



BDS INTEGRATED CURRICULUM 2k25

2nd Year BDS

Session 25-26

Block-4

Module 11	Module 12	Module 13	Module 14
Cariology-II	Community Dentistry & Public Health-I	1 -Dental Materials & Pre-Clinical Dentistry-I	Hepatorenal



TABLE OF CONTENTS

Content	Page no.
Table of Content	2
Vision and Mission of UHS	3
Vision and Mission of MMDC	3
List of Abbreviations	4,5
Curriculum Framework	6
Principal Message	7
Introduction to Study Guide	8
Academic Schedule Block-2	8
Timetable Block-2	
Contact Hours	
Block Subject In-charges/ Coordinators	
Module-11	
Module-12	
Module-13	
Module-14	
PRISME	
Teaching Methodologies	
Assessment	
Learning Resources	

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.

VISION AND Mission OF Dental Section MMDC

Vision Statement:

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.

Mission Statement:

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 Outcomes

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.

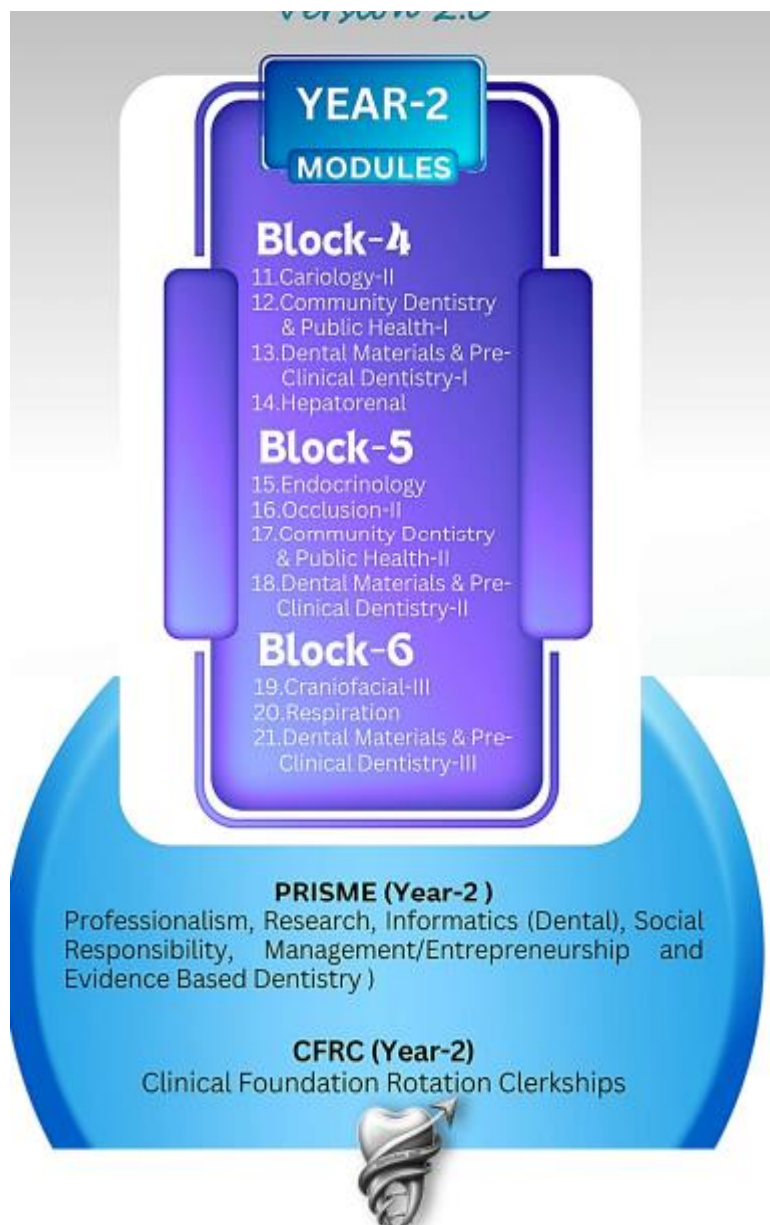
LIST OF ABBREVIATION

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

LIST OF ABBREVIATIONS	
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
WHO	World Health Organization
DME	Department of Medical Education
DDE	Department of Dental Education
HPE	Health Professions Education
CFRC	Clinical Foundation Rotation Clerkship
ICDAS	International Caries Detection and Assessment System
A	Anatomy
AI	Artificial Intelligence
B	Biochemistry
Enr	Endocrinology
HR	Hepatorenal
GDC	General Dental Council
Ph	Pharmacology & Therapeutics
P	Physiology
Pa	General Pathology & Microbiology
PD	Prosthodontics
OB	Oral Biology
OP	Oral Pathology
CD	Community & Preventive Dentistry

OD	Operative Dentistry
OM Oral Medicine AMIA American Medical Informatics Association AMEE	Association for Medical Education in Europe
BhS	Behavioral Sciences
CNS	Central Nervous System
GIT	Gastrointestinal Tract
CVS	Cardiovascular System
TMJ	Temporomandibular Joint
DR	Dental Radiology
DM	Dental Materials
CBC	Complete Blood Count
ESR	Erythrocyte Sedimentation Rate
PCR	Polymerase Chain Reaction
ED50	Median Effective Dose
LD50	Median Lethal Dose
TD50	Median Toxic Dose
ID50	Median Infectious Dose
AUC	Area Under Curve
MCV	Mean Corpuscular Volume
MCH	Mean Corpuscular Hemoglobin
MCHC	Mean Corpuscular Hemoglobin Concentration
NS	Neurosciences
DNA	Deoxyribonucleic Acid
TORCH	Toxoplasmosis, Other, Rubella, Cytomegalovirus, Herpes Simplex
CF	Craniofacial
Car	Cariology
DEJ	Dentin Enamel Junction
HERS	Hertwig's Epithelial Root Sheath
FDI	Fédération Dentaire Internationale
GAGs	Glycosaminoglycans
EFA	Essential Fatty Acids
Hb	Hemoglobin

HbA1c	Glycated Hemoglobin
ATP	Adenosine Triphosphate
RBC	Red Blood Cell
NMJ	Neuromuscular Junction
ALT	Alanine Aminotransferase
AST	Aspartate Aminotransferase
ALP	Alkaline Phosphatase
INR	International Normalized Ratio
GFR	Glomerular Filtration Rate
eGFR	Estimated Glomerular Filtration Rate
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HAV	Hepatitis A Virus
HDV	Hepatitis D Virus
HEV	Hepatitis E Virus
RCTs	Randomized Controlled Trials



INTRODUCTION TO STUDY GUIDE

As you enter the 2nd 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 2nd 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 Block-2

Block-4 Start Date	11 th May 2026
Midblock Exam Block-4	13 th July 2026
Block-4 Exam	24 th -28 th August 2026
Block-4 Ends Date	21 st August 2026



TIME TABLE

Multan Medical & Dental College								
Timetable for 2nd Year BDS Session 2026								
Block-4 (Integrated Modular 2k25) (11 Weeks)								
Day	08:30-09:30	09:30-10:20	10:20-11:10	11:10-12:00	12:00-12:50	12:50-01:20	01:20-02:10	02:10-03:00
Monday	Test/ Discussion	Test/ Discussion	Community Dentistry Interactive Lecture	Dental Material Interactive Lecture	G. Pathology (Lecture) 1-4 Week/ Operative Dentistry Interactive Lecture	Break	Biochemistry Interactive Lecture	Prosthodontics Interactive Lecture
Tuesday	Operative Dentistry Interactive Lecture	Behavioural Sciences Interactive Lecture	Oral Biology Interactive Lecture	Community Dentistry Practical	Dental Material Interactive Lecture		Pharmacology Interactive Lecture/Practical	PRISME Interactive Lecture
Wednesday	CFRC Interactive Lecture	Behavioural Sciences Interactive Lecture	Community Dentistry Interactive Lecture	Dental Material Interactive Lecture	Physiology Interactive Lecture		Behavioural Sciences Interactive Lecture/Practical	PRISME Interactive Lecture
Thursday	Community Dentistry Interactive Lecture	Dental Material Practical	Dental Material Practical	Physiology Interactive Lecture	Oral Biology Interactive Lecture		Pharmacology Interactive Lecture/Practical	Prosthodontics Interactive Lecture 1- 6 Week / Biochemistry Interactive Lecture 7-11 Week
Friday	Test	Community Dentistry Interactive Lecture	Oral Pathology Interactive Lecture 1- 6 Week / Oral Medicine Interactive Lecture 7-11 Week	Dental Material Interactive Lecture	Oral Biology Practical		G. Pathology Interactive Lecture	PRISME Interactive Lecture/Practical

Coordinators

BDS-2 Year Coordinator Community Dentistry	Prof. Dr. Aeeza Malik
Dental Education/ Block Coordinator	Dr. Hajra Talat

Block-4 Subject In-charges

Operative Dentistry	Prof. Dr. Sharina Naz
Community Dentistry	Prof.Dr. Ijaz Hussain Sahu
Dental material	Dr. Muhammad Abi Waqas
Oral Biology	Dr. Abubakar
Physiology	Prof. Dr. Maria Gill
Biochemistry	Dr. Jamal
Pharmacology	Prof. Dr. Muhammad Ali
Oral Pathology	Prof.Dr. Basil Khalid
Oral Medicine	Dr. Faisal Asghar
General Pathology	Dr. Rizwan Akhtar
Prosthodontics	Dr. Nadia Wajdan
CFRC	Coordinator Dental Education
PRISME Domain Professionalism, Social Responsibility, Accountability Domain Research Domain Management (Healthcare) Domain Informatics Domain EBD	Coordinator Behavioral Science Community Dentistry Clinical Dental Education Community Dentistry



Module no. 11

Cariology-II



BDS Integrated Curriculum 2K25
Version 2.0



Module No.11

CARIOLOGY-II



MODULE RATIONALE

Cariology II builds upon foundational knowledge of tooth morphology and dental caries to develop an integrated understanding of tooth structure, disease processes, and clinical decision-making. The module emphasizes the relationship between anatomical features of teeth and their susceptibility to caries, enabling students to apply morphological knowledge in identifying, diagnosing, and managing dental conditions.

It introduces dental caries as a dynamic, multifactorial process, highlighting the interplay of demineralization and remineralization, and the role of biological, behavioral, and environmental factors. Through the integration of operative dentistry, oral pathology, and dental radiology, students gain a comprehensive understanding of the clinical, histopathological, and radiographic aspects of caries and related tooth surface defects.

The module also focuses on risk assessment, early detection using standardized systems, and the principles of prevention and minimally invasive management. By combining theoretical knowledge with practical skills in tooth identification, carving, and radiographic interpretation, the module prepares students to make informed clinical decisions and to manage carious lesions effectively within both individual and community-oriented contexts.

MODULE OUTCOMES

- Describe and differentiate the morphology of premolars and molars (deciduous and permanent), including crown and root features relevant to identification and clinical practice.
- Recognize anatomical variations and anomalies in tooth structure and explain their clinical implications.
 - Correlate pulp morphology with radiographic appearance, particularly in premolars and molars.
- Explain the etiology, classification, and pathogenesis of dental caries, including the processes of demineralization and remineralization.
- Identify and interpret clinical and radiographic features of dental caries, including staging and severity.
 - Apply standardized systems (e.g., International Caries Detection and Assessment System (ICDAS) for detection and assessment of carious lesions.
- Differentiate carious lesions from non-carious tooth surface loss and developmental defects, using clinical and radiographic criteria.
 - Assess caries risk and categorize patients into risk groups to support clinical decision-making.
- Outline preventive and minimally invasive management strategies for dental caries.
- Demonstrate practical skills in tooth morphology (drawing, identification, carving) and
- Interpret conventional radiographs to evaluate carious lesions and their progression.
- recognition of carious lesions in clinical and radiographic settings.

SUBJECTS INTEGRATED IN THE MODULE

- Oral Biology & Tooth Morphology
- Operative Dentistry
- Oral Pathology
- Oral Medicine / Dental Radiology

THEORY				
ORAL BIOLOGY & TOOTH MORPHOLOGY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car2-OB-001	Describe the general considerations and morphological features of maxillary premolars, including their labial, lingual, mesial, distal, and occlusal aspects, as well as root morphology.	Morphology of Premolars	LGIS/SGD	MCQS
	Describe the general considerations and morphological features of mandibular premolars, including their labial, lingual, mesial, distal, and occlusal aspects, as well as root morphology.		LGIS/SGD	MCQS
	Differentiate maxillary from mandibular premolars using key identification criteria such as cusp morphology, root anatomy, and occlusal patterns.		LGIS/SGD	MCQS
Car2-OB-002	Identify and explain variations and anomalies in crown and root morphology of premolars.	Anomalies of Premolars	LGIS/SGD	MCQS
Car2-OB-003	Explain and analyze the number, shape, and anatomical variations of pulp canals and pulp chambers in premolars, with reference to radiographic appearances.	Pulp Morphology & Radiographic correlation	LGIS/SGD	MCQS
Car2-OB-004	Describe the general considerations and detailed morphology of the labial, lingual, mesial, distal, occlusal aspects, and root structure of permanent maxillary molars.	Morphology of Permanent maxillary molars	LGIS/SGD	MCQS
Car2-OB-005	Describe the general considerations and detailed morphology of the labial, lingual, mesial, distal, occlusal aspects, and root structure of permanent Mandibular molars.	Morphology of permanent Mandibular molars.	LGIS/SGD	MCQS
Car2-OB-006	Enlist and compare key identification features of maxillary deciduous & permanent molars based on cusp pattern, crown outline, and root configuration.	Comparison of Deciduous & Permanent molars.	LGIS/SGD	MCQS

Car2-OB-007	Enlist and compare key identification features of deciduous & permanent mandibular molars based on cusp pattern, crown outline, and root configuration.		LGIS/SGD	MCQS
Car2-OB-008	Enlist morphological anomalies in the crown and root of deciduous and permanent molars.	Molar Morphological Anomalies	LGIS/SGD	MCQS
Car2-OB-009	Explain and analyze the number, shape, and anatomical variations of pulp canals and pulp chambers in deciduous & permanent molars, with reference to radiographic appearances.	Pulp Morphology and Radiographic Correlation	LGIS/SGD	MCQS
OPERATIVE DENTISTRY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car2-OD-001	Discuss the etiology of dental caries.	Dental Caries	LGIS/SGD	MCQS
Car2-OD-002	Classify dental caries based on site, severity, and activity.	Classification of Dental Caries	LGIS/SGD	MCQS
Car2-OD-003	Describe the dynamic process of demineralization and remineralization in the development of caries.	Demineralization and remineralization	LGIS/SGD	MCQS
Car2-OD-004	Discuss the clinical characteristics of dental caries.	Clinical characteristics of dental caries	LGIS/SGD	MCQS
Car2-OD-005	Explain the radiographic appearance of dental caries.	Caries' Radiographic Appearance	LGIS/SGD	MCQS
Car2-OD-006	Discuss prevention of caries using medical model.	Caries Prevention	LGIS/SGD	MCQS
Car2-OD-007	Outline minimally invasive and operative approaches to caries management.	Caries Management	LGIS/SGD	MCQS

Car2-OD-008	Explain the criteria used to classify adult and pediatric patients into high, moderate, or low caries risk based on clinical findings, caries history, and relevant risk factors.	Caries risk Assessment	LGIS/SGD	MCQS
	Describe principles of caries risk assessment and their role in clinical decision-making.		LGIS/SGD	MCQS

ORAL PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car2-OP-001	Define dental caries and outline its initiation in enamel.	Zones of Caries	LGIS/SGD	MCQS
	List and identify zones of enamel caries & histological images.		LGIS/SGD	MCQS
	List the zones of dentin caries.		LGIS/SGD	MCQS
	Outline the progression of caries from enamel to dentin.		LGIS/SGD	MCQS
Car2-OP-002	Explain standardized systems (International Caries Detection and Assessment System (ICDAS) for the detection and clinical evaluation of carious lesions and pulp health status.	Caries Detection and Diagnosis	LGIS/SGD	MCQS
Car2-OP-003	Evaluate the etiology and contributing factors of non-cariou cervical and enamel lesions, including erosion, abrasion, attrition, abfraction and molar-incisor hypo mineralization (MIH).	Tooth Surface Loss	LGIS/SGD	MCQS

	Identify and differentiate enamel and dentin defects (hypoplasia, amelogenesis imperfecta, fluorosis, MIH, erosion, abrasion, attrition, and developmental malformations) based on clinical and radiographic criteria.	and Enamel Defects	LGIS/SGD	MCQS
	Differentiate developmental enamel defects from early carious lesions based on clinical and radiographic findings to prevent unnecessary intervention.		LGIS/SGD	MCQS
Car2-OP-004	Define pulpitis and give its type.	Pulpitis	LGIS/SGD	MCQS
	Differentiate between reversible & irreversible pulpitis.		LGIS/SGD	MCQS
ORAL MEDICINE / DENTAL RADIOLOGY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car2-DR-001	Explain the role of radiographic aids in diagnosing carious lesions and periodontal disease.	Interpretation of Conventional Radiographs	LGIS/SGD	MCQS
PRACTICALS/ LAB WORK				
ORAL BIOLOGY & TOOTH MORPHOLOGY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car2-OB-010	Identify and draw the outlines of all premolars (labial, lingual, mesial, distal, and occlusal aspects) on paper or models, labeling morphological features such as cusps, ridges, fossa, contact points, roots, and pulp canals Accurately label all key morphological features (e.g., cusps, marginal ridges, transverse ridges, triangular ridges, developmental depressions, pits, and grooves) on premolar models	Premolars	LGIS/SGD	MCQS

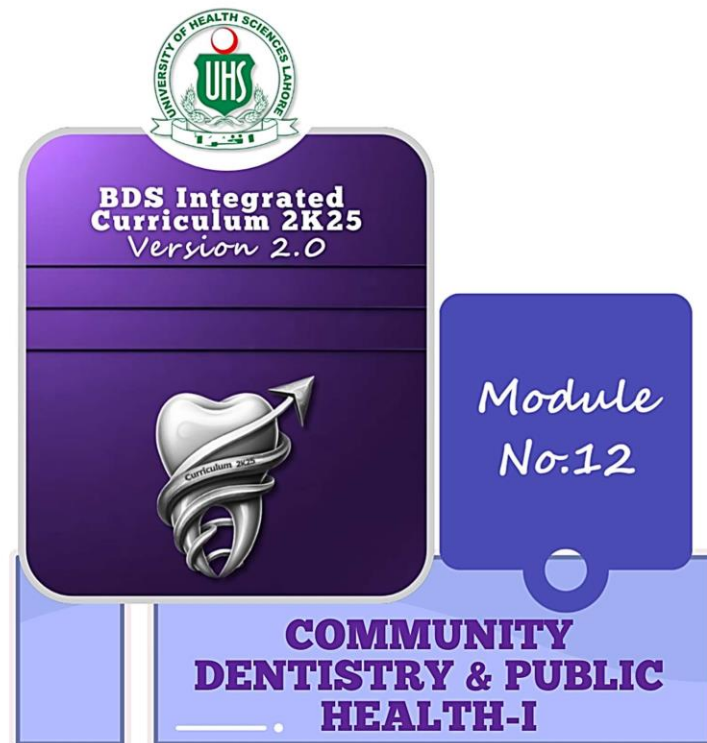
	Carve anatomical models of premolars using soap blocks/ wax blocks		LGIS/SGD	MCQS
Car2-OB-011	Identify and draw the outlines of all permanent molars (labial, lingual, mesial, distal, and occlusal aspects) on paper or models, labeling their key features, including oblique ridges and root anatomy	Molars	LGIS/SGD	MCQS
	Identify and draw the outlines of deciduous molars.			
	Accurately label all key morphological features (Cusps name, cusp ridges, marginal ridges, transverse ridges, triangular ridges, fossa, developmental depressions, contact points, name of roots/pulp canals, etc.) on molar models		LGIS/SGD	MCQS
	Carve anatomical models of molars using soap blocks/ wax blocks		LGIS/SGD	MCQS
OPERATIVE DENTISTRY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car2-OD-009	Identify clinical characteristics of dental caries in a clinical setup.	Dental Caries	LGIS/SGD	MCQS
Car2-OD-010	Identify various classes of carious lesions using images.			
ORAL MEDICINE / DENTAL RADIOLOGY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
Car2-DR-002	Determine the radiographic severity of carious lesions on radiographic images.	Radiographic Caries Interpretation	LGIS/SGD	MCQS
Car2-DR-003	Assess and interpret radiographs to determine the depth and severity of carious lesions.		LGIS/SGD	MCQS

Module no. 12

Community Dentistry &

Public Health I





MODULE RATIONALE

Community Dentistry and Public Health I introduces the principles of population-based oral health care, emphasizing prevention, health promotion, and the role of social and behavioral determinants in oral health. The module develops students' understanding of epidemiology, screening, and basic biostatistics for assessing community oral health needs and planning preventive strategies. Integration of behavioral sciences enables patient-centered communication and holistic care. The module prepares students to link clinical practice with public health approaches to reduce oral disease burden and inequalities.

MODULE OUTCOMES

- Explain principles of dental public health and the role of oral health at individual and population levels.
- Analyze oral diseases as public health problems, including their determinants, distribution, and inequalities.
- Apply epidemiological concepts and study designs to understand, investigate, and interpret oral health data.
- Calculate and interpret basic biostatistical measures, including measures of central tendency, dispersion, probability, and normal distribution.
- Differentiate and apply appropriate statistical tests (parametric and non-parametric) based on data type and research context.
- Explain and apply screening principles, including Wilson and Jungner criteria and characteristics of ideal screening tests.
- Plan and evaluate oral health surveys and preventive programs using appropriate indices and methodologies.
- Apply oral health indices (e.g., DMFT, CPI) in assessing disease burden at community level.
- Explain disease causation and risk factors using models such as the epidemiological triad and common risk factor approach.
- Evaluate preventive strategies for major oral diseases including periodontal disease and oral cancer.
- Integrate behavioral science principles (biopsychosocial model, stress, personality, illness behavior) into dental care.
- Demonstrate effective communication and behavior management skills tailored to patient needs, including anxious and vulnerable individuals.

- Apply ethical and professional responsibilities, including safeguarding and patient-centered decision-making.
- Conduct basic community-based oral health assessment activities and interpret findings for planning interventions.

SUBJECTS INTEGRATED IN THE MODULE

- Community & Preventive Dentistry
- Behavioral Sciences

THEORY				
COMMUNITY & PREVENTIVE DENTISTRY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CDPH1-CD-001	Describe the principles and scope of Dental Public Health and its role in promoting community oral health.	Introduction to Dental Public Health	LGIS/SGD	MCQS
CDPH1-CD-002	Explain how individual dental care contributes to population-level oral health outcomes.	Concept of Oral Health and Disease	LGIS/SGD	MCQS
CDPH1-CD-003	Explain the criteria used to identify oral conditions that constitute public health problems.	Oral Conditions as Public Health Problems	LGIS/SGD	MCQS
CDPH1-CD-004	Compare professional and layperson perspectives of health, disease, and illness.	Concepts of Health and Illness	LGIS/SGD	MCQS
CDPH1-CD-005	Explain the iceberg phenomenon and its relevance to subclinical oral diseases.	Epidemiological Concepts	LGIS/SGD	MCQS
CDPH1-CD-006	Explain the common risk factor approach and apply it to preventive oral health planning.	Risk Factors and Prevention Strategies	LGIS/SGD	MCQS
CDPH1-CD-007	Describe the major patterns and social determinants contributing to oral health inequalities.	Social Determinants of Health	LGIS/SGD	MCQS
CDPH1-CD-008	Analyze socioeconomic, behavioral, and environmental causes of oral health inequalities.	Health Inequalities	LGIS/SGD	MCQS
CDPH1-CD-009	Differentiate between high-risk, population, and common risk factor prevention strategies.	Prevention Approaches in Oral Health	LGIS/SGD	MCQS
CDPH1-CD-010	Evaluate the suitability of preventive strategies for different oral health contexts.	Planning Preventive Programs	LGIS/SGD	MCQS

CDPH1-CD-011	Explain the principles and applications of screening in oral health programs.	Screening in Dental Public Health	LGIS/SGD	MCQS
CDPH1-CD-012	Explain Wilson and Jungner criteria and evaluate their application in screening programs for oral diseases.	Screening Evaluation	LGIS/SGD	MCQS
CDPH1-CD-013	List and explain the desirable properties of an ideal screening test.	Screening Tests	LGIS/SGD	MCQS

CDPH1-CD-014	Differentiate between screening and diagnostic tests based on purpose and methodology.	Screening vs Diagnosis	LGIS/SGD	MCQS
CDPH1-CD-015	Define epidemiology and explain its role in understanding oral disease distribution.	Introduction to Epidemiology	LGIS/SGD	MCQS
CDPH1-CD-016	Explain the applications of epidemiology in planning and evaluating dental services.	Epidemiology and Oral Health Services	LGIS/SGD	MCQS
CDPH1-CD-017	Classify epidemiological studies and describe their design and use in oral health research.	Epidemiological Study Designs	LGIS/SGD	MCQS
CDPH1-CD-018	Explain the fundamental framework of an epidemiological study applicable to dental public health	Study Planning and Design	LGIS/SGD	MCQS
CDPH1-CD-019	Analyze how epidemiological findings guide preventive and clinical dental practices.	Application of Epidemiology	LGIS/SGD	MCQS
CDPH1-CD-020	Define bias and confounding and explain their influence on study validity.	Research Validity	LGIS/SGD	MCQS
CDPH1-CD-021	Explain techniques such as randomization and blinding and their role in minimizing bias in research studies.	Research Methodology	LGIS/SGD	MCQS

CDPH1-CD-022	Compare epidemiological, screening, and clinical approaches to oral disease management.	Integrated Disease Control Approaches	LGIS/SGD	MCQS
CDPH1-CD-023	Explain how epidemiological and screening principles can be applied in clinical and community dental care.	Application to Practice	LGIS/SGD	MCQS
CDPH1-CD-024	Differentiate and calculate prevalence and incidence rates to interpret oral health trends.	Epidemiologic Measurements	LGIS/SGD	MCQS
CDPH1-CD-025	Classify and describe different types of oral health surveys.	Oral Health Surveys	LGIS/SGD	MCQS
	Explain the standardized steps involved in designing and conducting a simple oral health survey		LGIS/SGD	MCQS
CDPH1-CD-026	Describe data types, variables, statistical methods, sampling techniques, and present findings graphically.	Data Handling and Presentation	LGIS/SGD	MCQS
CDPH1-CD-027	Define range, variance, mean deviation, and standard deviation as measures of data	Research dynamics	LGIS/SGD	MCQS
CDPH1-CD-028	Define probability and explain its application in dental research and data interpretation.		LGIS/SGD	MCQS

CDPH1-CD-029	Interpret and calculate key descriptive measures of data, including central tendency and dispersion.	Hypothesis testing in research & Presentation of data	LGIS/SGD	MCQS
CDPH1-CD-030	Correlate standard deviation with mean and the concept of normal distribution		LGIS/SGD	MCQS

CDPH1-CD-031	Define and explain Normal distribution (Bell curve) and its characteristics. explain the importance of normal distribution in research as well as on choice of tests of significance	Parametric and non-parametric tests	LGIS/SGD	MCQS
	Differentiate between parametric and non-parametric tests and select appropriate tests of significance (t-test, Chi-square test, and their alternatives) based on data type and distribution.		LGIS/SGD	MCQS
CDPH1-CD-032	Differentiate skewness and kurtosis types.		LGIS/SGD	MCQS
CDPH1-CD-033	Explain the cause-and-effect relationships underlying major oral diseases.	Disease Causation	LGIS/SGD	MCQS
CDPH1-CD-034	Define and classify oral health indices used in epidemiological studies.	Oral Health Indices	LGIS/SGD	MCQS
CDPH1-CD-035	Describe prevalence, distribution, and risk factors of periodontal diseases.	Periodontal Epidemiology	LGIS/SGD	MCQS
CDPH1-CD-036	Identify etiological factors and explain the triad of host, agent, and environment in periodontal disease.	Etiological Triads	LGIS/SGD	MCQS
CDPH1-CD-037	Evaluate preventive strategies for reducing the incidence of periodontal disease.	Periodontal Disease Prevention	LGIS/SGD	MCQS
CDPH1-CD-038	Explain the key components and strategies for planning oral health promotion programs aimed at preventing periodontal disease.	Health Promotion	LGIS/SGD	MCQS
CDPH1-CD-039	Explain etiological triads and contributing risk factors for oral cancer.	Oral Cancer Etiology	LGIS/SGD	MCQS
CDPH1-CD-040	Identify and implement preventive strategies for oral cancer in clinical	Oral Cancer Prevention	LGIS/SGD	MCQS

	settings.			
CDPH1-CD-041	Design community-based oral cancer prevention programs using public health approaches.	Community Prevention Programs	LGIS/SGD	MCQS
BEHAVIORAL SCIENCES				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CDPH1-BhS-001	Explain and apply the biopsychosocial model in dental patient care.	Biopsychosocial Model	LGIS/SGD	MCQS
CDPH1-BhS-002	Describe psychological development stages (Piaget, Erikson, Freud) and their relevance to patient behaviour in dental settings.	Human Development	LGIS/SGD	MCQS
CDPH1-BhS-003	Explain how personality traits influence patient reactions to oral health challenges and stress in a dental setting.	Personality	LGIS/SGD	MCQS
CDPH1-BhS-004	Describe patient stress responses and explain how coping mechanisms influence behaviour and cooperation in dental settings.	Patient Stress & Coping	LGIS/SGD	MCQS
CDPH1-BhS-005	Identify illness behaviour patterns in dental patients and apply appropriate management strategies.	Illness Behaviour	LGIS/SGD	MCQS
CDPH1-BhS-006	Define dental anxiety and phobia and explain their impact on patient attendance, treatment compliance, and oral health outcomes.	Dental Anxiety -- Foundation	LGIS/SGD	MCQS
CDPH1-BhS-007	Describe the stages of grief and identify psychological responses to dental-related loss.	Grief -- Stages Grief -- Communication	LGIS/SGD	MCQS
	Apply supportive communication strategies for patients experiencing grief or dental-related emotional		LGIS/SGD	MCQS

	distress.			
CDPH1-BhS-008	Recognize signs of domestic violence, abuse, and self-harm presenting in the dental setting.	Safeguarding - - Recognition Safeguarding - - Responsibilities	LGIS/SGD	MCQS
	Outline legal responsibilities and appropriate intervention pathways when domestic violence or self-harm is suspected.		LGIS/SGD	MCQS
CDPH1-BhS-009	Explain evidence-based methods of patient reassurance and emotional support and describe their impact on treatment outcomes.	Reassurance & Emotional Support	LGIS/SGD	MCQS
PRACTICALS / LAB WORK				
COMMUNITY & PREVENTIVE DENTISTRY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CDPH1-CD-042	Practise DMFT, CPI scoring on typodonts/models/case scenarios	Indices Recording (DMFT, CPI)	Demonstration	OSPE
	Learning how to record indices and simple epidemiological measures		Demonstration	OSPE
CDPH1-CD-043	Calculate mean, range, variance, and standard deviation using small datasets provided.	Basic Biostatistics	Demonstration	OSPE
CDPH1-CD-044	Interpret sample histograms and differentiate normal, skewed, and kurtotic distributions.	Skewness & Kurtosis	Demonstration	OSPE
CDPH1-CD-045	Perform basic dental screening by applying the principles of screening, using the Wilson and Jungner criteria and	Dental Screening	Demonstration	OSPE

	features of ideal screening tests.			
	Distinguish screening findings from diagnostic assessments.		Demonstration	OSPE
CDPH1-CD-046	Conduct a community-based oral health assessment by performing dental history taking, clinical examination, and DMFT index recording using WHO Oral Health Assessment Form.	Community Visit 1: Dental Caries Assessment Activity	Demonstration	OSPE
BEHAVIORAL SCIENCES				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
CDPH1-BhS-010	Demonstrate communication with paediatric, adolescent, and adult patients based on developmental stage.	Age-Specific Communication	Demonstration	OSPE
CDPH1-BhS-011	Perform behaviour management using Tell-Show-Do with a simulated anxious paediatric patient.	Tell-Show-Do Technique	Demonstration	OSPE
CDPH1-BhS-012	Demonstrate empathetic, patient-centred communication, apply empathy skills effectively, and provide structured psychological support to distressed patient. Explain a dental procedure to a patient with low health literacy using simple language.	Empathetic & Supportive Communication	Demonstration	OSPE
CDPH1-BhS-013	Apply shared decision-making in a simulated treatment planning discussion.	Shared Decision-Making	Demonstration	OSPE

CDPH1-BhS-014	Resolve interpersonal conflicts in a dental practice setting ensuring patient safety and team harmony.	Conflict Resolution	Demonstration	OSPE
CDPH1-BhS-015	Demonstrate structured emotional support and empathetic communication with a simulated patient experiencing dental-related grief or distress.	Grief Support - - Applied	Demonstration	OSPE

Module no. 13

Dental Material & Pre-Clinical Dentistry-I



**BDS Integrated
Curriculum 2K25**
Version 2.0



*Module
No.13*

**DENTAL MATERIALS & PRE-
CLINICAL DENTISTRY-1**

MODULE RATIONALE

Dental Materials and Preclinical Dentistry I introduces the fundamental principles governing the properties, manipulation, and clinical application of dental materials, alongside essential preclinical skills in prosthodontics and operative dentistry. The module emphasizes the relationship between material science and clinical performance, enabling students to select and handle materials appropriately. Through simulation-based training, students develop foundational skills in impression making, model fabrication, tooth preparation, and removable prosthesis construction. The module prepares students for safe, effective, and evidence-based clinical practice.

MODULE OUTCOMES

- Explain the fundamental physical, mechanical, chemical, and biological properties of dental materials and relate them to clinical performance.
 - Describe the structure of matter and principles of adhesion relevant to dental materials.
 - Classify dental materials based on composition, properties, and clinical applications.
 - Explain biocompatibility, toxicity, and safety considerations in the use of dental materials.
 - Describe the composition, properties, manipulation, and clinical uses of gypsum and impression materials.
 - Analyze factors affecting accuracy, dimensional stability, and performance of dental materials and impressions.
 - Apply infection control principles in handling dental materials and impressions.
 - Explain the principles and classification of prosthodontics, including Kennedy's classification and Applegate's rules.
 - Identify components and principles of removable partial dentures, including retention and support.
 - Explain principles of tooth preparation, including outline, resistance, retention, and convenience forms.
 - Recognize dental instruments and describe their functions, including safe use of rotary instruments.
 - Explain and apply isolation techniques, including rubber dam placement and its clinical significance.
 - Demonstrate manipulation of dental materials, including gypsum and impression materials, in laboratory settings.
-
- Perform preclinical prosthodontic procedures, including clasp fabrication, wax-up, articulation, flasking, dewaxing, and denture processing.
 - Demonstrate basic operative skills, including instrument handling, isolation, and ergonomic positioning.
 - Apply principles of accuracy, precision, and infection control during all preclinical procedures.

SUBJECTS INTEGRATED IN THE MODULE

- Science of Dental Materials
- Pre-clinical Operative Dentistry
- Pre-clinical Prosthodontics

THEORY

SCIENCE OF DENTAL MATERIALS

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
DMPD1-DM-001	Define and differentiate the key physical properties of dental materials including density, thermal conductivity, co-efficient of thermal expansion, solubility and optical and mechanical properties.	General Principles of Dental Materials	LGIS/ SGD	MCQS
	Interpret and label a stress-strain curve to determine various mechanical and physical properties.		LGIS/ SGD	MCQS
	Describe the fundamental physio-mechanical, biological, and chemical principles that determine the clinical behavior and performance of dental materials.		LGIS/ SGD	MCQS
DMPD1-DM-002	Elaborate the structure of matter and explain the fundamental principles of adhesion among dental materials.	Structure of Matter and Adhesion	LGIS/ SGD	MCQS
DMPD1-DM-003	Classify dental materials according to types, materials & uses.	Classification of Dental Materials	LGIS/ SGD	MCQS
DMPD1-DM-004	Describe the concepts of safety and biocompatibility in dental biomaterials.	Biocompatibility and Safety	LGIS/ SGD	MCQS
DMPD1-DM-005	Define key biological terms related to dental materials, including biocompatibility and hypersensitivity.	Biological Considerations	LGIS/ SGD	MCQS
	Discuss the effects of toxicity and corrosion and their influence on the biological performance of dental materials.		LGIS/ SGD	MCQS
DMPD1-DM-006	Define cast and die materials	Gypsum Products and Model	LGIS/ SGD	MCQS
	Define gypsum and identify various gypsum products used in dentistry.		LGIS/ SGD	MCQS

	Describe the composition, hydration reaction, and crystal formation process of gypsum products.	Fabrication and die materials	LGIS/ SGD	MCQS
--	---	-------------------------------	-----------	------

DMPD1 -DM-009	Classify gypsum products according to their composition and intended use in dental procedures.	Hydrocolloid Impression Materials	LGIS/ SGD	MCQS
	Discuss the ideal physical and mechanical properties, setting expansion, and setting time of gypsum products.		LGIS/ SGD	MCQS
	Demonstrate or describe the correct proportioning, mixing, pouring, and trimming techniques for gypsum materials.		LGIS/ SGD	MCQS
	Identify and explain factors that influence the setting time, expansion, and strength of gypsum materials.		LGIS/ SGD	MCQS
	Explain infection control measures and safety precautions during the pouring and handling of impressions and models.		LGIS/ SGD	MCQS
	Analyze common causes of air bubbles, inaccuracies, and fractures in gypsum models and propose preventive measures.		LGIS/ SGD	MCQS
	List the advantages and disadvantages of gypsum and enumerate miscellaneous types of die materials.		LGIS/ SGD	MCQS
	Classify impression materials used in dentistry according to setting mechanism and clinical use.		LGIS/ SGD	MCQS

DMPD1 -DM- 007	Describe the ideal properties and characteristics of impression materials.	Impression Materials	LGIS/ SGD 	
	Compare the advantages, disadvantages, and clinical indications of different impression materials.		LGIS/ SGD	MCQS
	Analyze the factors that affect the dimensional accuracy and surface detail of dental impressions.		LGIS/ SGD	MCQS
DMPD1 -DM- 008	Describe methods for disinfecting and storing dental impressions to prevent distortion and cross-infection.	Infection Control	LGIS/ SGD	MCQS
DMPD1 -DM- 009	Describe the composition, setting mechanism, and classification of hydrocolloid impression materials	Hydrocolloid Impression Materials	LGIS/ SGD	MCQS
	Explain the clinical steps for mixing, loading, and inserting hydrocolloid impression materials		LGIS/ SGD	MCQS
DMPD1 -DM- 010	Identify and classify non-elastic impression materials and discuss their composition, properties, setting reactions and uses.	Non-elastic impression materials	LGIS/ SGD	MCQS
	Evaluate the advantages and disadvantages of non-elastic impression materials.		LGIS/ SGD	MCQS
	Describe and differentiate between mucostatic and mucocompressive for complete denture impressions.		LGIS/ SGD	MCQS

PRE-CLINICAL PROSTHODONTICS

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
DMPD1 -PD- 001	Define Prosthodontics.	Overview of Prosthodontics and Its Branches	LGIS/ SGD	MCQS
	Comprehend various terminologies used in prosthodontics.		LGIS/ SGD	MCQS
	Comprehend the role of prosthodontics in oral rehabilitation.			

	Differentiate among major branches of Prosthodontics.		LGIS/ SGD	MCQS
DMPD1 -PD- 002	Identify Kennedy's Classes I–IV.	Kennedy's Classification of Partial Edentulism	LGIS/ SGD	MCQS
	Comprehend different modifications of Kennedy's classification.		LGIS/ SGD	MCQS
DMPD1 -PD- 003	Apply Applegate's Rules governing the Kennedy's Classification.	Applegate's Rules	LGIS/ SGD	MCQS
	Differentiate between tooth bounded and free end saddle areas.		LGIS/ SGD	MCQS
DMPD1 -PD- 004	Identify different types of removable prosthesis used for replacement of missing teeth.	Interim partial denture	LGIS/ SGD	MCQS
	Identify components of interim partial denture (types of teeth, retainer and denture base)		LGIS/ SGD	MCQS
	Comprehend the significance of components of interim partial denture.		LGIS/ SGD	MCQS
DMPD1 -PD- 005	Define Retention.	Interim partial denture	LGIS/ SGD	MCQS
	Comprehend different principles of retention used in prosthodontics.		LGIS/ SGD	MCQS
	Define Retainer and identify its different types for interim/ acrylic partial denture.		LGIS/ SGD	MCQS
	Comprehend properties of stainless-steel wrought alloy clasp material and its application in removable partial denture		LGIS/ SGD	MCQS
			LGIS/ SGD	MCQS

OPERATIVE DENTISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
------	----------------------------	-------	-----	----

DMPD1-OD-001	Recognize different instruments used in tooth preparation.	Instruments and armamentarium	LGIS/ SGD	MCQS
	Describe their functions.		LGIS/ SGD	MCQS
	Differentiate between hand and rotary instruments.		LGIS/ SGD	MCQS
	Discuss the hazards of rotary instruments.		LGIS/ SGD	MCQS
DMPD1-OD-002	Explain the importance of isolation in dental procedures, including its role in moisture control, visibility, infection control, and treatment success Enlist components of rubber dam Outline stepwise procedure for application of rubber dam.	Isolation	LGIS/ SGD	MCQS

DMPD1-OD-003	Discuss the principles of cavity preparation, including outline form, resistance form, retention form, and convenience form in ensuring the longevity and effectiveness of restorative treatments.	Fundamentals of tooth Preparations	LGIS/ SGD	MCQS
--------------	--	------------------------------------	-----------	------

PRACTICAL / LAB WORK

SCIENCE OF DENTAL MATERIALS

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
DMPD1-DM-011	Demonstrate and perform techniques for manipulation of hydrocolloid impression materials.	Impression Materials	Demonstration	OSPE
	Demonstrate the mixing of alginate ensuring correct water-to-powder ratio giving accurate consistency and setting time.		Demonstration	OSPE



DMPD1-DM-012	Demonstrate the softening technique of the impression compound using a water bath without overheating the material.	Non-elastic impression materials	Demonstration	OSPE
DMPD1-DM-013	Manipulate soft/hard plaster in the correct water/powder ratio to obtain a homogenous mix fit for model/die pouring	Gypsum	Demonstration	OSPE
	Build a plaster slab following the allocated dimensional guidelines.		Demonstration	OSPE
	Demonstrate the technique of model pouring.		Demonstration	OSPE
	Demonstrate the process of fabricating dental cast/model including trimming and finishing of the study models.		Demonstration	OSPE
	Differentiate between study casts, working casts, and refractory casts based on purpose and fabrication.		Demonstration	OSPE

PRE-CLINICAL PROSTHODONTICS

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
DMPD1-PD-001	Identify and remove specific teeth from a cast to simulate Kennedy's class III partial denture design.	Kennedy's Classification	Demonstration	OSPE
	Identify and classify partially edentulous arches according to Kennedy's classification on casts.		Demonstration	OSPE
DMPD1-PD-002	Fabricate a C-clasp for a removable partial denture.	C-Clasp Fabrication	Demonstration	OSPE



DMPD1-PD-003	Fabricate occlusal rim; perform wax-up; articulate for both upper and lower partial dentures.	Wax-Up and Articulation for Partial Dentures	Demonstration	OSPE
	Manipulation of base plate waxes to fabricate occlusal rims of standard dimensions.		Demonstration	OSPE
	Articulate upper and lower partial dentures.		Demonstration	OSPE
DMPD1-PD-004	Arrange upper and lower teeth as per the 5 planes (buccolingual, mesiodistal, occlusal plane, ridge relation, and rotational angle).	Dental Setup for Partial Dentures	Demonstration	OSPE
DMPD1-PD-005	Demonstrate the process of flasking for both upper and lower partial dentures.	Flasking for Partial Dentures	Demonstration	OSPE
DMPD1-PD-006	Perform dewaxing of flasks accurately while maintaining denture form.	Dewaxing for Partial Dentures	Demonstration	OSPE
DMPD1-PD-007	Perform packing, curing, and finishing steps for both upper and lower partial dentures.	Packing, Curing, and Finishing of Partial Dentures	Demonstration	OSPE

PRE-CLINICAL OPERATIVE DENTISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
DMPD1-OD-003	Identify instruments & equipment used in restorative work, their uses & handling.	Instruments and Armamentarium	Demonstration	OSPE
DMPD1-OD-004	Perform single tooth isolation & quadrant isolation using rubber dam on typodonts in maxillary and mandibular arches.	Rubber Dam Application and Isolation Techniques	Demonstration	OSPE



DMPD1-OD-005	Perform patient, operator position and instrument exchange.	Clinical Ergonomics	Demonstration	OSPE
--------------	---	---------------------	---------------	------

Module no. 14

Hepatorenal



BDS Integrated Curriculum 2K25
Version 2.0



Module
No.14

HEPATORENAL

MODULE RATIONALE

This module provides foundational knowledge and basic clinical skills in dental materials, prosthodontics, and operative dentistry, essential for early dental training. It integrates principles of material science, including adhesion, biocompatibility, and manipulation of commonly used materials, with their practical applications in clinical procedures. The module also introduces students to oral rehabilitation concepts, classification of partially edentate arches, and fabrication of interim prostheses, alongside essential operative skills such as identification of instruments, isolation, cavity preparation, and operator positioning. Overall, it aims to develop a strong theoretical base and hands-on competence necessary for safe and effective patient care.

MODULE OUTCOMES

- Explain the structure of matter and fundamental principles of adhesion.
- Describe the biocompatibility and effects of toxicity and corrosion on the biological performance of dental materials.
- Define and classify gypsum products and explain properties. Also demonstrate the mixing of gypsum materials.
- Discuss hydrocolloids and non-elastic impression materials.
- Demonstrate the manipulation of gypsum materials, alginate, impression compound and ZOE.
- Discuss the role of Prosthodontics in oral rehabilitation.
- Classify partially edentate arches for construction of a removable prosthesis.
- Demonstrate the procedure for fabrication of an acrylic interim partial denture.
- Demonstrate the tooth arrangements for acrylic interim partial denture.
- Identify instruments used in operative dentistry and demonstrate proper techniques for isolation and cavity preparation.
- Explain the fundamentals of tooth preparation for restoration of teeth and describe classification of dental caries.
- Perform patient and operator position for restorative procedures.

SUBJECTS INTEGRATED IN THE MODULE

- Physiology
- Biochemistry
- Pharmacology & Therapeutics
- General Pathology & Microbiology
- Oral Medicine
- Behavioral Sciences

THEORY

PHYSIOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
HR-P-001	Explain the functional anatomy and vascular organization of the liver Discuss functions of the liver.	Vascular Anatomy and Functional Correlation of the Liver	LGIS/ SGD	MCQS
	Differentiate between hemolytic and obstructive jaundice.			
	State the dental relevance of liver disease in coagulation and drug metabolism.			
HR-P-002	Describe physiological anatomy of the kidney and nephron	Anatomy of Renal System	LGIS/ SGD	MCQS
	Explain physiological anatomy and innervation of the bladder		LGIS/ SGD	MCQS
	Describe the mechanism of micturition and its control		LGIS/ SGD	MCQS
HR-P-003	Explain the processes of glomerular filtration, tubular reabsorption	Primary physiological Function of Renal System	LGIS/ SGD	MCQS
	State normal GFR and filtration fraction values explain determinants of GFR.		LGIS/ SGD	MCQS
	Describe the mechanism of autoregulation of GFR			
	Describe factors affecting GFR			
HR-P-004	Mention proportion of sodium, glucose and water reabsorbed in different parts of nephron.	Secondary Physiological function of renal system	LGIS/ SGD	MCQS
	Explain regulation of fluid osmolality by osmoreceptor-ADH mechanism			
HR-P-005	Discuss normal constituents of urine	Clinical relevance of renal system	LGIS/ SGD	MCQS
	Identify normal values/range of blood urea, and serum creatinine		LGIS/ SGD	MCQS
HR-P-005	Differentiate between acute kidney injury and chronic kidney disease.	Patho- Physiology of renal system	LGIS/ SGD	MCQS

	Enlist causes of hypertension in kidney diseases	Patho-Physiology of renal system	LGIS/ SGD	MCQS
	Define nephrotic syndrome, oliguria and anuria		LGIS/ SGD	MCQS
	State the dental relevance of chronic kidney disease		LGIS/ SGD	MCQS
BIOCHEMISTRY				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
HR-B-001	Differentiate between L-alpha amino acids and alpha-keto acids (carbon skeleton).	Nitrogen Removal from Amino Acids	LGIS/ SGD	MCQS
	Enumerate alpha-keto acids of alanine, glutamate, and aspartate.		LGIS/ SGD	MCQS
	Define transamination and explain its biochemical significance.		LGIS/ SGD	MCQS
	Describe the reactions catalyzed by alanine aminotransferase (ALT) and aspartate aminotransferase (AST)		LGIS/ SGD	MCQS
	Discuss the role of pyridoxal phosphate (PLP) in transamination reactions		LGIS/ SGD	MCQS
	Explain the diagnostic importance of AST and ALT		LGIS/ SGD	MCQS
	Define oxidative deamination and outline its physiological significance		LGIS/ SGD	MCQS
	Describe the reaction catalyzed by glutamate dehydrogenase (GDH)		LGIS/ SGD	MCQS
	HR-B-002		Enlist sources of ammonia. Outline the two major mechanisms for transport of ammonia from peripheral tissues to liver. Enumerate transport forms of ammonia.	Sources and Transport of Ammonia
HR-B-003	Explain the reactions, regulatory mechanisms, and physiological significance of the urea cycle and state the normal blood urea levels.	Disposal of Amino Groups: Urea Cycle	LGIS/ SGD	MCQS
	Describe the normal blood ammonia levels and explain the biochemical basis of ammonia-induced CNS toxicity.		LGIS/ SGD	MCQS

HR-B-004	Enlist inherited & acquired causes of hyperammonemia.	Ammonia Metabolism and Hyperammonemia	LGIS/ SGD	MCQS
	Describe the effects of hyperammonemia on brain.		LGIS/ SGD	
	Discuss the dietary and pharmacological strategies used in its management of hyperammonemia.		LGIS/ SGD	MCQS
HR-B-005	Briefly describe the metabolism & importance of glutamine in human body.	Glutamine Metabolism	LGIS/ SGD	MCQS
HR-B-006	Describe heme degradation and jaundice.	Heme Degradation and Jaundice	LGIS/ SGD	MCQS
HR-B-007	Interpret elevated ALT and AST values in patient histories to anticipate potential bleeding risks and altered drug metabolism during dental treatment.	Liver Function and Clinical Correlations in Dentistry	LGIS/ SGD	MCQS
HR-B-008	Explain renal structure–function relationships underlying fluid balance, drug excretion, and homeostasis.	Renal structure–function	LGIS/ SGD	MCQS
HR-B-009	Explain the renal mechanisms involved in hydrogen ion homeostasis.	pH Regulation Mechanisms	LGIS/ SGD	MCQS
PHARMACOLOGY & THERAPEUTICS				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
HR-Ph-001	Classify 5 major types of diuretics and relate them to their sites of action	Diuretics	LGIS/ SGD	MCQS
	Describe the major applications and the toxicities of acetazolamide, thiazides, loop diuretics, and potassium-sparing diuretics.		LGIS/ SGD	MCQS
HR-PH-002	Apply dose-modification charts for analgesics, local anesthesia, and common antibiotics in hepatic patients.	Drug Dose Modification in Hepatic Impairment	LGIS/ SGD	MCQS
GENERAL PATHOLOGY & MICROBIOLOGY				

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
HR-Pa-001	Interpret basic liver function tests (ALT, AST, ALP, INR) to assess hepatic function and disease severity.	Liver Function Test	LGIS/ SGD	MCQS
HR-Pa-002	Explain the mechanisms of hepatic coagulopathies and relate them to increased bleeding risk.	Hepatic Coagulopath es	LGIS/ SGD	MCQS
HR-Pa-003	Explain and compare eGFR, CBC, and related renal function tests in distinguishing acute from chronic kidney disease.	Renal Function Tests	LGIS/ SGD	MCQS

HR-Pa-004	Define and classify types of edema and explain their underlying causes.	Edema – Types and Mechanisms	LGIS/ SGD	MCQS
HR-PA-005	Discuss the viral characteristics and diagnosis of HBV.	Blood Borne Hepatic Infection and Their Relationship to Patient Safety and Infection Control Module.	LGIS/ SGD	MCQS
	Discuss the viral characteristics and diagnosis of HCV.		LGIS/ SGD	MCQS
	Discuss the window period in the diagnosis of HBV & HCV and its significance in dental surgery.		LGIS/ SGD	MCQS
	Discuss the vaccination of HBV & HCV and its importance for a dental surgeon.		LGIS/ SGD	MCQS
HR-PA-006	Discuss the viral characteristics and diagnosis of HAV.	Hepatic infection and their relationship to patient safety and infection control module.	LGIS/ SGD	MCQS
	Discuss the viral characteristics and diagnosis of HDV.		LGIS/ SGD	MCQS
	Discuss the viral characteristics and diagnosis of HEV.		LGIS/ SGD	MCQS
	Discuss the vaccination of HAV and HEV		LGIS/ SGD	MCQS
HR-PA-007	Discuss briefly the life cycle and diseases caused by Entamoeba histolytica	Entamoeba histolytica	LGIS/ SGD	MCQS
HR-PA-008	Discuss briefly the life cycle and diseases caused by Echinococcus granulosus	Echinococcus granulosus	LGIS/ SGD	MCQS
HR-PA-009	Discuss briefly the bacteria that cause Urinary Tract Infection.	UTI	LGIS/ SGD	MCQS

HR-PA-010	Discuss briefly the microbial characteristics, disease spectrum, brief diagnosis, and renal infection caused by E. coli - Proteus - Staphylococcus saprophyticus - Klebsiella - Pseudomonas	Microorganisms causing renal infections	LGIS/ SGD	
-----------	--	---	-----------	--

ORAL MEDICINE				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
HR-OM-001	Explain the oral implications of hepatitis, cirrhosis, and hepatic failure.	Oral Manifestations of Hepatic Diseases	LGIS/ SGD	MCQS
HR-OM-002	Recognize hepatic conditions most relevant to general dental care and their impact on treatment planning.	Dental Considerations in Hepatic Disorders	LGIS/ SGD	MCQS
HR-OM-003	Explain the principles of post-exposure prophylaxis (PEP) for Hepatitis B and Hepatitis C.	Infection Control and Post-Exposure Prophylaxis for Hepatitis	LGIS/ SGD	MCQS
HR-OM-004	Interpret lab findings CBC, RFTs (urea, creatinine), Bleeding time and (PT, APTT, & INR) to plan dental treatment for acute and chronic renal conditions	Laboratory Interpretation and Dental Management in Renal Disorders	LGIS/ SGD	MCQS
HR-OM-005	Describe the risk factors for patients undergoing renal dialysis associated with oral cavity.	Oral Health Considerations in Renal Dialysis Patients	LGIS/ SGD	MCQS
HR-OM-006	Identify oral soft-tissue changes associated with hepatic disease and correlate them with underlying cholestatic mechanisms.	Oral Manifestations of Liver Disease	LGIS/ SGD	MCQS
HR-OM-007	Interpret urea and creatinine levels and apply findings to modify dental treatment plans.	Dental Management in Renal Disease	LGIS/ SGD	MCQS

HR-OM-008	Describe and relate the systemic and oral manifestations of CKD, nephrotic syndrome, and dialysis dependency.	Oral Manifestations of Renal Disease	LGIS/ SGD	MCQS
BEHAVIORAL SCIENCES				
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC	MIT	AT
HR-BhS-001	Explain the principles for communicating diagnoses, treatment modifications, and infection-control measures to patients with	Communication	LGIS/ SGD	MCQS

	hepatic disease in a clear, non-stigmatizing manner.		LGIS/ SGD	MCQS
HR- BhS -002	Explain the OARS motivational interviewing (MI) micro-skills and describe how they can be applied to improve patient adherence to liver and kidney health recommendations	Motivational Interviewing Skills	LGIS/ SGD	MCQS
HR- BhS -003	Explain the principles and appropriate use of shared-decision tools in developing a bleeding-risk mitigation plan collaboratively with the patient and the physician	Shared Decision-Making	LGIS/ SGD	MCQS
HR- BhS -004	Describe the principles and rationale of anxiety-reduction techniques (such as tell-show-do and paced breathing) used when preparing medically compromised patients for dental procedures.	Anxiety-Reduction Techniques	LGIS/ SGD	MCQS
HR- BhS -005	Discuss ethical dilemmas encountered in pain management for patients with liver disease and explain the rationale for an appropriate, justified prescribing decision	Ethical Considerations	LGIS/ SGD	MCQS

HR- BhS -006	Describe communication and professionalism challenges encountered in clinical practice and outline a monthly goal to improve one specific aspect.	Reflective Practice	LGIS/ SGD	
HR- BhS -007	Explain principles of patient-centred communication and shared decision-making.	Principles of Patient-Centred Communication	LGIS/ SGD	MCQS
HR- BhS -008	Explain the principles of patient-centred communication and shared decision-making in the management of individuals with hepatic disease.	Application of Patient-Centred Care	LGIS/ SGD	MCQS
HR- BhS -009	Explain the process of coordinating referrals and follow-up with hepatology services using structured communication templates and shared electronic records.	Interdisciplinary Coordination and Continuity of Care	LGIS/ SGD	MCQS
HR- BhS -010	Explain strategies for providing patient education on prevention and postoperative care using clear, literacy-appropriate written and verbal instructions.	Patient Education and Health Literacy in Dental Practice	LGIS/ SGD	MCQS

PRISME

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



BLOCK-4

Professionalism		
Learning Objective	Subject	Facilitator
Demonstrate respect, integrity, and accountability in group/clinical tasks/social media.	Behavioral Science	
Apply professionalism in simulated patient interactions		
Write structured reflections on professional experiences		
Demonstrate patient-centered communication in structured interviews		
Discuss simple ethical dilemmas		
Research		
Formulate research questions (PICO/PECO)	Community Dentistry	
Select an appropriate research title		
Develop basic literature search strategy (databases, keywords)		
Conduct literature search in PubMed/Google Scholar		
Summarize research findings using a literature matrix		
Explain purpose and steps of a literature review		
Conduct a simple literature review on a selected topic		
Informatics		
Search academic databases & journals online	Dental Education	
Use advanced Word features & Excel basics		
SOCIAL RESPONSIBILITY, CULTURAL SENSITIVITY, ETHICS & JURISPRUDENCE		
Practice communication skills with culturally diverse patients through role play	Behavioral Science	
Apply ethical principles in case-based discussions	Forensic Medicine	
Describe basics of patient rights and informed consent		
EVIDENCE BASED DENTISTRY		
Describe and differentiate levels/types of evidence (systematic reviews, RCTs, cohort, case reports) and strengths/limitations	Community Dentistry	





Teaching Methodologies





INSTRUCTIONAL STRATEGIES

Delivery of a curriculum also needs a diversity of educational vernacular 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 practicals 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 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



has previously passed all the Blocks/Clinical Clerkships in the preceding professional examination.

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*

5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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

	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 <u>for joining</u> 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 <u>examination</u> 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

13. 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.

The logo of Multitan Medical & Dental College is a large, light blue circular emblem. It features a white star at the bottom center. The words "MULTITAN MEDICAL & DENTAL" are written in white capital letters along the top arc, and "COLLEGE" is written along the bottom arc. In the center of the circle is a faint, light pink grid pattern.

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 Hussain 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	6. Guyton & Hall. Textbook of Medical Physiology (14th ed.). 7. 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).
General 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)
Prosthodontics	1. McCracken's Removable Partial Prosthodontics (13th Edition) 2. Boucher's Prosthodontic Treatment for Edentulous Patients (12th Edition)
Orthodontics	1. Proffit's Contemporary Orthodontics (6th Edition)
Science of Dental Materials	1. Philips Science of Dental Materials (12th Edition) 2. McCabe Applied Dental Materials (15th Edition)