
- Recognize basic genetic principles, types of mutations, and chromosomal abnormalities relevant to craniofacial development and dental disorders.
- Correlate structural, developmental, and biochemical knowledge with common craniofacial and dental pathologies encountered in clinical practice.

SUBJECTS INTEGRATED IN THE MODULE

1. Anatomy
2. Biochemistry
3. Oral Biology & Tooth Morphology
4. General Pathology & Microbiology
5. Oral Pathology

THEORY

GROSS ANATOMY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CF1-A-001	Describe the gross anatomy of the skull, its features, foramina, and applied aspects relevant to head and neck anatomy.	Skull	LGIS/ SGD	MCQs / VIVA
	Describe the features and structures of different views of skull (Anterior, Posterior, Superior, Inferior, Lateral)		LGIS/ SGD	MCQs / VIVA
	Discuss the sutures and fontanelles of skull, their age changes and clinical significance.		LGIS/ SGD	MCQs / VIVA
CF1-A-002	Describe the bony features of mandible.	Mandible	LGIS/ SGD	MCQs / VIVA
CF1-A-003	Enlist names of the cranial nerves.	Cranial Nerves	LGIS/ SGD	MCQs / VIVA

EMBRYOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CF1-A-004	Describe neurulation, formation of the neural tube, and migration of neural crest cells.	Neurulation and Early Organogens is	LGIS/ SGD	MCQs / VIVA
	Enlist derivatives of neural crest cells.		LGIS/ SGD	MCQs / VIVA
	Describe development of the head and neck region, including contributions of pharyngeal arches, pouches, and cranial nerves.		LGIS/ SGD	MCQs / VIVA

	Explain development of the skull and meninges (including craniosynostosis correlation), and vasculogenesis (basic).		LGIS/ SGD	MCQs / VIVA
CF1-A-005	Discuss growth and differentiation of the embryonic disc, trophoblast development and anomalies (situs inversus, sirenomelia, zoloprosencephaly).	Advanced Development and Anomalies	LGIS/ SGD	MCQs / VIVA
	Describe the embryological basis of hydatidiform mole and its pathological significance.		LGIS/ SGD	MCQs / VIVA
	Describe common chromosomal anomalies related to early embryonic development.		LGIS/ SGD	MCQs / VIVA

HISTOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CF1-A-006	Describe the microscopic and ultramicroscopic structure of all types ofcartilages	Cartilages	LGIS/ SGD	MCQs / VIVA
	Draw and label light microscopic diagram of different types of cartilages		LGIS/ SGD	MCQs / VIVA
CF1-A-007	List the bone cells and their origin along with their functions	Bones	LGIS/ SGD	MCQs / VIVA
	Describe the composition of bone matrix (organic, inorganic)		LGIS/ SGD	MCQs / VIVA
	Describe the histology of compact and spongy bone		LGIS/ SGD	MCQs / VIVA
CF1-A-	Describe the microscopic structure and ultramicroscopic structure of skeletal, cardiac,	Muscles	LGIS/ SGD	MCQs / VIVA

008	and smooth muscles			
CF1-A-009	Describe the layers and microscopic structure of the epidermis and dermis of the skin.	Skin	LGIS/ SGD	MCQs / VIVA

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CF1-B-001	Differentiate between anabolism and catabolism, and list the metabolic pathways associated with each process.	Overview of Metabolism	LGIS/ SGD	MCQs / VIVA
CF1-B-002	Explain metabolism: glycolysis and TCA cycle (steps, regulation,energetics).	Carbohydrate Metabolism	LGIS/ SGD	MCQs / VIVA
	Differentiate aerobic and anaerobic glycolysis.		LGIS/ SGD	MCQs / VIVA
	Describe the transport systems for glucose entry into cells, including sodium and ATP-independent (GLUTs) and sodium and ATP dependent cotransport.		LGIS/ SGD	MCQs / VIVA
CF1-B-003	Define amino acids and classify standard amino acids according to side chain and nutritional importance.	Amino Acids: Structure, Classification And Properties	LGIS/ SGD	MCQs / VIVA
CF1-B-004	Explain the levels of protein organization (primary, secondary, tertiary,and quaternary structures) and their relevance to protein function.	Protein Structure and Function	LGIS/ SGD	MCQs / VIVA
	Define conjugated proteins and provide suitable examples of conjugated proteins in the human body (lipoproteins, glycoproteins, nucleoproteins,		LGIS/ SGD	MCQs / VIVA

	chromoproteins, and metalloproteins).			
	Elaborate the role of chaperones in protein folding.		LGIS/ SGD	MCQs / VIVA
	Differentiate between denaturation and coagulation.		LGIS/ SGD	MCQs / VIVA
	Define limiting amino acids and provide suitable examples of limiting amino acids.		LGIS/ SGD	MCQs / VIVA
	Understand the nutritional importance of proteins and correlate this information to protein energy malnutrition.		LGIS/ SGD	MCQs / VIVA
	Compare and contrast the salient features of kwashiorkor and marasmus.		LGIS/ SGD	MCQs / VIVA
CF1-B-005	Explain enzyme structure, classification with examples, properties, mechanisms of action, kinetics, regulation, and inhibitors.	Enzymes: Structure, Classification, Mechanism, and Regulation	LGIS/ SGD	MCQs / VIVA
	Add diagnostic and therapeutic roles of enzymes (ALT, AST, CK-MB, ALP, LDH).		LGIS/ SGD	MCQs / VIVA
CF1-B-006	Describe vitamins (B1, B2, B3, B5, B7), their active forms, sources, RDA, biochemical roles, and deficiency manifestations.	Vitamins	LGIS/ SGD	MCQs / VIVA

ORAL BIOLOGY & TOOTH MORPHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
	Describe the primary epithelial band and explain its role in the initiationof tooth development.		LGIS/ SGD	MCQs / VIVA

CF1-OB-001	Explain the mechanisms involved in initiation of tooth	Early Tooth Development	LGIS/ SGD	MCQs / VIVA
	Describe the process of regionalization of the oral epithelium and its significance in tooth development.		LGIS/ SGD	MCQs / VIVA
	Explain the instructive signals for patterning and odontogenic potential		LGIS/ SGD	MCQs / VIVA
CF1-OB-002	Explain the hard tissue formation through histodifferentiation	Tooth Development	LGIS/ SGD	MCQs / VIVA
	Explain nerve and vascular contributions to tooth development during early developmental stages.		LGIS/ SGD	MCQs / VIVA
	Describe root development, Hertwig's epithelial root sheath, andsupporting tissues.		LGIS/ SGD	MCQs / VIVA
CF1-OB-003	Describe the embryonic development of the face, palate & tongue, contributions of key structures (lateral lingual swellings, tuberculum impar, and copula), muscle derivation, and sensory/motor innervation and Developmental Defects associated with it like Ankyloglossia.	Formation of the Face, Palate and Tongue	LGIS/ SGD	MCQs / VIVA
CF1-OB-004	Describe the role of Meckel's cartilage in mandibular development and the process of intramembranous ossification in forming the mandible and maxilla.	Development of the Mandible and Maxilla	LGIS/ SGD	MCQs / VIVA
	Define jaw size anomalies and their embryological basis and clinical impact (Micrognathia and Macrognathia).		LGIS/ SGD	MCQs / VIVA
CF1-OB-005	Describe basic developmental anomalies relevant to craniofacial region (e.g., cleft palate, anomalies of tooth number and size).	Craniofacial anomalies	LGIS/ SGD	MCQs / VIVA

GENERAL PATHOLOGY & MICROBIOLOGY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**
CF1-Pa-001	Define genetic disorders and their causes.	Genetic Disorders: Introduction and causes	LGIS/ SGD	MCQs / VIVA
CF1-Pa-002	Describe types of mutations (point, insertions, deletions).	Types of Mutations	LGIS/ SGD	MCQs / VIVA
CF1-Pa-003	Explain Mendelian principles applied to autosomal and X-linked disorders.	Mendel principles and genetic disorders	LGIS/ SGD	MCQs / VIVA
CF1-Pa-004	Describe genetic testing methods: PCR, sequencing, karyotyping, biochemical tests, prenatal screening.	Genetic testing	LGIS/ SGD	MCQs / VIVA
ORAL PATHOLOGY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**
CF1-OP-001	Discuss the clinical presentation of numerical and structural chromosomal abnormalities	Chromosomal abnormalities	LGIS/ SGD	MCQs / VIVA

PRACTICALS / LAB WORK

GROSS ANATOMY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CF1-A-010	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	Skull	LGIS/ SGD	MCQs / VIVA
	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		LGIS/ SGD	MCQs / VIVA
	Identify and enlist all the foramina of the skull along with their neurovascular contents		LGIS/ SGD	MCQs / VIVA
CF1-A-011	Identify and locate the major anatomical landmarks, foramina (with their contents), and surface features of the mandible; articulate it the skull	Mandible	LGIS/ SGD	MCQs / VIVA

HISTOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CF1-A-012	Draw and label light microscopic diagram of compact and spongy bones	Bones	LGIS/ SGD	MCQs / VIVA
CF1-A-013	Draw and label light microscopic diagram of	Cartilage	LGIS/	MCQs / VIVA

	cartilage		SGD	
CF1-A-014	Draw and label light microscopic diagram of muscle	Muscle	LGIS/ SGD	MCQs / VIVA
CF1-A-015	Draw and label light microscopic diagram of thick and thin skin	Skin	LGIS/ SGD	MCQs / VIVA

ORAL BIOLOGY & TOOTH MORPHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CF1-OB-006	Identify congenital defects (cleft lip/palate, tongue anomalies).	Development of Human embryo with special emphasis on tooth related structures.	LGIS/ SGD	MCQs / VIVA
CF1-OB-007	Draw and label stages of tooth development and root formation.	Tooth & Root Development	LGIS/ SGD	MCQs / VIVA

MODULE NO. 3
CARIOLOGY -I

MODULE RATIONALE

Cariology I introduce students to the biological, structural, biochemical, and behavioral foundations of dental caries. This module integrates oral biology, oral pathology, biochemistry, operative dentistry, community dentistry, and behavioral sciences to help students understand how caries develops, progress, and can be prevented. Through microscopic, radiographic, and practical learning, students explore the interactions between host factors, diet, microorganisms, and behavior, forming the essential groundwork for clinical dental practice and patient-centered preventive care.

MODULE OUTCOMES

- Explain the biochemical basis of dental caries, including carbohydrate metabolism, acid production, and the role of fluoride in caries prevention.
- Describe the structure, composition, and developmental biology of enamel and dentin, and relate these features to caries susceptibility.
- Identify normal and abnormal enamel and dentin structures on slides, models, and radiographs.
- Describe the etiology, microbiology, and histopathology of dental caries and developmental defects such as enamel hypoplasia and amelogenesis imperfecta.
- Explain the types, clinical features, and progression of pit and fissure, smooth surface, and root caries, along with preventive and management approaches.
- Apply the principles of caries prevention at both individual and community levels through dietary counseling, oral hygiene practices, and fluoride use.
- Demonstrate effective communication, empathy, and professionalism while addressing behavioral aspects that influence oral health and patient cooperation.
- Correlate biological and behavioral concepts with preventive strategies to promote oral health across diverse populations.

SUBJECTS INTEGRATED IN THE MODULE
1. Biochemistry
2. Oral Biology & Tooth Morphology
3. Oral Pathology
4. Operative Dentistry
5. Community & Preventive Dentistry
6. Behavioral Sciences

THEORY

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car1-B-001	Explain cariogenic potential of carbohydrates.	Biochemical Role of carbohydrates in Dental Caries	LGIS/ SGD	MCQs / VIVA
Car1-B-002	Explain biochemical mechanism of fluoride in disrupting bacterial glycolysis and acid production.	Fluoride's Biochemical Mechanism	LGIS/ SGD	MCQs / VIVA

ORAL BIOLOGY & TOOTH MORPHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
	Describe physical and chemical properties of enamel; explain their role in		LGIS/ SGD	MCQs / VIVA
	caries resistance and susceptibility.		LGIS/ SGD	MCQs / VIVA
	Describe structural organization of enamel; identify enamel on		LGIS/ SGD	MCQs / VIVA
	radiographs.		LGIS/ SGD	MCQs / VIVA
	Explain differentiation and life cycle of ameloblasts.		LGIS/ SGD	MCQs / VIVA
Car1-OB-001	Describe amelogenesis stages (pre-secretory, secretory, maturation), Tom's process, and pH regulation.	Enamel	LGIS/ SGD	MCQs / VIVA

	Describe enamel proteins; explain incremental lines, Hunter-Schreger, bands, tufts, lamellae, spindles, and gnarled enamel.		LGIS/ SGD	MCQs / VIVA
	Explain fluoride effects, enamel etching, age changes and repair		LGIS/ SGD	MCQs / VIVA
	Describe the anatomical surfaces and land marks of both anterior and Posterior teeth, including the roots, using standardized dental terminology.	Tooth Morphology	LGIS/ SGD	MCQs / VIVA
	Identify and name tooth surfaces and thirds of tooth surfaces from diagrams or descriptions		LGIS/ SGD	MCQs / VIVA
	Differentiate between the crown surfaces of teeth by matching them with		LGIS/ SGD	MCQs / VIVA
	their correct general shape (triangular, trapezoidal, or rhomboidal), or by relating the shape to the specific function of the tooth.		LGIS/ SGD	MCQs / VIVA
	Identify and name line and point angles, embrasures and curves basedon diagrams or descriptions.		LGIS/ SGD	MCQs / VIVA
	Define elevations and depressions on the tooth surface.		LGIS/ SGD	MCQs / VIVA
	Describe lobes, contact points, embrasures, cervical line, pits, and fissures and relate to caries susceptibility.		LGIS/ SGD	MCQs / VIVA

	Describe the components, boundaries and functions of interproximal space and embrasures		LGIS/ SGD	MCQs / VIVA
ORAL PATHOLOGY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**
Car1-OP-001	Describe etiology and pathogenesis of enamel hypoplasia.	Enamel Development al Anomalies	LGIS/ SGD	MCQs / VIVA
	Explain Amelogenesis imperfecta (types, clinical and radiological features).		LGIS/ SGD	MCQs / VIVA
Car1-OP-002	Describe etiology and pathogenesis of dental caries.	Microbiology and Pathogenesis of Caries	LGIS/ SGD	MCQs / VIVA
	Describe the microbiological aspect of caries; the role and characteristics of cariogenic bacteria.		LGIS/ SGD	MCQs / VIVA
	Define plaque and stages of plaque development		LGIS/ SGD	MCQs / VIVA
	Describe the changes that develop in enamel of erupted teeth in association with microorganisms.		LGIS/ SGD	MCQs / VIVA
	Describe histopathological changes in enamel during dental caries, with emphasis on microbial invasion.		LGIS/ SGD	MCQs / VIVA
OPERATIVE DENTISTRY				
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**	**MIT**	**AT**

Car1-OD-001	Describe the anatomy of pits and fissures, explain their role in caries susceptibility, and outline preventive strategies such as sealant application and fluoride use.	Pit and Fissure Caries	LGIS/ SGD	MCQs / VIVA
Car1-OD-002	Describe etiology, risk factors, and clinical features of smooth surface caries; explain role of fluoride in prevention.	Smooth Surface Caries	LGIS/ SGD	MCQs / VIVA
Car1-OD-003	Describe etiology, clinical features, and progression of root caries.	Root Caries	LGIS/ SGD	MCQs / VIVA
Car1-OD-004	Differentiate active caries based on clinical features; explain clinical significance; outline management strategies. identify the factors that promote caries arrest.	Active and Arrested Caries	LGIS/ SGD	MCQs / VIVA
Car1-OD-005	Differentiate arrested caries; describe biological processes and contributing factors.		LGIS/ SGD	MCQs / VIVA

COMMUNITY & PREVENTIVE DENTISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car1-CD-001	Explain the role of diet in dental caries, including the Stephen curve, cariogenic potential of sugars, and dietary modification strategies.	Diet and Dental Caries	LGIS/ SGD	MCQs / VIVA

Car1-CD-002	Describe the role of dental biofilm in demineralization and remineralization; explain oral hygiene measures and Keyes' triad in caries prevention.	Dental Biofilm and Caries Prevention	LGIS/ SGD	MCQs / VIVA
Car1-CD-003	Explain and apply the principles of dental caries prevention in individual and community settings.	Principles of Caries Prevention	LGIS/ SGD	MCQs / VIVA
Car1-CD-004	Explain the role of systemic and topical fluoride in the prevention of dental caries; apply knowledge of community-based preventive measures (e.g., water fluoridation, school programs).	Fluoride and Community-Based Caries Prevention	LGIS/ SGD	MCQs / VIVA
Car1-CD-005	Describe correct toothbrushing and flossing techniques in relation to caries prevention.	Oral Hygiene Practices and Caries Prevention	LGIS/ SGD	MCQs / VIVA

BEHAVIORAL SCIENCES

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car1-BhS-001	Explain the bio-psycho-social model and its relevance to holistic dental care.	Introduction to Behavioral Sciences	LGIS/ SGD	MCQs / VIVA
Car1-BhS-002	Describe how psychology, sociology, and anthropology contribute to understanding oral health behavior.	Determinants of Oral Health Behavior	LGIS/ SGD	MCQs / VIVA
Car1-BhS-003	Differentiate between normal and abnormal behavior and discuss their implications for dental care.	Understandin g Human Behavior	LGIS/ SGD	MCQs / VIVA

Car1-BhS-004	Recognize the influence of emotions and behavior on patient–dentist interactions and oral health outcomes.	Emotional and Behavioral Factors in Dentistry	LGIS/ SGD	MCQs / VIVA
Car1-BhS-005	Demonstrate effective communication and interpersonal skills in clinical and community dental settings.	Communication Skills	LGIS/ SGD	MCQs / VIVA
Car1-BhS-006	Apply principles of empathy and emotional intelligence in role play.	Emotional Intelligence	LGIS/ SGD	MCQs / VIVA
Car1-BhS-007	Describe ethical principles, professional roles, and responsibilities of a dentist.	Professional Ethics and Responsibilities	LGIS/ SGD	MCQs / VIVA

PRACTICALS / LAB WORK

ORAL BIOLOGY & TOOTH MORPHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car1-OB-003	Identify major morphological features of teeth including the lobes, contact areas, embrasures, height of contour, and the cervical and gingival lines using models, and anatomical specimens.	Tooth Morphology and Structural Features	LGIS/ SGD	MCQs / VIVA
	Locate pits, fissures, and different types of embrasures on teeth through direct inspection of specimens/typodont models/clinical images.		LGIS/ SGD	MCQs / VIVA
Car1-OB-004	Draw and label lifecycle of ameloblast	Enamel	LGIS/ SGD	MCQs / VIVA
	Draw and label Secretory stage ameloblast		LGIS/ SGD	MCQs / VIVA
	Draw and label Maturation stage ameloblast		LGIS/ SGD	MCQs / VIVA
	Draw and label different histological/organizational features of the enamel (enamel rods, striae of Retzius, Hunter-Schreger bands, gnarled enamel, DEJ, enamel tufts, lamellae, spindles, & neonatal lines.)		LGIS/ SGD	MCQs / VIVA

ORAL PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car1-OP-003	Observe prepared slides of plaque samples.	Microscopic Analysis of Plaque	LGIS/ SGD	MCQs / VIVA

Car1-OP-004	Identify amelogenesis imperfecta and fluorosis on e-slides.	Radiographic Identification of Tooth Structures and Developmental Anomalies	LGIS/ SGD	MCQs / VIVA

OPERATIVE DENTISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car1-OD-006	Identify fluoride gel and demonstrate application procedure.	Prevention of Dental Caries	LGIS/ SGD	MCQs / VIVA
	Identify pits, fissures, smooth surface, and root caries on models, or images		LGIS/ SGD	MCQs / VIVA
	Differentiate active versus arrested caries on prepared slides or images		LGIS/ SGD	MCQs / VIVA

PRISME	
P	**Professionalism**
R	**Research**
I	**Informatics**
S	**Social Responsibility** **Social Accountability**
M	**Management** **(Healthcare)**
E	**Evidence Based Dentistry (EBD)**

	PROFESSIONALISM
Year	**Learning Outcomes (LOs)**
I	• Recognize attributes of professionalism (respect, integrity, accountability) • Define professionalism in dentistry • Identify unprofessional behaviors • Practice patient-centered communication (role play) • Apply basic reflective practice

	RESEARCH
Year	**Learning Outcomes (LOs)**
I	• Understand fundamentals of academic writing i.e., official applications, letters, report writing, etc. • Define research, inquiry, and evidence-based dentistry • Recognize importance of research in dentistry • Identify forms of scientific writing (editorial, article, review, case report, meta-analysis) • Explain IMRAD structure • Differentiate types of health research (basic, clinical, applied, public health) • Enlist differences between quantitative and qualitative research • Describe basic principles of research ethics

CFRC

Block I	
1.	**Hand washing** Demonstrate steps of hand washing
2.	**Gloving** Perform the procedure of wearing gloves
3.	**Tooth Brushing Techniques** Demonstrate correct toothbrushing techniques in relation to caries prevention.
4.	**Flossing Techniques** Demonstrate correct flossing techniques in relation to caries prevention.
5.	**Communication Skills** Demonstrate counseling skills related to oral hygiene.

Dental Section (Multan Medical & Dental College)

Instructural Strategies

TEACHING METHODOLOGY

Delivery of a curriculum also needs a diversity of educational vernaculars for the different learning styles. Following are a few of the recommended instructional strategies. It is advised that at least **three different methods of instruction** should be adopted in the institutional planning. This will enable the diversity of learning patterns to be facilitated.

Large Group Interactive Session (LGIS)

Lecture format is the most widely used approach to teaching especially in a large class size with average attention span of 20-30 mins. Interactive lecturing involves a two-way interaction between the presenter and the participants. Interactive methods like brainstorming, buzz group, simulation, role play, and clinical cases can be used.

Significance of its usage

- Relaxed environment, diverse opinions, active involvement
- Increase attention and motivation.
- Independence and group skills.
- Cost effective.
- Suitable for taking advantage of available audiovisual technologies.

Team based learning (TBL)

TBL is a uniquely powerful form of small group learning. It provides a complete coherent framework for building a flipped course experience. There are four essential elements of TBL which include:

- Teams must be properly formed and managed (5-7 students)
- Getting students ready
- Applying course concepts
- Making students accountable

Significance of its usage

- Students are more engaged.
- Increased excitement in TBL classroom
- Teams outperforms best members.
- Students perform better in final and standardized exams.

Problem based learning (PBL)

It is an instructional student-centered approach in which students work in small groups on a health problem, identifying their own educational needs and being responsible for the acquisition of the knowledge required to understand the scenario.

Significance of its usage

- Teamwork
- Critical evaluation of literature
- Self-directed learning and use of resources
- Presentation skills
- Leadership
- Respect for colleagues' views

Tutorials

Tutorial is a class or short series of classes, in which one or more instructors provides intensive instruction on some subject to a small group. Its purpose is to explore students' point of view, allowing time for discussion, and inculcating self-directed, reflective learning skills.

Significance of its usage

- Develop and assess the extent of background knowledge of students, which enables them to properly understand concepts which may not have been understood in lectures.
- Develop problem-solving skills.
- Develop practice of self-learning.
- Reduced time to understand the topic.

Reflective Writing

It is a metacognitive process that occurs before, during and after the situation with the purpose of developing greater understanding of both the self and situation so that future encounters with the situation are informed from previous encounters.

Significance of its usage

- Questioning attitude and new perspectives.
- Areas for change and improvement.
- Respond effectively to new challenges.
- Critical thinking and coping skills

Clinical Teaching

Teaching and learning that occurs with actual patient as the focus. It occurs in the dental simulation labs, Dental Clinics and for OMFS in the wards and operation theatre

Significance of its usage

- Stimulus of clinical contact
- Psychomotor skills
- Communication skills
- Language skills
- Interpersonal skills
- Professional attitudes and empathy
- Role modelling

Laboratory Practical

Lab practical involve things like identifying a structure, a type of stain through a microscope, a problem with a preparation, reading biochemical test results and answering safety questions. These simulations allow students to attempt the experiments in the laboratory in a risk-free way that provides the opportunity to make mistakes and learn how to correct them using the immediate feedback generated.

Significance of its usage

- Enhance mastery of subject matter.
- Develop scientific reasoning.
- Develop practical skills.
- Develop teamwork abilities.

Demonstrations

The demonstration method in teaching can be defined as giving a demo or performing a specific activity or concept. It is a teaching-learning process carried out in a very systematic manner.

Significance of its usage

- Promotes learning and correlates theory with practice.
- Sharpens the observation skills.
- Sustain interests in learning environment.
- Helps teacher to evaluate students' response

ASSESSMENT

Regulations

1. Professional examination shall be open to any student who:
   a. has been enrolled/registered and completed one academic year preceding the concerned professional examination in a constituent/affiliated college of the University.
   b. has his/her name submitted to the Controller of Examinations, for the purpose of examination, by the principal of the college in which he / she is enrolled & is eligible as per all prerequisites of the examination.
   c. has his/her marks of internal assessment in all the Blocks/Clinical Clerkships sent to the Controller of Examinations through office of the principal of the concerned college, at the end of each Block/Clinical Clerkships, as well as at the conclusion of the academic session along with the admission form for the professional examination.
   d. Has been certified by the principal of his/her college:
      (i) of good character;
      (ii) of having attended not less than cumulative 75%* of the full course of lectures delivered, practical and clinical rotations conducted in the particular academic session, while maintaining 75 % attendance in each Block/Clinical Clerkship,
      (iii) of having appeared at the Block/Clinical Clerkship Examinations conducted by the college of enrolment with at least 50 % marks* in each Block/Clinical Clerkship examination, as well as in aggregate score of all Blocks/Clinical Clerkships examinations for the concerned year;
2. Written/Theory paper in all Professional Examinations in Modular Integrated MBBS or BDS Curricula shall consist of MCQs alone, with effect from Annual 2026 Examinations. (Ref: No. UHS/REG-25/2379, dated 17.11.2025)
3. The minimum number of marks required to pass the professional examination for each Block/Clinical Clerkship shall be fifty percent (50%) in Written and fifty percent (50%) in the 'Oral/Practical/Clinical' examinations and fifty percent (50%) in aggregate, independently and concomitantly, at one and the same time.

4 A candidate failing in one or more Blocks/Clinical Clerkships in the annual examination shall be provisionally allowed to join the next professional class till the commencement of supplementary examinations. The candidate, however, shall have to pass the failed Block/s or Clinical Clerkship in this supplementary examination failing which he / she shall be detained in the professional year. Under no circumstances, a candidate shall be promoted to the next professional class till he/she has passed all the Blocks/Clinical Clerkships in the preceding professional examination.

5. If a student appears in the Supplementary Examination for the first time as he/she did not appear in the annual examination for any reason and failed in any Block/Clinical Clerkship in the Supplementary Examination, he/she will be detained in the same class and will not be promoted to the next class.

**Notification No.UHS/REG-25/2351 Dated 13-11-2025*

6. Only one annual and one supplementary of each Professional Examination shall be allowed in a particular academic session. However, in exceptional situations, i.e., national calamities, war or loss of solved answer books in case of accident, special examination may be arranged after having observed due process of law. This will require permission of relevant authorities, i.e., Syndicate and Board of Governors.
7. Any student who fails to clear the First or Second Professional MBBS / First Professional BDS Examination, in four consecutive attempts, each, inclusive of both availed as well as un-availed attempts, after becoming eligible for the examination, and has been expelled on that account shall not be eligible for continuation of studies and shall not be eligible for admission as a fresh candidate in either MBBS or BDS.
8. The application for admission of each candidate to the professional examination shall be submitted to the Controller of Examination, through the Principal of the College, on the prescribed format, as per notified schedule, accompanied by the prescribed fee.

9. The candidates shall pay their fee through the principal of their respective Colleges, who shall forward the Examination Forms along with the duly paid challan of the examination fee generated from the Online Examination Form.

10. The continuous internal assessment through the Block/Clinical Clerkship, conducted by the college of enrollment, shall carry 20% weightage in the total allocated marks for the concerned Block/Clinical Clerkship in the Professional Examination conducted by the university. The score will be equally distributed to the Written and "Oral/Practical/Clinical" Examinations.
11. The marks of internal assessment through Blocks/Clinical Clerkships examination and attendance record shall be submitted to Controller of Examinations, along with question papers and keys for the Block/Clinical Clerkship examination, within two weeks of completion of each Blocks/Clinical Clerkships examination.

    Further, parent-teacher meetings shall be arranged by the colleges after every Block/Clinical Clerkship examination to share feedback on the progress of students with their parents. Minutes of parent teacher meetings, academic timetables/schedule of Blocks/Clinical Clerkships and academic year study guides shall be submitted to the Department of Medical Education UHS, as well.
12. It is emphasized that fresh internal assessment or a revision of assessment for supplementary examination shall not be permissible. However, a revised internal assessment for the detained students can be submitted. The internal assessment award in a particular year will not be decreased subsequently detrimental to the detainee candidate. A proper record of the continuous internal assessment shall be maintained by the concerned department/s in the colleges.
13. The colleges may arrange remedial classes and one re-sit for each Block/Clinical Clerkship examination after fulfillment of prescribed requirements given below. The remedial classes and re-sit examination can be conducted during summer vacation/weekends, before or during preparatory leave for the concerned professional examination, subject to the following conditions:

Block/Clinical Clerkship Attendance	Remedial Classes
<75%, ≥ 50% (50-74%)	i. Principal of the college may conduct remedial classes and submit result to the Examination Department, UHS, independently. ii. Principal of the college may conduct remedial classes for detained students, who have short attendance in the first Block/Clinical Clerkship of a professional year after detention. The college may submit record of the remedial classes to the Examination Department, UHS, independently.
<50%	i. Principal of the college may submit attendance record of such students to Department of Medical Education, UHS, seeking permission for conduct of remedial Classes. The conduct of remedial classes in such cases shall be arranged only after permission from the Competent Authority in the university. ii. The colleges shall also have to provide the university with the reasons submitted by the candidates for short attendance along with documentary evidence for the same duly verified by the principal. iii. The following shall be considered as valid reasons for short attendance of the studesnts for consideration of permission for remedial classes: • Illness/accident/surgery of the student or sickness/death of an immediate relative/being afflicted by a natural/man-made calamity or disaster or detained students (missed the first Block/Clinical Clerkship of the year), students clearing their preceding professional examination in supplementary, or late admitted students who have been permitted for joining by UHS

Marks in Block/ Clinical Clerkship Examination	Re-sit Examination
<50% Marks/ Absence from Block /Clinical Clerkship Examination	i. Principal of the college may submit record of such students to Department of Medical Education, UHS, seeking permission for conduct of re-sit examination. ii. The conduct of re-sit examination in all cases shall be arranged only after permission from the Competent Authority in the university. iii. The colleges shall also have to provide the university with the reasons submitted by the candidates for absence from the Block/Clinical Clerkship examination, along with documentary evidence for the same duly verified by the principal. iv. The following shall be considered as valid reasons for absence of a student from Block/Clinical Clerkship examination, and for consideration of permission for re-sit examination: • Illness/accident/surgery of the student or sickness/death of an immediate relative/being afflicted by a natural/man-made calamity or disaster or detained students (missed the first Block/Clinical Clerkship of the year), students clearing their preceding professional examination in supplementary, or late admitted students who have been permitted for joining by UHS

14. The following policy shall be applicable for transition of students From Traditional Subject-Based Scheme to the Modular Integrated Curriculum Scheme:
    i. The students who fail in all subjects of the professional examination, either by taking the examination or due to non-appearance, and are detained in the respective professional year, shall follow the Modular Integrated Curriculum Scheme for their teaching and assessment.

ii. The students who fail in one or more subjects but not all the subjects of a professional examination, either by taking the examination or due to non-appearance, and are detained in the respective professional year, shall attend classes with students following the Modular Integrated Curriculum Scheme, but they will be examined in the failed subject/s according to their parent scheme, i.e., the Traditional Subject-Based Curriculum Scheme.

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 Examination + 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 (MCQs only)	5 %
	Continuous assessment (SEQs, MCQs etc)	3 %
Practical 10 %	Attendance	75% attendance -1 % >85% attendance -2 %
	Block Exam	5 %
	Portfolio-clinical logbooks (CFRC, PRISME)	3 %

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Sr. No.	Written Exam		Oral/Practical exam				Total
	Subjects	No. of MCQs	Subjects	OSPE (9 marks)	OSCE/ CFRC (9 marks)	OSVE (6 marks)	
1	Anatomy	23	Anatomy	02	-	01	24
2	Oral Biology	22	Oral Biology	03	-	01	33
3	Biochemistry	18	Biochemistry	-	-	01	06
4	General Pathology & Microbiology	14	General Pathology & Microbiology	01	-	01	15
5	Physiology	09	Physiology	-	-	01	06
6	Oral Pathology	09	Oral Pathology/Operative Dentistry	01	-	01	15
7	Community Dentistry	07	Community Dentistry	-	01	01	15
8	Operative Dentistry	07	Pharmacology	-	-	01	06
9	Pharmacology	08	-	-	-	-	-
10	Behavioral Sciences	03	-	-	-	-	-
Total		120	Total	7 OSPE= 63 marks	1 OSCE/ CFRC = 09 marks	8 OSVE= 48 marks	120

Learning Resources

Subject	Learning Resources
General Anatomy, Histology & Embryology	1. General Anatomy by Laiq Hussain Siddiqui 7th Edition 2. Medical Histology Text and Atlas by Laiq Hussan Siddique 9th Edition 3. Langman's Medical Embryology 15th Edition 4. Snell's Clinical Anatomy by Regions 11th Edition 5. Snell's Clinical Neuroanatomy 9th Edition
Physiology	1. Guyton & Hall. Textbook of Medical Physiology (14th ed.). 2. Essential Physiology for Dental Students (Essentials (Dentistry)) 1st Edition by Kamran Ali (Editor), Elizabeth Prabhakar (Editor)
Biochemistry	1. Harper's Illustrated Biochemistry (32nd ed.) by Rodwell et al. 2. Lippincott Illustrated Reviews: Biochemistry (8th ed.) by Abali et al.
Oral Biology & Tooth Morphology	1. Nanci, A. (2024). Ten Cate's Oral Histology, Development, Structure, and Function (10th ed.). Elsevier Health Sciences. 2. Fuller, J. L. (4th ed.). Concise Dental Anatomy & Morphology. 3. Nelson, S. J. (2015). Wheeler's Dental Anatomy, Physiology and Occlusion (1st SAE) (for Occlusion).
Pathology & Microbiology	1. Robbins & Cotran Pathologic Basis of Disease 2. Review of Medical Microbiology and Immunology by Levinson
Community & Preventive Dentistry	1. Textbook of Public Health Dentistry by SS Hermith
Pharmacology & Therapeutics	1. Katzung & Trevor's Pharmacology Examination & Board Review (12th ed.)- Mini 2. Lippincott Illustrated Reviews: Pharmacology (7th ed.)

Oral Pathology	1. Contemporary Oral and Maxillofacial Pathology by Wysocki, Sapp & Eversole 2. Cawson's Essentials of Oral Pathology & Oral Medicine
Operative Dentistry	1. Sturdevant's Art and Science of Operative Dentistry 2. Summitt's Fundamentals of Operative Dentistry
Behavioral Sciences	1. Hand book of Behavioral sciences, by MH Rana, 3rd ed. 2. Humayun A., Herbert M. (2010). Integrating behavioural sciences in healthcare. Islamabad: HEC.
Periodontology	1. Newman and Carranza's Clinical Periodontology (3rd South Asia Edition)
Oral Medicine	1. Tyldesley's Oral Medicine (5th Edition)
Dental Radiology	1. K. Horner, K. A. Eaton's Selection Criteria for Dental Radiography (3rd Edition)