BDS Curriculum

Year II

(2023)

National University of Medical Sciences
Pakistan

CONTENTS

INTRODUCTION

a. Preamble

The recently revised standard by the Pakistan Medical and Dental Council (PM&DC) encourages integration of major subjects both horizontally and longitudinally. This curriculum meets the standards of Pakistan Medical and Dental Council and our students, on completion of program will develop required competencies as defined worldwide in a graduate doctor.

BDS Years II will deal with the normal structure, function and biochemical aspects of topics relevant to dentistry which will be delivered in an integrated manner in clinical context. This curriculum also aims to improve different skills of the future dentists including communication, leadership & management and research skills and inculcate ethical values and professionalism

This curriculum has been developed by the BDS faculty from constituent/affiliated colleges in collaboration with NUMS Academic Directorate

b. Curriculum perspective

NUMS curriculum is evolved taking into consideration Constructivist, Cognitivist, behaviorist with some element of Constructivist approach. It allows students to construct their own knowledge based on what they already know and to use that knowledge in purposeful activities requiring decision making, problem solving, and judgments.

c. Level of integration

The approach is discipline-based with clinical relevance.

d. Competencies

The focus of this curriculum is on following competencies:

1) Medical Knowledge
2) Problem solving
3) Procedural skills
4) Communication skills
5) Empathy
6) Professionalism
7) Leadership and Management skills
8) Research skills

e. Outcomes

By the end of second year, students should be able to:

1) Relate physico-mechanical, chemical, thermal and rheological properties of different dental materials including gypsum, dental waxes, investment materials, prosthetic polymers, impression materials, resin-based materials, dental amalgam, endodontic and preventive filling materials & their relation to clinical application.
2) Appraise the scope of Prosthodontics as a specialty, correlate the significance of anatomical landmarks of maxilla with respect to biomechanics of a complete denture, extrapolate the concepts of impression registration to different edentulous situations, importance of various dental casts, use of record bases used in denture fabrication, perform different steps of complete & partial denture making.
3) Identify instruments used in restorative work, their uses & handling, explain pathophysiology of carious lesions, appraise the principles involved in cavity preparation, various restorative materials, outline the steps involved in Class I, Class II cavity preparation for Amalgam, Class III, IV, V cavity preparation for Composite restoration & knowledge of Cavity Liners, Bases & Varnishes with their practical application
4) Outline basic concepts in Health, Disease & Infection, scope of public & dental public health, knowledge of basic principles of general & oral epidemiology, application of oral indices, outline principles & objectives of health education & health promotion, knowledge of healthcare delivery system of Pakistan, prevention of oral diseases, role of Fluorides in dentistry, demonstrate the knowledge of basics of research methodology, biostatistics & ethical principles relevant to dentistry.
5) Demonstrate understanding of brief history of pharmacology, principles of pharmacokinetics, bio-transformation of drugs and its clinical significance, identify synthesis, release and transport of adrenergic and cholinergic neurotransmitters, the basic & clinical pharmacology of catecholamines, non-catecholamines, sympatholytics, cholinergic drugs, cholinesterase inhibitors, orgaophosphates & oximes, cholinergic blockers, skeletal muscle relaxants, drugs acting on CNS, inflammation & gout, in CVS, diuretics,

chemotherapeutics, on endocrine system, for treatment of anemia & coagulation disorders & of gastrointestinal & respiratory disorders.

6) Demonstrate understanding of cell injury, mechanism of free radical, necrosis, apoptosis, inflammation & repair, hemodynamics, hemorrhage, shock, thrombosis & embolism, infraction, neoplasia, classification of tumors, molecular basis of cancer, grading & staging of tumors, immunology, hypersensitivity reactions, immunodeficiency diseases, genetics, hematology & environmental diseases, general microbiology, principles & methods of sterilization, normal flora, bacteriology, Streptococcus, Staphylococcus, Gram negative cocci, E. coli etc. Gram positive & negative anaerobes, Mycobacterium I & II, basic Parasitology, Virology & Fungal infections.

f. Academic Calendar

BLOCK I **12+1=13 weeks**	**BLOCK II** **12+1=13 weeks**	**BLOCK III** **12+1=13 weeks**
Research Methodology & Evidence based Medicine, Behavioral Sciences		

g. Proposed Contact Hours Distribution Year-II

SUBJECTS	**SECOND YEAR**
Community and Preventive Dentistry	240
General Pathology	250
Pharmacology	250
Sciences of Dental Materials	200
Pre-clinical Prosthodontics	125
Pre-clinical Operative Dentistry	125
*Behavioral Sciences **(Curriculum Separately Attached)**	50
Research Methodology & EBM	20
TOTAL HOURS	**1260**

h. Educational Strategies

1) Lectures
2) Small group discussion

3) Lab practical
4) Skill lab
5) Problem based learning/ Case based learning
6) Tutorials

i. **Resources**. To be filled in by the institute
   1) Faculty
   2) Facilities
   3) Administration for Course
   4) Administrative structure
   5) Communication with students

j. **Internal Assessment**

   Students will be assessed at the end of each block. The weighting of internal assessment is 20% in 2nd professional BDS Examination. There will be three ends of blocks and one pre -annual examination. The scores of tests of each end block assessment and pre-annual examination will be used for calculation of the internal assessment.

k. **Annual Professional Examination**.

   The University will take the first professional Examination at the end of the academic year. Annual Theory & Practical Examination will be of 200 marks for **Community & Preventive Dentistry, Science of Dental Materials, Gen Pathology & Microbiology, Pharmacology& Therapeutics**, **Pre-Clinical Prosthodontics & Pre-clinical Operative Dentistry.** The pass score shall be 50% in theory and practical separately.

l. **Evaluation of the Course.** To be filled in by the institute

2nd YEAR BDS
BLOCK WISE DISTRIBUTION

BLOCK-I

COMMUNITY DENTISTRY	
Introduction to Public Health Dentistry	• Health, its dimensions, determinants & Indicators • Disease, Natural history, Iceberg of disease • Infection, Modes of transmission, Stages • Public Health, Vision, Essential services, Characteristics • Dental Public Health: Objectives, core areas, stages public & clinical health
Epidemiology	• Definition, Basic concepts, Uses and Principles. • Oral Epidemiology: Definition, Uses. • Epidemiology of Dental Caries • Epidemiology of Periodontal disease • Epidemiology of Oral cancer • Epidemiology of Malocclusion • Epidemiology of traumatic Injuries & Wasting diseases of teeth.
Oral indices	• Definition, Ideal requirements, purpose and uses, Classification of oral indices • Indices of Periodontal disease • Indices of Dental caries • Indices of Oral Hygiene • Indices of Fluorosis • Indices of Malocclusion
Health Education	• Objectives, General educational theories, Principles, Different methods and materials used, steps in planning oral health education • Health Promotion: Definition, Principles, Approaches, Ottawa charter and its components.
PATHOLOGY	
General Pathology	
General Pathology Cell Injury	• Introduction, etiology, types • Mechanism of free radical, chemicals. reversible & irreversible injury • Necrosis • Apoptosis • Pigmentation, intracellular accumulation • Adaptation to cell Injury-I • Adaptation to cell injury-II

Inflammation & Repair	• Definition, etiology, events of acute inflammation • Chemical mediators, sequele of acute inflammation • Chronic inflammation • Wound healing & tissue repair
Microbiology	
General Microbiology:	• Bacterial Anatomy • Bacterial physiology • Bacterial genetics • Bacterial growth • Sterilization • Physical methods • Chemical methods • Normal flora
Bacteriology	• Staphylococcus • Streptococcus classification • Strept. Pneumoniae • Gram negative cocci • Gram negative rods • Entero-bacteriaceae • E. coli, Salmonella • Shigella, Vibrio • Helicobacter, coliforms • Proteus-Providencia-Morganella group • Gram negative rods Hemophilus, Mycoplasma
PHARMACOLOGY	
Gen Pharmacology	• Pharmacology: Historical overview • Branches / Divisions of Pharmacology • Active Principles of vegetable drugs. • Dosage forms and doses of drugs. • Routes of administration of drugs. • Absorption of drug and processes involved in drug absorption • Factors modifying drug absorption. • Drugs reservoirs, distribution of drugs. Protein Binding. Volume of distribution. • Biotransformation of drugs. • Factors modifying biotransformation • Bioavailability, clinical significance, and factors affecting. • Excretion of drugs. Drug clearance • Half life of drugs & its clinical significance. • Mechanisms of drug action • Factors modifying actions & doses of drugs

Autonomic Nervous System	• A N S: Introduction • Catecholamines • Non Catecholamines • Alpha receptor blockers • Adrenergic Blockers • Central sympathoplegics • Cholinergic drugs • Anti Cholinesterases/Oximes • Cholinergic blockers. • Semisynthetic/Anticholinergics. • Skeletal Muscle Relaxants
Central Nervous System	• Central Neurotransmission • Gen Anaesthetic • Local Anaesthetics. • Sedative & Hypnotics. • Antiepileptic drugs • Antidepressant • Drugs for migraine
DENTAL MATERIALS	
Properties Used to Characterize Materials	• Mechanical Properties • Rheology • Optical and Thermal Properties • Adhesive and Chemical Properties Biocompatibility
Gypsum Products for Dental Casts	
Dental Waxes	
Impression Materials	• Impression Materials: Classification and Requirements • Non-Elastic Impression Materials • Elastic Impression Materials: Hydrocolloids • Elastic Impression Materials: Synthetic Elastomers Dental Amalgam
PRECLINICAL DENTISTRY	
Prosthodontics	• Anatomical landmarks of Maxilla and Mandible • Impressions and Impression trays • Dental Casts • Record Bases • Occlusion Rims • Articulators • Occlusion in Complete Dentures
Operative Dentistry	• Fundamentals of Tooth Preparation • Dental Cariology • Class I and II Cavity Preparation Amalgam

BLOCK-II

COMMUNITY DENTISTRY	
Prevention:	• Levels of prevention, WHO strategy • Screening • Prevention of Dental caries: Diet counselling, Caries activity test, plaque control • Plaque disclosing agents • Pits and fissure sealants • Atraumatic restorative technique • Caries risk assessment • Cariogram& Dental caries vaccine • Minimal Invasive Dentistry • Oral hygiene Aids • Prevention of Oral cancer • Prevention of Periodontal disease • Prevention of wasting diseases of teeth • Fluorides in Dentistry
Occupational Hazards in Dentistry	• Infection control in Dentistry • Nutrition and Oral health • Environment & Health Ergonomics in Dentistry
PATHOLOGY	
GENERAL PATHOLOGY:	
Hemodynamics:	• Edema & congestion • Hemorrhage • Shock • Thrombosis & embolism • Infarction
Neoplasia:	• Classification of tumors • Benign tumors • Malignant tumors • Molecular basis of cancer • Biology + Mechanism of tumor spread • Carcinogenic agents • Host defenses • Grading & staging of tumors
MICROBIOLOGY:	
Bacteriology:	• Gram positive rods • Listeria

	• Corynabacteria • Zoonotic organisms • Brucella & Pasteurella • Gram positive and negative anaerobes • Mycobacterium • Actinomycosis/Nocardia • Chlamydia, Rickettsia & Spirochetes
Parasitology:	• Introduction to parasitology • Entamoeba • Giardia/Trichomonas • Malarial parasite • Toxoplasma • Leishmania • Cestodes spp • Ascaris lumbricoides • Ankylostoma, Necator americanus, Enterobius
PHARMACOLOGY	
Chemotherapy	• Introduction, General Principles of Chemotherapy. • Mechanism of Resistance • Sulfonamides • Trimethoprim & Co-trimoxazole • Antibiotics, Penicillins. • Antibiotics, Cephalosporins. • Antibiotics, Macrolides. • Antibiotics: Broad spectrum, Tetracyclines. • Antibiotics: Broad spectrum, Chloramphenicol. • Antibiotics: Aminoglycosides. • Quinolones. • Antituberculosis drugs. • Antifungal drugs, Role in dentistry. • Antiviral drugs, Role in dentistry • Antimalarial drugs • Antiamoebic drugs. Antineoplastics
CVS	• Drugs used in CCF • Anti arrhythmic drugs • Antihypertensive drugs • Antianginal drugs/Drugs used in MI
Diuretics	• Diuretics: Introduction, Classification. • Diuretics: Thiazides. Loop

	• Diuretics: K+ sparing & Misc groups
Endocrinology	• Antidiabetic drugs • Thyroid Hormones • Corticosteroids. • Oral contraceptives.
DENTAL MATERIALS	
Prosthetic Polymers	• Synthetic Polymers • Denture Base Polymers • Denture Lining Materials • Artificial Teeth • Other Materials such as Separating media and tissue conditioners
Resin-Based Materials	• Resin-Based Filling Materials • Bonding of Resin-Based Materials
Investments and Refractory Die	
Ceramics and PFM Casting	
Dentifrices and Fluoride agents	
PRECLINICAL DENTISTRY	
Prosthodontics	• Artificial teeth • Arrangement of teeth Maxilla and Mandible • Laboratory procedures prior to insertion • Parts & Surfaces of a Denture • Spot grinding • Classification of partially edentulous arches • Rests and Rest seats
Operative Dentistry	• Composite Restorative Material • Class III Class IV And V

BLOCK-III

COMMUNITY DENTISTRY	
Health care delivery system	• National health policy of Pakistan • Problems in health care system of Pakistan • Primary Health Care • Dental needs and resources • Health need assessment • Health Planning • Survey, Path finder surveys and Scientific method in dental epidemiology • Evaluation • Dental Auxiliaries • Financing in Health care • Dental practice management • Comprehensive dental care
Introduction to Epidemiology	• Incidence and Prevalence • Classification of epidemiological studies • Descriptive Epidemiology • Analytical studies • Experimental studies • Bias & types • Research proposal writing • Introduction to Biostatistics • Data, Types of Data, Presentation of Data, • Variables • Measure of central tendency • Outliers • Measure of dispersion • Sampling & Types of sampling, Sample size calculation, Sampling frame, Sampling error • Normal distribution & normal distribution curve • Probability and its significance • Statistical testing • Types of parametric and nonparametric tests • Systematic Review • SPSS • Endnote • Plagiarism
Evidence Based Dentistry	

Ethics in Medical profession	
PATHOLOGY	
General Pathology	
Immunology:	• Cells of immune system • Immunoglobulins • Hypersensitivity reactions Type I to Type IV • Immunodeficiency diseases • AIDS • Amyloidosis
Genetics:	• Terminology • Chromosomal disorders • Autosomal disorders • Sex chromosomes
Hematology:	• Anemias • Leukemias • Bleeding disorders • Interpretation of CBC
Environmental diseases	• Effects of alcohol and smoking • Hazards of radiations
MICROBIOLOGY	
Virology	• Hepatitis viruses • HIV • Rabies virus • Herpes virus
Fungi	• Cutaneous mycosis • Deep mycosis • Opportunistic infections
PHARMACOLOGY	
Opioids	• Introduction, classification • Morphine • Semisynthetic/synthetic
NSAIDs:	• Aspirin & other Salicylates. • Classification, Mechanism of action • Propionic acid, Acetic acid der, Paracetamol
Blood	• Haematinics. • Anticoagulants. • Oral Anticoagulants. • Antiplatelet drugs & Thrombolytics

GIT	• Antidiarrhoeals • Antiemetics • Purgatives • Drugs used in Peptic Ulcer
Respiration	• Expectorants & Antitussives. • Antiasthmatic drugs
Miscellaneous	• Antihistamines. • Antiseptics & disinfectants in dentistry • Drug interactions
DENTAL MATERIALS	
Metals	• Metals and Alloys • Gold and Alloys of Noble Metals • Base Metal Casting Alloys • Steel and Wrought Alloys • Implant
Cements	• Glass Ionomer Restorative Materials (Polyalkenoates) • GIC modifications including Resin-modified and Related Materials • Cements Based on Phosphoric Acids • Cements Based on Organometallic Chelates Compounds • Polycarboxylates • Requirements of Dental Cements for Lining, Base and Luting Applications
Endodontic Materials	
Pit and Fissure Sealants	
PRECLINICAL DENTISTRY	
Prosthodontics	• Major Connectors • Minor Connectors • Indirect Retainers • Direct Retainers • Denture Base • Surveying
Operative Dentistry	• Liners and Bases • Pit & Fissure Sealants • Matrix and Retainer System

COMMUNITY & PREVENTIVE DENTISTRY

COMMUNITY & PREVENTIVE DENTISTRY

Topic/ Theme	Learning outcomes	Learning objectives	Instructional strategies	Assessment tools
Health	At the end of the session students will be able to: Outline basic concepts in Health, Disease & Infection and To demonstrate a knowledge regarding scope of Public & Dental Public Health	By the end of Section I, students will be able to:	LGIS & Skill Lab	MCQs SEQs
		• Define Health, Oral health • Define Community medicine, Community / Public health dentistry		
		• Define health • Describe different concepts & perspectives of health • Explain different dimensions of health • Describe determinants of health • Outline Indicators of health		
Disease		• Define disease • Outline different concept of disease • Describe natural history of disease • Describe Iceberg phenomenon of Disease		
Infection		• Define infection • Describe modes of transmission • Explain Stages of infection		
Public Health		• Define public health • Describe different concepts of public health • Define the vision and mission of public health • Highlight essential public health services • Describe different characteristics of public health methods • Highlight public health techniques		
Dental Public		• Define Objectives of public health		

Health		dentistry • Definition of dental public health • Outline core areas in public health dentistry • Explain stages of public and clinical health practice • Compare similarities and differences in public and private dental practice		
EPIDEMIOLOGY OF ORAL DISEASES AND ORAL INDICES				
	At the end of the session students will be able to: Demonstrate knowledge of basic principles of Epidemiology & Epidemiology of Oral Diseases & Application of Oral Indices	By the end of Section II, students will be able to:	LGIS SGD Demonstration Videos PBL & Skill Lab	MCQs SEQs OSPE
Epidemiology		• Define epidemiology • Outline History of epidemiology • Summarize basic concepts • Explain Uses and Principles.		
Oral Epidemiology		• Define Oral Epidemiology & its Uses		
Dental Caries		• Define Dental caries • Describe Epidemiological triad of dental caries • Outline theories related to causation • Identify factors associated with dental caries • Explain Prevalence in Pakistan & associated factors		
Periodontal Disease		• Define periodontal disease • Describe Epidemiological triad of periodontal disease • Explain Prevalence in Pakistan and associated factors		
Oral Cancer		• Define oral cancer • Identify the signs and symptoms of oral cancer • List different types of carcinomas • Outline the epidemiology of oral cancer in Pakistan • Describe agent, host and environmental factors related to		

		oral cancer		
Malocclusion		• Classify malocclusion • Discuss Causes of malocclusion • Describe Epidemiological triad of malocclusion and oro-facial defects • Explain Prevalence in Pakistan and associated factors		
Wasting Diseases of teeth		• Define Tooth Wear, Attrition & Abrasion • Define Erosion of tooth • Define Abfraction • Understand Epidemiology of Tooth Wear		
Oral Indices		• Define an index • Identify ideal requirements of an index • Outline purpose • Describe uses of an index • Describe the classification of oral indices		
Dental Caries Indices		• Identify different Indices used for Dental caries • Define the DMFT and dft Index, • Describe Procedure to check, Index teeth to be examined & Scoring criteria • Define the PUFA and CAST index • Show Procedure to check • Identify Index teeth to be examined & Scoring criteria		
Oral Hygiene Indices		• Define the OHS and SBI index • Explain Procedure to check, Index teeth to be examined • Describe scoring criteria • Explain Nominal scale for interpretation		
Periodontal Indices		• Define gingival index • Explain procedure to check, Index teeth to be examined &		

		Scoring criteria • Define the PI and PHP index, • Describe Procedure to check, Index teeth to be examined & Scoring criteria • Describe Nominal scale for interpretation • Define the CPITN Index, Instruments used, Procedure to check, Index teeth to be examined and Scoring criteria		
Fluorosis Index		• Define the term Fluorosis • Describe Dean's Fluorosis Index, Procedure to check • Identify Index teeth to be examined • Describe scoring criteria		
Index for Malocclusion		• Define the Angle's classification • Explain Procedure to check &Scoring criteria		
HEALTH EDUCATION AND HEALTH PROMOTION				
Health Education	At the end of the session students will be able to: Outline basic Principles & Objectives of Health Education & Strategy of Health Promotion	By the end of Section III, students will be able to: • Define health education • Outline the objectives and key messages in health education • Explain General educational theories • Describe principles involved in health education. • List the different methods and materials used in health education • Describe the steps involved in planning oral health education.	LGIS SGD Role play PBL & Skill Lab	MCQs SEQs OSPE
Health Promotion		• Define Health promotion • Outline Principles of health promotion • Identify different approaches • Describe Ottawa charter and its components with examples		

Prevention	At the end of the session students will be able to: Demonstrate knowledge of different levels of Prevention & Prevention of Oral Diseases. Outline role of Fluorides in Dentistry	By the end of Section IV, students will be able to: • Define prevention • Identify Levels of prevention • Describe WHO strategy	LGIS SGD Demonstration Videos PBL & Skill Lab Portfolio	MCQs SEQs OSPE
Screening		• Define screening • Identify Aims and objectives • Enlist Basic screening test • Describe types of screening Criteria for screening & Uses of screening		
Prevention of Dental Caries		• Define prevention & Levels of prevention • Identify Plaque control methods • Describe Mechanical and chemical plaque control • Define caries • Describe caries activity test • Outline Indications, advantages of caries test • Describe Types of caries test & Procedure to carry out test • Define plaque and its contents • Define plaque disclosing agents • Describe purpose & Types of disclosing agents • Explain Method of application • Define pits and fissure sealants • Enlist Advantages of pits and fissure sealants • Describe Indication and contraindications • Describe Method of application & Material used • Define ART • Explain History & Rationale of ART • Outline Principles of using ART, Indications and contraindications • Enlist Instruments, Essential		

		material & Working requirements • Describe Survival/success rate • Describe How to carry out Caries risk assessment • Describe Cario-gram • Discuss Dental caries vaccine • Explain Concept of MID		
Prevention of Oral cancer		• Define different levels of prevention • Plan prevention of oral cancer at different levels		
Prevention of Periodontal Disease		• Define different levels of prevention • Plan prevention of periodontal disease at different levels		
Prevention of Wasting diseases		• Describe how to prevent wasting diseases at different levels		
Fluorides in Dentistry		• Outline the historical background of fluoride in relation to dentistry • Understand the metabolism of fluoride • Explain the mechanism of actions of fluoride • Discuss the methods of introducing fluoride to prevent dental caries • Describe modes of administration of fluorides • Different methods of systemic delivery with their advantages and disadvantages • Define Required amount • Describe Reasons for fluoride rejection • Define topical fluorides • List indications for topical fluoride use • Describe different topical fluoride vehicles • Define defluoridation		

		• Different methods of defluoridation, Advantages and disadvantages of each method • Define the term fluoride toxicity, Types of toxicity • Define Lethal dose of fluoride • Describe management of fluoride toxicity		
Occupational Hazards		• Define occupational hazards • Classify different hazards • Identify hazards related to profession of dentistry • Describe prevention of occupational hazards		
Health & Nutrition		• Define Diet, nutrition, nutrients, calories • Enlist Basic nutrients • Describe structure, sources, daily requirement of different nutrients • Identify Deficiencies associated with different nutrients • Explain Management of deficiencies associated with them • Identify major nutritional problems in public health • Define balance diet • Describe food pyramid and daily portion requirements		
Infection control & Sterilization		• Define infection • Define sterilization & Methods of sterilization • Describe Sterilization of dental instruments • Explain how to control infection in dentistry		
Environmental Health		• Definition of Environmental health • Describe Water, Sources, Purification of water, Hardness of water • Identify health aspects of solid		

		waste, Sources of solid waste, Different methods of waste disposal • Define Air pollution, Sources • Describe effects of air and noise pollution, • Explain Prevention of air and noise pollution		
Ergonomics		• Define ergonomics and it effects • Describe the Psychosocial Factors and Work-related MSDs in Dentistry • Explain prevention Strategies		
HEALTH CARE DELIVERY SYSTEM				
Health care Delivery System	At the end of the session students will be able to:	By the end of Section V, students will be able to:	LGIS SGD Demonstration PBL	MCQs SEQs
		• Identify Partners in health • Describe components of Health care system • Explain Health care delivery system of Pakistan		
		• Describe National health policy of Pakistan		
		• Identify Problems in health care system of Pakistan • Describe how to address them		
Primary Health care	Demonstrate the knowledge of Primary Health care & Healthcare Delivery system of Pakistan	• Define primary health care • Explain Elements of primary health care • Understand Principles of primary health care • Describe WHO strategy for PHC		
Need Assessment		• Define concept of needs & Demand • Understand types of needs • Describe Health need assessment		
Health Planning		• Definition of planning • Describe Purpose of planning • Enumerate Basic steps in the		

		planning cycle		
Surveys		• Define survey • Outline Advantages • Describe modes of data collection &Types of investigations • Outline special characteristics of oral health surveys • Explain Path finder surveys, Index age groups for survey • Describe Scientific method in dental epidemiology		
Evaluation		• Define evaluation • List the reasons for conduction of evaluation • Explain the WHO criteria for evaluation of dental services. • Describe the different types of evaluation • Enumerate the guidelines for evaluation • Describe the different steps involved in evaluation process		
Dental Auxiliaries		• Define Dental auxiliaries • Describe types of auxiliaries & WHO classification of Dental auxiliaries • Explain Dental Auxiliaries with their duties		
Payment for Dental care		• Classify payment plans • Explain mechanism of Payment for Dental Care • Outline Reimbursement of dentist		
Dental office management		• Describe Dental office establishment, Location selection, • Explain Financial Assistance • Describe Design of Dental Office, Personnel Management • Explain how Record Management is done		

		• Understanding the Accounting and Other Financial Aspects What Factors are associated with successful dental practice • Identify Factors Influence the Dental Practice		
		• Explain concept of Comprehensive Dental care		
INTRODUCTION TO EPIDEMIOLOGY				
General Epidemiology	At the end of the session students will be able to: Demonstrate the knowledge of Basics of Research Methodology & Biostatistics	By the end of Section VI, students will be able to:	LGIS SGD Demonstration Videos PBL & Skill Lab	MCQs SEQs OSPE
		• Define epidemiology • History of epidemiology • Classify epidemiological diseases • Aims of epidemiology • Measurements used in epidemiology • Uses of epidemiology		
		• Incidence and prevalence definition and types of studies		
		• Classification of Epidemiological studies		
Descriptive Epidemiology		• Concept of descriptive studies &Types of studies • Procedures in descriptive epidemiology • Uses of descriptive epidemiology • Designs of descriptive epidemiology		
Analytical Studies		• Explain analytical studies. • Describe Case-control study. • Indications, advantages and disadvantages • Define bias and list its different types. • Estimation of risk. • Describe cohort study. • General consideration while selection of cohorts • Types of cohort studies & Elements of cohort studies		

		• Indications, advantages and disadvantages. • Estimation of risk		
Experimental Epidemiology		• Define experimental studies • Types & Aim of experimental research • Design of randomized control trials • Bias & types • Non randomized controlled trials		
Research Proposal		• Define research proposal • How to write research proposal		
Biostatistics		• Define data • Types of data, Presentation of Data • Variables, Types, • Measure of central tendency • Calculation of these measures, Uses • Outliers • Measure of dispersion, Uses • Sampling & Types of sampling • Sample size calculation, Sampling frame & Sampling error • Normal distribution & normal distribution curve • Probability and its significance • Statistical testing • Types of parametric and non-parametric tests • Where and how to apply these test.		
		• Basics of systematic review		
		• Basics of SPSS		
		• Basics of Endnote		
Plagiarism		• Define term Plagiarism • Basics of Plagiarism		
Evidence Based Dentistry		• Concept of EBD		

BEHAVIORAL SCIENCES				
Sociology	At the end of the session students will be able to: Demonstrate knowledge of health behavior, and its management. Demonstrate a knowledge of the ethical principles relevant to dentistry	By the end of Section VII, students will be able to: • Definition • Sociology as applied to dental public health	LGIS SGD PBL	MCQs SEQs
Child Psychology		• Importance of Learning Child Psychology • Different Theories of Child Psychology		
Behavior management		• How to manage Behavior in Community Dentistry		
Health Communication		• Components of doctor patient relationship • Models of interaction between doctor and patient • Factors which influence doctor and patient communication		
Ethics in Dentistry		• Define ethics • Principles & Codes of ethics • Unethical practices • Consent • How are Ethics and social sciences related • Basis of medical ethics • Duties and Obligation of Dentists towards Patients and Public		

GEN PATHOLOGY & MICROBIOLOGY

GENERAL PATHOLOGY & MICROBIOLOGY, BLOCK I By the end of Block I, the students will be able to:				
Topic	**Learning Outcomes**	**Learning Objectives**	**Mode of Information**	**Assessment tool**
General Pathology: **Cell Injury**	• Understand the mechanism of different types of pathological cellular adaptations to cell injury • Critically analyze the pathological basis of apoptosis and necrosis • Correlate ischemic changes to its morphology • Relate different types of cellular accumulations with the pathological basis of disease • To differentiate between reversible and irreversible cell injury. (definition, causes, morphology, mechanism, examples)	• Introduction to cell injury • Mechanisms of cell injury • Necrosis & apoptosis • Intracellular accumulations • Adaptation to cell injury	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
General Pathology: Inflammation and repair	• Differentiate between acute and chronic inflammation on the basis of etiology, pathogenesis and morphology • Summarize the systemic effects of inflammation with wound healing and tissue repair	• Acute Inflammation • Chemical Mediators • Chronic inflammation • Wound healing & tissue repair	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
General Microbiology	• Correlate the basic morphological, physiological and genetic characteristics of bacteria with their pathological mechanism • Appraise the concept and	• Introduction to microbiology and biohazards in microbiology lab and infection control measure • Bacterial anatomy,	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE

	different methods of sterilization and disinfection in detail. • Match the members of normal flora with their appropriate anatomical locations • Apply the methods of health professional and patient safety in laboratory and clinical settings. (infection control measures)	physiology, bacterial growth and genetics • Sterilization and disinfection by physical methods • Sterilization and disinfection by chemical methods • Normal Flora		
Special Bacteriology (Gram positive & negative cocci and gram negative bacteria)	• Correlate the important morphological and pathogenic characteristics, laboratory diagnosis, prevention and virulence factors produced by gram positive cocci, gram-negative cocci with their clinical significance • Describe the important morphological, pathogenic characteristics, laboratory diagnosis and virulence factors produced by gram negative cocci • Describe the important morphological, pathogenic characteristics, laboratory diagnosis, clinical findings and virulence factors produced by Enterobacteriaceae, Non-Enterobacteriaceae, zoonotic and respiratory gram-negative rods	• Gram positive and gram negative cocci bacteria • Staphylococci • Streptococci, classification and Streptococcus pyogenes • Streptococcus pneumoniae • Neisseria meningitidis • Neisseria gonorrhoeae • Coliform organisms & family Enterobacteriaceae: General characteristics	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
End Block Assessment	**End block assessment is to be taken by the concerned institute itself. Assessment tools: MCQs & SAQs/SEQs**			

GENERAL PATHOLOGY & MICROBIOLOGY - BLOCK II By the end of Block II, the students will be able to:				
Topic	**Learning Outcomes**	**Learning Objectives**	**Mode of Information**	**Assessment tool**
Hemodynamic disorders, thromboembolism and shock	• Assess the hemodynamic disorders including hyperemia, congestion and edema along with the pathogenesis and contributing factors (thrombosis and embolism). • Describe the pathological factors involved in the process of infarction and shock along with their types.	• Edema & congestion • Thrombosis • Embolism • Hemorrhage • Infarction • Amyloidosis	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
Neoplasia	• Analyze the nomenclature, characteristic, epidemiology, carcinogenesis, grading and staging, genetic basis, and mechanism of metastasis	• Introduction • Classification of tumors • Pathogenesis of tumours • Molecular basis of tumors • Mechanism of spread • Carcingenic agents & host defences • Grading & staging of tumors	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE

Special Bacteriology (GPR, GNR Mycobacteria, mycoplasma, spirochetes, chlamydia, rickettsia and miscellaneous bacteria)	• Describe the important morphological, pathogenic characteristics, laboratory diagnosis, virulence factors and clinical findings produced by Gram positive & negative rods
	• Categorize the clinical diseases caused by Typical & Atypical Mycobacteria
	• Describe the important morphological, pathogenic characteristics, laboratory diagnosis and virulence factors produced by gram positive rods, spirochetes, chlamydia, rickettsia and miscellaneous* bacteria
		• Gram positive rods
		  ○ Cornybacteria
		  ○ Listeria
		  ○ Actinomyces & Nocardia
		• Gram negative rods
		• Mycobacteria
		  ○ M. tuberculosis
		  ○ M. leprae
		  ○ Atypical mycobacteria
		• Spirochetes
		• Chlamydia
		• Rickettsia
			Lectures, Small Group discussion, Lab practical, Tutorials	MCQs
				
				SAQ/SEQs
				
				OSPE

Parasitology	• Identify and classify various parasites • Distinguish the life cycle, pathogenesis and laboratory diagnosis of parasites	• Introduction to parasitology • Entamoeba histolytica • Giardia lamblia, Trichomonas vaginalis • Malarial parasite (Plasmodia) • Toxoplasma gondii, Leishmania • Cestodes spp • Ascaris lumbricoides • Enterobius vermicularis • Ancylostoma and Necator americanus	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
End Block Assessment	**End block assessment is to be taken by the concerned institute itself. Assessment tools: MCQs & SAQs/SEQs**			

GENERAL PATHOLOGY & MICROBIOLOGY - BLOCK III By the end of Block III, the students will be able to:				
Topic	**Learning Outcomes**	**Learning Objectives**	**Mode of Information**	**Assessment tool**
Disease of immune system	• Categorize and evaluate the components of normal immune system along with various pathological immune response • Evaluate the autoimmune diseases with various types of immunodeficient syndromes • Amyloidosis	• Immune system, complement system, immunoglobulin • Hypersensitivity I,II,III & IV • HLA system • Tissue transplantation, tolerance & autoimmunity • Autoimmune disease • Immune deficiency syndrome, AIDS • Lab diagnosis of immunological diseases	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
Genetics	• Evaluate the nature and pattern of inheritance disorders involving single and multiple gene complex. • Relate the congenital anomalies infections and syndrome.	• Introduction to genetics terminologies • Biochemical & molecular basis of chromosomal disorders • Diagnosis of genetic disorders	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
Haematology	• Assess the haematological disorders including Anaemias, Leukemias and bleeding disorders • Describe the etiology and pathological factors along with their types. • Interpret blood counts parameters	• Introduction of Anaemias, Leukemias and bleeding disorders • Interpretation of complete blood counts	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE

Environmental disease	Justify the environmental and nutritional factors contributing in diseases and effects.	• Introduction of Environmental diseases • Harmful effects of smoking, radiation and alcohol	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
Virology	• Differentiate between different classes of viruses • Outline the diagnosis and pathogenesis of viruses • Paraphrase the Pathophysiology, laboratory diagnosis, and prevention of Hepatitis, HIV, Herpes and Rabies viruses	• Classification of viruses and principles of viral diagnosis • Hepatitis viruses • Rabies virus • Herpes viruses • HIV/AIDS	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
Mycology	Identify, classify and diagnose various fungi along with their clinical relevance	• Superficial Mycosis • (Cutaneous and sub-cutaneous fungi) • Deep Mycosis • Opportunistic pathogenic fungi	Lectures, Small Group discussion, Lab practical, Tutorials	MCQs SAQ/SEQs OSPE
End Block Assessment	**End block assessment is to be taken by the concerned institute itself. Assessment tools: MCQs & SAQs/SEQs**			

PHARMACOLOGY

PHARMACOLOGY

Topic	Learning outcomes	Learning objectives	Mode of Information Transfer	Assessment Tool
Pharmacology: Introduction & Historical overview.	To know about the brief history of pharmacology	• Define pharmacology • Describe the role of Muslims scientist in advancement of pharmacology	Lecture	MCQ SAQ/SEQ Structured Viva
Pharmacology: Branches/ division of Pharmacology	to know about the various branches of pharmacology and their significance	To define Pharmacokinetics, pharmacodynamics, therapeutics, chemotherapy, toxicology, clinical pharmacology, Pharmacy, pharmacognosy, pharmacogenetics, pharmacogenomics, pharmacoepidemiology, comparative pharmacology, animal pharmacology, pharmacoeconomics, posology	Lecture	MCQ SAQ/SEQ Structured Viva
Pharmacokinetics	To understand the principles of pharmacokinetics of drugs	• To define, explain factors affecting and describe clinical significance of • ROA of drugs, • Dosage forms, • Absorption, • Bioavailability, • Distribution, • Plasma protein binding, • Excretion and clearance of drugs	Lecture	MCQ SAQ/SEQ Structured Viva
Biotransformation of drugs	To understand the principles of bio-transformation of drugs and its clinical significance	• Define biotransformation and enumerate types • Explain the factors affecting biotransformation	Lecture	MCQ SAQ/SEQ Structured Viva
Pharmaco-dynamics	To understand The principle mechanisms of action	• Enlist and describe receptors, types, agonist /antagonist, mechanisms,	Lecture	MCQ SAQ/SEQ Structured

	of drugs Factors modifying actions & doses of drugs	signaling mechanism, second messenger system • Enlist and describe Factors modifying actions & doses of drugs		Viva
Drug-drug interactions	To understand principle drug-drug interactions	Describe pharmacokinetic and pharmacodynamic drug interactions with clinical significance	Lecture	MCQ SAQ/SEQ Structured Viva
A N S Introduction	To identify the synthesis, release and transport of adrenergic and cholinergic neurotransmitters	• Describe the synthesis, release and transport of adrenergic and cholinergic neurotransmitters • Enlist the various receptors responsible for adrenergic and cholinergic transmission	Lecture	MCQ SAQ/SEQ Structured Viva
Sympathmimetics	To understand the basic and clinical pharmacology of catecholamines and non-catecholamines	• Enlist the receptors, classification, chemistry, metabolism, MoA of adrenaline, NE, Isoprenaline, dopamine, dobutamine, ephedrine, amphetamine, phenylephrine, salbutamol, dexmedetomideine, xylometazoline and oxymetazoline • Describe pharmacological actions on all organ systems, therapeutic uses and ADRs	Lecture	MCQ SAQ/SEQ Structured Viva
Sympatholytics	To understand the basic and clinical pharmacology of sympatholytics	• Enlist the receptors, classification, chemistry, metabolism, MoA of Alpha-receptor Blockers and beta receptor blockers • Describe pharmacological actions on all organ systems therapeutic uses and ADRs	Lecture	MCQ SAQ/SEQ Structured Viva

Central Sympathoplegics.	To understand the basic and clinical pharmacology o central sympathoplegics	• Enlist the receptors, classification, chemistry, metabolism, MoA of Alpha-methyl dopa, clonidine, apraclonidine • Describe pharmacological actions on all organ systems therapeutic uses and ADRs	Lecture	MCQ SAQ/SEQ Structured Viva
Cholinergic drugs	To understand the basic and clinical pharmacology of cholinergic drugs	• Enlist the receptors, classification, chemistry, metabolism, MoA of cholinergic drugs • Describe pharmacological actions on all organ systems therapeutic uses and ADRs	Lecture	MCQ SAQ/SEQ Structured Viva
Anti Cholinesterases	To understand the basic and clinical pharmacology of cholinesterase inhibitors	• Enlist the receptors, classification, chemistry, metabolism, MoA of cholinesterase inhibitors. • Describe pharmacological actions on all organ systems therapeutic uses and ADRs	Lecture	MCQ SAQ/SEQ Structured Viva
Organophosphate poisoning &Oximes	To understand the basic and clinical pharmacology of orgaophosphates and oximes	Explain chemistry, metabolism, MoA of orgaophosphates and oximes Describe pharmacological actions therapeutic uses and ADRs	Lecture	MCQ SAQ/SEQ Structured Viva
Cholinergic blockers	To understand the basic and clinical pharmacology of Cholinergic blockers	Enlist the receptors, classification, chemistry, metabolism, MoA of cholinergic blockers. Describe pharmacological actions on all organ systems therapeutic uses and ADRs	Lecture	MCQ SAQ/SEQ Structured Viva
Skeletal muscle relaxants	To understand the basic and clinical pharmacology of skeletal muscle	Enlist the receptors, classification Describe chemistry, metabolism, MoA,	Lecture	MCQ SAQ/SEQ Structured Viva

	relaxants	pharmacological actions, therapeutic uses and ADRs of Skeletal muscle relaxants		
Drugs acting on central nervous system	To understand the basic and clinical pharmacology of drugs acting on central nervous systems.	Enlist the receptors, classification Describe chemistry, metabolism, MoA, pharmacological actions, therapeutic uses and ADRs of General anesthetics, Local anesthetics, Anti migraine drugs, Sedative hypnotics, Antiepileptics, Antidepressants, Opioids.	Lecture	MCQ SAQ/SEQ Structured Viva
Drugs acting in inflammation and gout.	To understand the basic and clinical pharmacology of drugs acting in inflammation and gout.	Enlist the classification Describe chemistry, metabolism, MoA, pharmacological actions, therapeutic uses and ADRs of 1. NSAIDs (Non Selective cyclo-oxygenase Inhibitors, Cyclo-oxygenase-2 Selective Inhibitors) 2. DMARDS(Antimalarials, Methotrexate, sulfasalazine.cyclophsophemide, leflonomide, azathiophen, cycloserine, TNF alpha inhibitors, antibiotics, gold salts, monoclonal antibodies, gold salts, glucocorticoids) 3. Antigout drugs, (colchicine, NSAIDs, Probenecid, sulfapyrazone, allopurinol, feboxostat, glucocorticoid, anakinra, pegloticase)	Lecture	MCQ SAQ/SEQ Structured Viva
Drugs acting in cardiovascular system.	To understand the basic and clinical pharmacology of drugs acting in cardiovascular system.	Enlist the classification • Describe chemistry, metabolism, MoA, pharmacological actions, therapeutic uses and ADRs of drugs used in 1. Heart failure 2. Hypertension 3. Ischemic heart disease	Lecture	MCQ SAQ/SEQ Structured Viva

		4. Arrythmias		
Diuretics	To understand the basic and clinical pharmacology of diuretics	Enlist Classification • Describe the MoA, Actions,uses and ADRs of • CAIs • Loop Diuretics, • Thiazides, • K+ sparing, Osmotic Diuretics, • ADH antagonists	Lecture	MCQ SAQ/SEQ Structured Viva
Chemotherapeutics	To understand the basic and clinical pharmacology of Chemotherapeutics	• Enlist Classification • Describe the MoA, mechanism of resistance, regional resistance patterns, spectrum, clinical use and role in dentistry, ADRs of • Sulfonamides • Penicillins • Cephalosporin • Macrolide antibiotics • Tetracyclines • Chloramphenicol • Aminoglycosides • Quinolone • Misc Chemotherapeutic agents, • Disinfectants and antiseptics, • Antituberculosis drugs • Antifungals drugs • Antiviral drugs • Antimalarial drugs • Antiamoebics • Antineoplastics	Lecture	MCQ SAQ/SEQ Structured Viva
Drugs acting on endocrine system.	To understand the basic and clinical pharmacology of drugs acting on endocrine system.	• Enlist Classification • Describe the MoA, Actions,uses and ADRs of • Anti Diabetic Drugs • Anti-thyroid drugs • Adrenal Hormones Hormonal contraceptives	Lecture	MCQ SAQ/SEQ Structured Viva
Drugs used in the treatment of anemia	To understand the basic and clinical pharmacology of drugs used in the	• Describe the absorption Physiology, Storage, transport, elimination, Factor affecting	Lecture	MCQ SAQ/SEQ Structured Viva

	treatment of anemia	absorption, Therapeutic Indications, ADRs, Preparations & Content of • Iron, • Vit B12 • Folic acid		
Drugs used in the treatment of coagulation disorders	To understand the basic and clinical pharmacology of drugs used in the treatment of coagulation disorders	• Enlist Classification • Describe the MoA, Actions, uses and ADRs of Parenteral agents (heparin, low molecular weight heparins, heparinoids, direct acting agents, fondaparinux, oral agents (warfarin) direct acting agents • Thrombolytics • Antiplatelets	Lecture	MCQ SAQ/SEQ Structured Viva
Drugs acting in gastrointestinal system.	To understand the basic and clinical pharmacology of drugs used in the treatment of gastrointestinal disorders	• Enlist Classification • Describe the MoA, Actions,uses and ADRs of • Antiemetic drugs • Antidiarrheals • Purgatives/laxatives • Drugs used in peptic ulcer	Lecture	MCQ SAQ/SEQ Structured Viva
Drugs acting in respiratory system.	To understand the basic and clinical pharmacology of drugs used in the treatment of respiratory disorders.	• Enlist Classification • Describe the MoA, Actions,uses and ADRs of • Bronchial Asthma Drugs • Antihistamines • Expectorants and anti tussives	Lecture	MCQ SAQ/SEQ Structured Viva

SCIENCE OF DENTAL MATERIALS

SCIENCE OF DENTAL MATERIALS

Topic / Theme	Learning Outcomes	Learning Objective	Instructional Strategies	Assessment Tools
		At the completion of BDS Course, the students should be able to:		
1. General Classification and Properties of Dental Materials				
Properties Used to Characterize Materials	Outline physico-mechanical, chemical, thermal and rheological properties of dental materials.	• Describe the structure of matter. • Explain the principles of adhesion among dental materials. • Differentiate between primary and secondary bonds. • Describe the principles of surface interaction including concept of substrate, adhesive, adherend and processes which occur at interface. • Demonstrate knowledge of the fundamental mechanical, chemical, thermal and physical principles that make the foundation of the clinical behavior and application of dental materials. • Infer stress-strain graphs for elaboration of mechanical properties. • Differentiate between various properties of materials e.g. dimensions of color, tarnish and corrosion, fracture toughness and resilience, syneresis and imbibition, creep and flow etc. • Differentiate between erosion, abrasion, abfraction and attrition. • Outline the need of biological considerations	• Interactive lecture • Small Group Discussion • PBL	• MCQs • SAQs • Viva • OSPE

		regarding the selection and performance of dental materials for clinical applications. • Differentiate between toxicity, inflammation and allergic response. • Explain nickel hypersensitivity, mercury toxicity and latex allergy.		
Requirements of Direct Filling Materials and Historical Perspectives	Relate properties of restorative materials to clinical applications.	• Classify restorative materials. • Differentiate between direct and indirect restorations. • Identify different restorative materials in available in dental laboratory.		
2. Waxes, Gypsum Products and Investment Materials				
Gypsum Products for Dental Casts	Relate chemistry and properties of Gypsum Products, waxes and investment materials to relevant clinical procedures.	• Classify gypsum products. • Describe the sources, chemistry and properties of gypsum products used in dentistry. • Relate the composition and crystalline structure of dental stone and dental plaster and compare the two. • Describe the setting reactions of dental stone and dental plaster. • Describe the manipulation factors which affect the setting time and physico-mechanical properties of final set product. • Explain the methods used for the disinfection of dental gypsum models and study casts. • Demonstrate the proper mixing technique of dental gypsum used for preparing study models and casts.	• Interactive lecture • Small Group Discussion • PBL • Practical Demonstration	• MCQs • SAQs • Viva • OSPE

		• Fabricate plaster slab.		
Dental Waxes		• Classify types of waxes used in dentistry. • Describe the composition, properties and uses of different types of dental waxes. • Identify different types of dental waxes e.g. Sticky, Ortho, Inlay, Modelling and Carding wax. • Manipulate Modelling wax.		
Investments and Refractory Dies		• Classify investment materials used in dentistry. • Describe the composition, setting reaction and properties of different type of investment materials used in dentistry. • Identify different types of investment materials.		
3. Metals in Dentistry				
Metals	Correlate basic concepts of metallurgy to prosthesis design and implantology.	• Infer the basic concepts related to processing and solidification of dental alloys. • Describe different types of metals and alloys used in fabrication of dental prosthesis. • Interpret the alloy phase diagrams.	• Interactive lectures	• MCQs • SAQs • Viva • OSPE
		• Explain the types, processing and clinical applications of high noble, noble and base metal alloys. • Explain the casting procedures for metal alloys. • Explain the types, processing and clinical applications of stainless steel in dentistry.	• Small Discussion Groups • PBL • Practical Demonstration	

		• Describe the properties and composition of various orthodontic wires. • Identify different metallic components of a Cast Partial Denture. • Fabricate different alphabets in order to practice manipulation of wire.		
Implants		• Describe the history of implants in dentistry. • Interpret Osseo-integration and factors affecting it. • Describe different types of implants used in dentistry. • Appraise significance and clinical applications for titanium and its alloys in dentistry, especially for implants.		
4. Ceramics and Casting Procedures for PFM Prosthesis				
Ceramics and Porcelain Fused to Metals (PFM)	Appraise casting procedures for fabrication of ceramic-fused-to-metal prosthesis.	• Classify dental ceramics. • Relate the basic chemistry and composition of ceramics. • Compare and contrast general procedures involved in fabrication of dental ceramics. • Infer the concept of metal ceramic bonding. • Describe metal-ceramic restorations, their uses and properties. • Describe all-ceramic restoration, their uses and properties. • Illustrate methods of strengthening ceramics. • Describe CAD-CAM in context of ceramics. • Identify different ceramic restorations e.g. PFM crown and bridge.	• Interactive lectures • Small Discussion Groups • PBL	• MCQs • SAQs • Viva • OSPE

Casting		• Enumerate various steps involved in casing procedure. • Illustrate sprue design. • Describe the causes of defective casting. • Analyze measures to overcome defective casting. • Identify steps of casting procedure.		
5. Prosthetic Polymers and Associated materials				
Prosthetic Polymers	Relate the properties of prosthetic polymers and associated materials to respective clinical applications.	• Classify denture base materials. • Relate chemical composition and properties of denture base materials. • Illustrate the various procedures involved in the fabrication of denture base materials. • Enumerate step-by-step manipulation, processing, and care of dentures for laboratory processed prosthetic resins. • Describe various methods of polymerization of denture base materials. • Appraise the concept of relining and rebasing. • Differentiate between temporary and permanent soft relining materials. • Compare hard and soft relining materials. • Describe the procedure of relining and rebasing. • Outline the need of tissue conditioning. • Demonstrate the correct dispensing, manipulation and application of self-cure and heat-cure dental acrylic resin (e.g. for	• Interactive lectures • Small Discussion Groups • PBL • Practical Demonstration	• MCQs • SAQs • Viva • OSPE

		fabrication of custom tray)		
Artificial Teeth		• Compare artificial and porcelain teeth.		
Separating media		• Interpret the rationale behind the use of separating media in dentistry. • Describe and identify various types of separating media used in dentistry, including their composition, mechanism of action and properties. • Illustrate techniques for application of a separating media.		
6. Impression Materials				
Impression Materials	Correlate important properties of various impression materials to respective clinical	• Classify impression materials used in dentistry. • Describe the characteristics and properties of elastic and non- elastic impression materials. • Differentiate between reversible and irreversible hydrocolloids. • Define duplicating materials.	Interactive lectures	• MCQs • SAQs • Viva • OSPE

	applications and techniques.	• Describe modifications in alginate. • Compare different types of elastomers on the basis of properties. • Define working and setting time • Infer importance of correct manipulation of impression materials. • Outline various methods of disinfecting different impression materials. • Identify different impression materials. • Demonstrate the correct dispensing, manipulation and handling of Alginate, ZnO - Eugenol paste and Impression compound.	• Small Discussion Groups • PBL • Practical Demonstration	
7. Cements				
Cements	Relate the physico-mechanical properties of dental cements to respective clinical applications.	• Outline basic terminologies related to dental cements e.g. liners, bases etc. • Explain the setting mechanism of different dental cements. • Describe the clinical applications of different dental cements. • Describe luting agents, types and their properties • Infer the use of temporary restorative materials, properties and their uses. • Interpret techniques for handling and manipulation of various dental cements.	• Interactive lectures • Small Discussion Groups • PBL • Practical Demonstration	• MCQs • SAQs • Viva • OSPE

		• Describe Atraumatic Restorative Technique (ART) and Sandwich Technique. • Analyze modifications in Glass-ionomer cements. • Demonstrate the correct dispensing, manipulation and handling of Zinc phosphate cement, Zinc oxide eugenol cement, Glass ionomer cement, Calcium hydroxide cement.		
8. Resin-based materials				
Restorative Resin Composites	Relate compositional characteristics and properties of resin-based materials to clinical applications.	• Describe composition of resin-composites and the function of each component. • Classify resin-composites. • Describe the properties of resin-based composites. • Describe different methods of curing-resin based composites.	Interactive lectures	• MCQs • SAQs • Viva • OSPE
		• Interpret the concept of polymerization shrinkage and different techniques to minimize it. • Analyze finishing and polishing procedures for restorative composites. • Identify different modifications in relation to restorative resin composites. • Identify and familiarize themselves with the armamentarium used for composite restorations	• Small Discussion Groups • PBL • Practical Demonstration	

		i.e. Visible light cure unit, Acid etching gel, Bonding agent, Restorative composite.		
Dental Bonding Agents in Adhesive Dentistry		• Infer the concept of bonding and adhesion in dentistry. • Appraise significance of enamel and dentine bonding. • Describe various generations of bonding agents. • Compare the development of smear layer and hybrid layer. • Describe acid-etch technique and dentin bonding.		
Resin Modified and Related Materials		• Describe the composition and properties of Resin-modified materials (e.g. RMGIC) • Compare Giomers and Compomers.		
9. Dental Amalgam				
Dental Amalgam	Outline compositional characteristics, properties and manipulative variables of dental amalgam.	• Classify Dental Amalgam based on composition. • Describe the setting mechanism of different types of dental amalgams e.g. low copper Vs. high copper amalgam alloys. • Describe trituration and effect of mercury-alloy ratio on the properties of set materials. • Explain the hazards associated with mercury. • Demonstrate the correct dispensing, trituration	• Interactive lectures • Small Discussion Groups • PBL • Practical Demonstration	• MCQs • SAQs • Viva • OSPE

		and application of dental amalgam. • Demonstrate hand mixing and mechanical mixing of dental amalgam.		
10. Miscellaneous Topics				
Endodontic Materials	Appraise rationale for use of endodontic materials in dentistry.	• Identify different endodontic materials used in dentistry • Describe composition, properties and manipulation of Gutta Percha. • Identify different endodontic materials used in dentistry e.g. GP and Paper points.	• Interactive lectures • Small Discussio n Groups • PBL • Practical Demonstration	• MCQs • SAQs • Viva • OSPE
Preventive Materials Dentifrices, Fluoride agents and Pit and Fissure sealants	Appraise use of preventive materials in dentistry.	• Outline the types, composition and purpose of dentifrices and mouthwashes. • Identify different types of fluoride agents, their mode of action and application. • Describe the composition, properties and clinical application of pit and fissure sealants.		

List of Practical Demonstrations
Science of Dental Materials

Sr.	Practical Demonstrations
1.	Wire Bending
2.	Fabrication of Plaster Slab
3.	Fabrication of Custom Tray
4.	Manipulation of Dental Waxes
5.	Manipulation of Non – Elastic Impression Materials
6.	Manipulation of Hydrocolloids
7.	Manipulation of Dental Cements
8.	Identification of various dental materials, instruments and equipment

LABORATORY PRACTICAL QUOTA	
1.	Plaster slab • Dimensions: – Length – 3 inches – Width – 1.5 inches – Thickness – 0.5 inch
2.	Wire work **–** (Alphabets) • Dimensions: – Height - 2 inches – Width – 1.5 inches

PRE-CLINICAL PROSTHODONTICS

PRE-CLINICAL PROSTHODONTICS

Theme/Topics	Learning Outcomes	Learning Objectives	Instructional Strategy	Assessment Tools
	At the completion of the session, the students should be able to:	At the completion of the session, the students should be able to:		
I. PROSTHODONTICS				
Prosthodontics	Appraise the scope of Prosthodontics as a specialty	• Define Prosthodontics • Enlist different branches of prosthodontics and their application in everyday life • Describe implications of not addressing tooth loss at an appropriate time • Understand effect of prosthetic replacement on the quality of life of an individual	• Interactive Lectures • Small Group Discussion	MCQs SAQs SEQs
II. COMPLETE DENTURE PROSTHODONTIC				
Anatomical Landmarks of Denture Bearing Area	Correlate the significance of anatomical landmarks of maxilla with respect to biomechanics of a complete denture	• Enlist anatomical landmarks of maxillary arch. • Differentiate between supporting structures, limiting structures & relief areas • Differentiate between primary stress bearing area and secondary stress bearing area • Describe the significance of all structures in relation to complete denture. • Identify anatomical landmarks of maxilla on cast	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva

		• Identify primary stress bearing area		
	Correlate the significance of anatomical landmarks of maxilla with respect to biomechanics of a complete denture	• Enlist anatomical landmarks of Mandibular arch. • Differentiate between supporting structures, limiting structures & relief areas • Differentiate between primary stress bearing area and secondary stress bearing area • Describe the significance of all structures in relation to complete denture • Identify anatomical landmarks of mandible on cast • Identify primary stress bearing area	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
Impressions in Complete Dentures	**Impression Trays -** • Identify the factors affecting impression registrations in complete dentures	• Identify maxillary and mandibular impression trays • Differentiate between dentate and edentulous impression trays • Describe the selection of appropriate size of an impression tray • Describe the difference between a stock tray and custom tray • Name different materials used in the fabrication of custom tray • Demonstrate manipulation of acrylic powder and liquid	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva

		• Fabricate a custom tray using self-cure acrylic resin		
	Impression Theories - • Extrapolate the concepts of impression registration to different edentulous situations	• Define an impression • Enumerate objectives of impression-making • Classify types of impressions on the basis of use & impression theories • Describe different theories of complete denture impression making • Record a mucostatic impression on a dental simulator	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
CASTS & MODELS	• Appraise the importance of various dental casts used in denture fabrication	• Define a dental cast • Classify dental casts • Describe different types of dental casts in detail • Identify parts of a dental cast	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
DENTURE BASES	• Outline the use of record bases in fabrication of complete dentures	• Define record bases • Describe the requirements of record bases • Classify types of record bases • Describe various materials used to fabricate record bases • Perform wax-up for a record base • Fabricate a record base using acrylic resin • Finish and polish the cured record base	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
COMPLETE DENTURE OCCLUSION	**Occlusion Rims –** • Fabricate a pair of occlusion rims on an edentulous cast	• Define what are occlusion rims • Describe briefly the uses of occlusion rims • Describe the dimensions of	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva

		occlusion rims for both maxillary and mandibular base plates • Describe briefly the steps in fabrication of occlusion rims • Describe maxilla-mandibular relations in brief. • Fabricate occlusion rims of adequate dimensions for maxilla and mandible using modelling wax		
	Articulators • Differentiate between various articulators used for prosthodontic work	• Define an articulator • Identify between different types of articulators • Describe briefly the concept behind the use of an articulator • Define facebow and uses of a facebow • Articulate the fabricated rims in Class I relation on a semi-adjustable articulator	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
	Artificial Teeth • Appraise the differences in artificial devices used to replace natural teeth	• Describe the different types of artificial teeth based on type of material and occlusal morphology • Describe the differences in occlusal morphology and their uses in different situations • Describe the differences between acrylic and porcelain teeth and their uses	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs Viva
	Occlusion for Complete Dentures –	• Define dental occlusion • Describe the difference between occlusion and	• Interactive Lectures • Small Group	One Best MCQ SAQs

	• Compare artificial occlusion with natural occlusion	articulation • Describe the objectives of establishing occlusion • Differentiate between natural and artificial occlusion • Name different types of complete denture occlusal schemes • Briefly describe the factors affecting occlusion	Discussion (PBL) • Lab Demonstration	SEQs
	Arrangement of Teeth – • Perform complete denture tooth setup	• Describe the steps of anterior tooth setup in detail • Differentiate between Overjet and Overbite • Describe Class I canine relationship • Describe steps of posterior tooth setup • Describe Class I molar relationship • Describe the compensating curves involved in tooth setup • Perform complete denture tooth setup	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
LAB PROCEDURES PRIOR TO INSERTION	• Perform flasking, packing and curing of a complete denture	• Describe different techniques used for flasking • Enlist materials that can be used as separating media • Differentiate between stages of setting of acrylic • Describe curing cycles for heat-cured acrylic resin • Perform investment of denture bases using dental plaster	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva

		• Differentiate between 2-pour and 3-pour techniques • Perform dewaxing of the invested denture bases using a hot bath • Manipulate heat-cured acrylic resin • Perform trial packing of resin into the mold • Identify and remove Flash • Perform final packing of acrylic resin in the mold • Perform curing of acrylic resin • Divest the cured dentures without damage • Perform finishing and polishing of cured dentures		
	Spot Grinding – • Summarize the concepts of occlusal equilibration	• Define occlusal equilibration • Enlist causes of occlusal disharmony • Outline the steps involved in occlusal equilibration • Enumerate the necessary armamentarium for occlusal adjustments • Explain BULL's Law • Pour a remount cast • Perform occlusal adjustment on articulator	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
III. PARTIAL DENTURE PROSTHODONTICS				
INTRODUCTION	• Differentiate between cast and acrylic partial	• Define a partial denture • Differentiate between cast partial and acrylic	• Interactive Lectures • Small Group	MCQs SAQs SEQs

	dentures	partial dentures • Enumerate components of cast partial denture • Define retention, support and stability	Discussion (PBL) • Lab Demonstration	DOPS Viva
PATTERNS OF PARTIAL EDENTULISM	• Classify partially dentate arches using Kennedy's classification	• Enlist requirements of an acceptable classification system • Describe Kennedy's classification for partially edentulous arches • Highlight advantages and disadvantages of Kennedy's Classification • Outline Applegate's rules that govern application of Kennedy's classification • Create saddle areas according to Kennedy's Classification	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
COMPONENTS OF CAST PARTIAL DENTURE	**Major Connectors –** • Identify components that serve as major connectors	• Enumerate the components of CPD • Define major connectors • Understand the characteristics of major connectors that contribute to the well-being of patients • Name maxillary and mandibular major connectors • Identify major connectors on CPD models	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
	Minor Connectors – • Identify components that serve as minor connectors	• Define minor connectors • Describe functions and various forms of minor connectors • Identify minor	• Interactive Lectures • Small Group Discussion (PBL) • Lab	MCQs SAQs SEQs DOPS Viva

		connectors on CPD models	Demonstration	
	Rests – • Recognize the role of rests in complete denture support	• Define rests. • Enumerate functions of rests. • Describe and draw the outline form of an occlusal rest • Identify rests on CPD models	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
	Direct Retainers – • Recognize the role of retainers in complete denture retention	• Define direct retainers • Classify direct retainers • Identify parts of a clasp • Enlist functions of reciprocal clasp arm • Enumerate principles of clasp design • Name factors that affect flexibility of clasps • Identify direct retainers on CPD models • Fabricate C-clasp and looped clasps for the edentulous span using stainless steel wire 0.7 mm	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
	Indirect Retainers – • Identify components that serve as indirect retainers	• Define Indirect Retainers • Enumerate functions of indirect retainers • Name different forms of indirect retainers • Identify indirect retainers on CPD models	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
	Denture Base – • Differentiate between denture bases used in varying clinical situations	• Define a denture base • Enlist functions of a denture base • Differentiate between tooth – supported and distal extension denture base • Name factors affecting support of a distal	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva

		extension denture base • Differentiate between metal and acrylic denture bases • Enumerate methods of attaching teeth to denture base • Perform wax up for acrylic partial denture using modeling wax		
SURVEYING	**Surveying –** • Outline the role of surveying in partial denture fabrication	• Define surveying • Identify parts of a surveyor • Differentiate between supra-bulge and infra-bulge areas • Enumerate objectives of surveying • Enumerate factors that affect path of insertion and removal • Define Tripoding • Describe different types of tripoding	• Interactive Lectures • Small Group Discussion (PBL)	MCQs SAQs SEQs Viva

REFERENCE BOOKS:

- Prosthodontic treatment for edentulous patient by GA Zarb 13th edition
- McCracken's removable partial prosthodontics 13th edition

PRE-CLINICAL OPERATIVE DENTISTRY

PRE-CLINICAL OPERATIVE DENTISTRY

Theme/Topics	Learning Outcomes	Learning Objectives	Instructional Strategy	Assessment Tools
	At the completion of the session, the students should be able to:	At the completion of the session, the students should be able to:		
I. INTRODUCTION				
INTRODUCTION TO OPERATIVE DENTISTRY	Appraise factors affecting operative treatment & the future demand for operative dentistry	• Appraise the basic need to study biologic basis of operative dentistry • Highlight the importance of development of psychomotor skills	• Interactive Lectures • Small Group Discussion (PBL)	MCQs SAQs SEQs Viva
INTRODUCTION TO ARMAMENTARIUM	Identify instruments used in restorative work, their uses & handling	• Enumerate the basic equipment used in Operative dentistry clinical procedures • Enlist their clinical uses • Demonstrate How to avoid hazardous effects of these equipment • Identify and classify instruments	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
II. ISOLATION & MOISTURE CONTROL				
RUBBER DAM	Perform single tooth isolation using rubber dam	• Define isolation • Enumerate methods of isolation • Enlist indications of isolation methods • Enlist Advantages of isolation during operative work • Identify Rubber dam components and their uses • Describe rubber dam application methods • Demonstrate placement of rubber dam in	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva

		posterior arch/anterior arch/ cross arch and single tooth isolation		
III. CARIOLOGY				
DENTAL CARIOLOGY	Explain the pathophysiology of carious lesions	• Define caries • Identify the etiological factors leading to caries • Classify dental caries • Describe clinical characteristics of carious lesions • Describe histopathological features of dental caries • Highlight the steps involved in caries diagnosis • Explain how can caries be prevented • Outline the definitive management of dental caries	• Interactive Lectures • Small Group Discussion (PBL)	MCQ SAQs SEQs Viva
IV. CAVITY PREPARATION				
CAVITY PREPARATION	Appraise the principles involved in cavity preparation	• Define tooth preparation • Justify the need for restorations • Classify tooth preparations • Enlist the objectives of tooth preparation • Identify the stages and steps of tooth preparation • Analyze the factors affecting tooth preparation • Explain tooth preparation terminologies • Explain the method of cavity preparation	• Interactive Lectures • Small Group Discussion (PBL)	MCQs SAQs SEQs Viva

		according to the extension of lesion • Identify the requirement of different armamentarium for specific cavity designs • Outline the principles of long term maintenance of restorations in the oral cavity		
V. RESTORATIVE MATERIALS				
INTRODUCTION TO RESTORATIVE MATERIALS	Differentiate between various restorative materials	• Classify restorative materials • Describe each material's composition, structure, and properties • Identify clinical considerations for each material • Enlist Indications and contraindications for each material • Enumerate advantages and disadvantages of each material • Perform application of pits and fissure sealants in posterior teeth both maxillary and mandible arches.	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
VI. CAVITY PREPARATION FOR AMALGAM RESTORATIONS				
CAVITY PREPARATION FOR AMALGAM RESTORATION	Outline the steps involved in Conservative Class I Amalgam Restoration	• Describe Initial clinical procedures • Explain tooth preparation for conservative Class I cavity • Highlight the restorative technique for Class I Amalgam restoration • Perform Class I cavity preparation	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva

		• Apply lining materials on teeth • Perform mixing of amalgam • Perform condensation, burnishing, carving, finishing & polishing of amalgam		
	Outline the steps involved in Extensive Class I Amalgam Restoration	• Describe Initial clinical procedures • Explain tooth preparation for extensive Class I cavity • Highlight the restorative technique for extensive Class I Amalgam restoration	• Interactive Lectures • Small Group Discussion (PBL)	MCQs SAQs SEQs Viva
	Outline the steps involved in Class I occluso-lingual amalgam restorations	• Describe Initial clinical procedures • Explain tooth preparation for Class I occluso-lingual cavity • Highlight the restorative technique for Class I occluso-lingual Amalgam restoration	• Interactive Lectures • Small Group Discussion (PBL)	MCQs SAQs SEQs DOPS Viva
	Outline the steps involved in Class II cavity preparation for Amalgam	• Describe the preparation method for Class II cavity preparation for Amalgam Restoration • Outline the choice of Matrix System for Class II cavity. • Explain the handling of Amalgam in class II Cavity restoration • Perform Class II cavity preparation • Perform placement of different matrix systems and wedges	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva

		• Apply lining materials on teeth • Perform mixing of amalgam • Perform condensation, burnishing, carving, finishing & polishing of amalgam		
VII. MATRIX AND RETAINERS				
MATRIX & RETAINER SYSTEMS	Appraise the importance of Matrix systems in restorative dentistry	• Define matrix and retainer • Classify matrix and retainer systems • Identify different designs of matrix systems used • Enlist indications for the use of matrix systems • Enumerate advantages of using matrix systems • Outline the use of different matrix systems according to different clinical situations	• Interactive Lectures • Small Group Discussion (PBL)	MCQs SAQs SEQs Viva
VIII. PULP PROTECTING AGENTS				
PULP PROTECTING AGENTS	Correlate the knowledge of Cavity Liners, Bases & Varnishes with their practical application	• Differentiate between liners, bases and varnishes • Classify liners and bases • Describe their composition and properties • Enlist their indications and advantages • Highlight the importance of their clinical use in the restorations of different cavities • Outline the method of application of these pulpal protecting agents in deep carious and non-	• Interactive Lectures • Small Group Discussion (PBL)	MCQs SAQs SEQs DOPS Viva

		carious cavities		
IX. CAVITY PREPARATION FOR COMPOSITE RESTORATIONS				
CAVITY PREPARATION FOR COMPOSITE RESTORATIONS	Outline the steps involved in Class III cavity preparation for Composite restoration	• Differentiate between Conventional class III tooth preparation and Beveled class III tooth preparation • Describe Modified class III tooth preparation • Outline the accurate method of cavity preparation in the aesthetic zones of oral cavity • Explain Restorative technique including etching, bonding agent application, matrix application, placement and curing of Composite & finishing and polishing of restoration • Appraise the importance of polishing of aesthetic restorations • Perform Class III cavity preparation • Perform placement of composite matrix systems • Apply lining materials on teeth • Perform manipulation and placement of composite material • Demonstrate use of bonding agent and LED light • Perform composite finishing & polishing	• Interactive Lectures • Small Group Discussion (PBL) • Lab Demonstration	MCQs SAQs SEQs DOPS Viva
	Outline the steps	• Differentiate between	• Interactive	MCQs

	involved in Class IV cavity preparation for Composite restoration	Conventional class IV tooth preparation and Beveled class IV tooth preparation • Describe Modified class IV tooth preparation • Outline the accurate method of cavity preparation in the aesthetic zones of oral cavity • Explain Restorative technique including etching, bonding agent application, matrix application, placement and curing of Composite & finishing and polishing of restoration • Appraise the importance of polishing of aesthetic restorations • Perform Class IV cavity preparation • Perform placement of composite matrix systems • Apply lining materials on teeth • Perform manipulation and placement of composite material • Demonstrate use of bonding agent and LED light • Perform composite finishing & polishing	Lectures • Small Group Discussion (PBL) • Lab Demonstration	SAQs SEQs DOPS Viva
	Outline the steps involved in Class V cavity preparation for Composite	• Differentiate between Conventional class V tooth preparation and Beveled class V tooth preparation	• Interactive Lectures • Small Group Discussion (PBL)	MCQs SAQs SEQs DOPS Viva

	restoration	• Describe Modified class V tooth preparation • Explain Restorative technique for class V cavity • Describe the use of sandwich technique for deep class V cavities • Perform Class V cavity preparation • preparation • Perform placement of composite matrix systems • Apply lining materials on teeth • Perform manipulation and placement of composite material • Demonstrate use of bonding agent and LED light • Perform composite finishing & polishing • Demonstrate use of sandwich technique for deep carious lesions	• Lab Demonstration	

REFFERENCE BOOK:
Art and Science of Operative Dentistry