



Study Guide 2nd Year BDS

Women Dental College

Abbottabad

Module 1

Foundation II

2nd Year BDS

Table 1: Themes

S#	Theme	Duration in Weeks
1	Cellular Response to Injury & Drugs	2
2	Health and Oral Well Being	1
3	Foundations of Pre-Clinical Skills	2

Hours allocation for different subjects

Hours allocation for different subjects

S. No	Subject	Hours
1	Science of Dental Materials	41
2	Community and Preventive Dentistry	30
3	Pharmacology	26
4	General Pathology & Microbiology	17.5
5	Oral Pathology	1
7	Junior Operative	6
8	Junior Prosthodontics	8
9	Physiology	2
10	General Medicine	1
11	Oral Medicine	1
	Total	133.5

Learning Outcomes

By the end of this Module, 2nd year BDS students will be able to:

1. Explain the various cellular adaptations to injury, including atrophy, hypertrophy, hyperplasia, and metaplasia.
2. Differentiate between reversible and irreversible cellular injuries, and describe their biochemical and morphological changes.
3. Compare and contrast apoptosis and necrosis, including their causes, processes, and roles in both health and disease.
4. Identify different types of necrosis and discuss the underlying mechanisms leading to these cellular outcomes.
5. Classify bacteria based on cell wall characteristics, oxygen requirements, and staining properties, and describe their growth patterns.
6. Explain the pathogenesis of bacterial infections, including syphilis, leprosy, tuberculosis, and gonorrhea, and outline their clinical management.
7. Define key pharmacological terms, such as pharmacokinetics, bioavailability, and drug interactions.
8. Explain the process of drug absorption, distribution, metabolism, and excretion, with emphasis on clinical applications like dosing and therapeutic index.
9. Identify and categorize various types of adverse drug reactions, including dose-related and non-dose-related effects.
10. Classify autonomic nervous system drugs and anti-asthmatic drugs, their mechanism of action, uses, adverse effects and drug interactions and other pharmacological aspects.
11. Perform essential lab techniques such as gram staining and culture media preparation, interpreting results to identify bacterial infections.
12. Perform and Practice self-protection protocol during laboratory sessions.

13. Perform and Practice self-protection protocol during laboratory sessions.
14. Perform and practice the self-protection protocol in the clinical skill laboratory.
15. Establish the importance of empathic communication in clinical practice during discussion sessions.
16. Define health and wellbeing, and explain their changing concepts and dimensions.
17. Identify responsibilities and indicators of health, and describe their significance.
18. Define disease and describe the epidemiological triad, risk factors, and prevention levels.
19. Discuss global health goals (MDGs, SDGs) and the application of epidemiology in dental care.
20. Classify dental materials and discuss their properties and selection criteria.
21. Discuss the basics, procedures, and future prospects of operative dentistry and endodontics.
22. Identify and demonstrate the use of dental equipment and instruments.
23. Describe mechanical, physical, chemical, and biological properties of dental materials.
24. Classify and explain composition, properties, and applications of dental impression materials.
25. Identify components and fabrication steps of complete dentures.
26. Recognize and utilize essential dental instruments and equipment.
27. Demonstrate proper chair positioning and instrument handling in operative dentistry and Phantom Head Lab.
28. Classify and describe the principles of epidemiology and the various epidemiological study designs
29. Describe the principles of health promotion and health education and oral education
30. Deliver health education

Khyber Medical University (KMU) Mission:

Our Vision

Khyber Medical University (KMU) Vision:

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Our Mission

Khyber Medical University aims to promote professional competence through learning and innovation for providing comprehensive quality health care to the nation.

BDS Program Outcomes:

Knowledge (K):

1. Demonstrate comprehensive knowledge of biomedical, behavioral, and clinical sciences to provide safe and evidence-based patient care.
2. Integrate theoretical knowledge with clinical practice in diagnosis, treatment planning, and management of oral health conditions.
3. Apply information technology, research literacy, and self-directed learning to support lifelong education and innovation.

Skills (S):

1. Perform essential clinical procedures with competence, safety, and patient-centered focus.
2. Apply analytical, diagnostic, and problem-solving skills to deliver holistic oral healthcare.
3. Demonstrate effective communication, leadership, and collaboration with patients, communities, and interprofessional teams.
4. Promote oral health through preventive strategies, public health initiatives, and evidence-based research.

Attitude (A):

1. Practice ethical and professional values in patient care, research, and education within sociocultural contexts.
2. Demonstrate accountability, empathy, and respect in clinical and academic settings, while committing to lifelong learning and adaptability.

Table 1: Learning Objectives Theme Wise

Theme I: Cellular Response to Injury & Drugs			
S No	Topic	Hours	Learning objectives
Physiology			
1.	Functional system of cell	2	1.1 Discuss the function of cellular organelles (endoplasmic reticulum, golgi bodies, mitochondria, lysosomes, peroxisomes, cytoskeleton). 1.2 Describe the mechanism of endocytosis. 1.3 Differentiate between pinocytosis and phagocytosis. 1.4 Explain the steps of phagocytosis. 1.5 Discuss the regression and autolysis mechanism damaged cells by the lysosomes.
General Pathology			
2.	Introduction to the subject	1	2.1 Define Pathology and its different branches. 2.2 Define etiology, disease, pathogenesis, morphology, cell adaptation, cell injury and homeostasis.
3.	Cellular adaptation	1	3.1 Define atrophy, hypertrophy, hyperplasia, and metaplasia with examples. 3.2 Discuss causes of different types of cellular adaptations. 3.3 Describe mechanism of Hypertrophy, Hyperplasia, and atrophy. 3.4 Discuss difference between physiologic and pathologic cellular adaptation.
4.	Cellular injury, cell death	1	4.1 Define cell injury. 4.2 Differentiate between reversible and irreversible cell injury.

			4.3 Discuss the mechanism, morphological, biochemical, and functional alteration in reversible and irreversible cell injury. 4.4 Describe the nature and severity of cell injury with cellular responses. 4.5 Describe the subcellular responses to injury including heterophagy and lysosomal catabolism. 4.6 Discuss process of autophagy.
5.	Necrosis	1	5.1 Define necrosis. 5.2 Discuss different types of necrosis with examples. 5.3 Discuss the mechanism and morphological changes of different types of necrosis. 5.4 Describe morphologically different patterns of necrosis in coagulative necrosis, liquefactive necrosis, gangrenous necrosis, caseous necrosis, Fat necrosis, and fibrinoid necrosis
6.	Apoptosis	1	6.1 Define Apoptosis. 6.2 Discuss cell cycle. 6.3 Enumerate causes of apoptosis 6.4 Enlist the examples of Apoptosis. 6.5 Discuss pathophysiology, morphology, and biochemical features of Apoptosis. 6.6 Describe the intrinsic and extrinsic pathways of apoptosis. 6.7 Discuss difference between apoptosis and necrosis. 6.8 Describe role of apoptosis in health and disease. 6.9 Identify the role of nutritional deficiencies in the process of cell apoptosis.

7.	Pathologic calcification	1.5	7.1 Define Pathologic calcification 7.2 Describe types, morphology, and functional alterations of pathologic calcification with examples. 7.3 Differentiate between dystrophic and metastatic calcification.
8.	Intracellular accumulations		8.1 Discuss all the pathways for abnormal intracellular accumulations. 8.2 Describe causes, morphology mechanism and consequences and nutrition aspects of pro accumulation.
9.	Pigmentation	1	9.1 Describe types of pigments. 9.2 Differentiate between endogenous and exogenous pigments. 9.3 Enlist the nutrients causing oral pigmentation.
Oral Pathology			
10.	Oral pigmentation	1	10.1 Classify oral pigmentation. 10.2 Describe the clinical and histological features of oral lesions caused by exogenous and endogenous pigmentation.
General Medicine			
11.	Syphilis, Leprosy, Tuberculosis	1	11.1 Define Syphilis, Leprosy, Tuberculosis and Gonorrhea diseases. 11.2 Discuss sign and symptoms of bacterial diseases. 11.3 Discuss management of patients.
General Pathology & Microbiology			
12.	Classification Bacteria	1	12.1 Classify aerobic and anaerobic bacteria with examples.
			12.2 Discuss classification of bacteria on the basis of nature of cell wall, staining characteristics, spore formation and ability to grow in the presence of oxygen.
13.	Structure	1	13.1 Describe specialized structures outside the cell wall including capsule, glycocalyx, flagella and pilli. 13.2 Describe structure and function of various parts of the bacterial cell.

			13.3 Enlist the differences between Gram Positive and Gram-Negative Bacteria. 13.4 Describe classification and important functions of plasmids 13.5 Describe structure, functions, and medical importance of bacterial spores with examples. 13.6 Describe functions and arrangement of transposons.
14.	Normal Flora and Bacterial growth curve	2	14.1 Describe medically important members of normal flora and their anatomic location. 14.2 Describe various phases of bacterial growth curve. 14.3 Describe the role of probiotics and prebiotics in maintaining gastrointestinal health.
15.	Bacterial genetics	1	15.1 Define mutation 15.2 Discuss causes of mutation. 15.3 Classify different types of mutations. 15.4 Discuss conjugation, transduction, recombination, and transformation in bacteria.

16.	Bacterial pathogenesis	1	16.1 Define the term pathogen, infection, virulence, communicable, endemic, epidemic and pandemic diseases, carrier, pathogens, opportunists, commensals, and colonizers. 16.2 Describe stages/determinants of bacterial pathogenesis 16.3 Describe colonization, invasion, toxins, immune pathogenesis. 16.4 Differentiate between exotoxins and endotoxins. 16.5 Describe the various modes of action of endotoxins and endotoxins produced by gram positive and gram-negative bacteria. 16.6 Describe the four stages of a typical infectious disease and Koch's postulates for establishing the causal role of an organism in the disease.
Pharmacology			
17.	Introduction	1	17.1 Define basic terms pharmacokinetics, pharmacodynamics, excipient, compounding, and Dispensing. 17.2 Define basic terms like Pharmacology, Clinical Pharmacology, Therapeutics, drug, medicine, pro-drugs, prototype drugs, Materia medica, pharmacopoeia, formulary, national formulary. 17.3 Describe the branches of Pharmacology like Pharmacy, Pharmacognosy, pharmacogenetics, pharmacogenomics, toxicology, and posology. 17.4 Define prescription drugs, OTC drugs, WHO essential drugs, and Orphan drugs with examples.

18.	Nomenclature of drugs	1	18.1 Describe how drugs are named, i.e., chemical, generic, approved, official, and trade names of drugs with examples.
19.	Sources of drugs		19.1 Enlist various sources of drugs. 19.2 Describe the genetic engineering source of drugs with examples
20.	Active principles of drugs		20.1 Enlist important principles of drugs with examples.
21.	Absorption of drugs	1	21.1 Define drug absorption. 21.2 Describe various mechanisms of drug absorption with examples. 21.3 Describe the concept of ionization of drug molecules. 21.4 Discuss clinical significance of ion trapping. 21.5 Enlist factors affecting drug absorption.
22.	Bioavailability	1	22.1 Define bioavailability, bioequivalence, and pharmaceutical equivalence.
23.	Distribution of drugs Volume Distribution		23.1 Define distribution, redistribution, and volume of distribution drugs. 23.2 Discuss factors affecting drug distribution. 23.3 Enlist drugs with small volume of distribution. 23.4 Enlist drugs with large volume of distribution. 23.5 Describe formula for calculation of volume of distribution. 23.6 Discuss plasma protein binding. 23.7 Discuss its clinical significance in diseased conditions. 23.8 Discuss volume of distribution of drug with its clinical significance. 23.9 Enlist some drugs whereby loading dose is administered.

24.	Pro-drug Biotransformation (metabolism)	1	24.1 Define biotransformation/Pro-drug. 24.2 Describe the objectives of biotransformation and the fate of drugs after biotransformation. 24.3 Name major sites of biotransformation. 24.4 Describe major drug-metabolizing enzymes, i.e., microsomal (P450) and non-microsomal enzymes. 24.5 Describe phases and reactions of biotransformation. 24.6 Define idiosyncrasy with examples.
25.	Dose and Loading dose	1	25.1 Define dose. 25.2 Classify dose. 25.3 Discuss its significance. 25.4 Discuss loading of dose. 25.5 Discuss its significance. 25.6 Explain calculation of loading dose. 25.7 Describe maintenance dose. 25.8 Describe calculation of maintenance dose. 25.9 Discuss Paediatric dose. 25.10 Describe significance of Paediatric dose. 25.11 Describe calculation of Paediatric dose.
26.	Physiological barriers to transport of drugs	1	26.1 Enlist important physiological barriers to transport of drugs. 26.2 Describe important physiological barriers to transport of drugs and their clinical significance.

27.	Hepatic first-pass effect	1	27.1 Describe hepatic first-pass effect (Pre-systemic elimination) and its clinical significance.
28.	Enterohepatic circulation		28.1 Define enterohepatic circulation. Describe enterohepatic circulation with examples and its clinical significance.
29.	Excretion of drugs, Steady		29.1 Define drug excretion and clearance. 29.2 Enlist different routes of drug excretion. 29.3 Discuss different factors affecting excretion of drug. 29.4 Discuss drug clearance and elimination and explain their kinetics 29.5 Explain C _{ss} and its clinical application. 29.6 Differentiate between excretion, elimination, and clearance. 29.7 Apply the formula for calculating drug clearance.
30.	Excretion of drug, renal, biliary excretion, lung excretion, drug excreted in milk and saliva		30.1 Define excretion of drug. 30.2 Enumerate different routes of excretion of drug. 30.3 Differentiate between clearance, elimination, and excretion of drug. 30.4 Discuss renal excretion renal, biliary excretion, lung excretion, drug excreted in milk and saliva. 30.5 Define zero order and first order excretion of drug. 30.6 Enumerate drug elimination through first order kinetics. 30.7 Enumerate drug elimination through zero order kinetics. 30.8 Discuss the clinical significance of first- and zero-order kinetics
31.	Plasma half life		31.1 Define plasma half-life. 31.2 Enlist drugs with short half-life and long half-life.

			31.3 Discuss formula for calculation of plasma half-life.
			31.4 Describe the clinical significance of half-life.
32.	Pharmacodynamics	2	32.1 Describe intracellular Second-messenger systems and enlist some important second messengers.
33.	Agonist and antagonist		33.1 Discuss agonist. 33.2 Classify agonist. 33.3 Describe clinical use of agonist. 33.4 Discuss antagonist. 33.5 Classify antagonist. 33.6 Describe clinical uses of antagonist.
34.	Drug antagonism		34.1 Define drug antagonism. 34.2 Enlist types of antagonism. 34.3 Describe chemical, physiological (functional), and pharmacological (competitive/surmountable and non-competitive) antagonisms with examples.
35.	Drug interactions	1	35.1 Define drug interaction. 35.2 Define drug incompatibilities with examples. 35.3 Describe pharmacokinetic drug interactions with examples and its clinical significance. 35.4 Define summation, synergism, and potentiation with examples 35.5 Describe pharmacodynamics drug interactions with examples and its clinical significance.

			35.6 Define orphan receptors, serpentine receptors, and spare receptors. 35.8 Define drug selectivity and specificity. 35.9 Describe drug-food interactions and drug-disease interactions with examples. 35.10 Define summation, synergism, and potentiation with examples.
36.	Tolerance	2	36.1 Define Tolerance, cross tolerance, reverse tolerance (sensitization), innate tolerance, tachyphylaxis and drug resistance. 36.2 Describe the mechanisms of development of tolerance and tachyphylaxis. 36.3 Define drug holidays with example.
37.	Adverse		37.1 Define adverse drug effect, secondary effect. 37.2 Define intolerance to a drug. 37.3 Classify adverse drug reactions. 37.4 Describe dose-related adverse effects (side effects and toxic effects) with examples. 37.5 Describe non-dose-related adverse effects with examples. 37.6 Describe causes of adverse drug reactions. 37.7 Enlist drugs causing hepatotoxicity, renal toxicity, and cardio toxic drugs. 37.8 Enlist drugs causing adverse effects on reproduction. 37.9 Describe non-dose-related adverse effects (idiosyncrasy and drug allergy) with examples
38.	Therapeutic index		38.1 Define therapeutic index. 38.2 Define median lethal dose, median toxic dose, and median effective dose.

			38.3 Enlist some drugs with a narrow therapeutic index.
			38.4 Enlist some drugs with a broad therapeutic index.
39.	Therapeutic window		39.1 Define the therapeutic window.
40.	Potency and efficacy		40.1 Define potency and efficacy. 40.2 Describe potency and efficacy with examples. 40.3 Describe the clinical importance of efficacy compared to potency. 40.4 Describe graded and quantal dose response curve.
41.	ANS DRUGS (Introduction to autonomic nervous system drugs)	1	41.1 General organization of nervous system with differences between somatic and autonomic nervous system 41.2 Differences with sympathetic and parasympathetic nervous system 41.3 Neurochemical transmission and sites of drug action 41.4 Autonomic neurotransmitters and their receptors with their distribution 41.5 Presynaptic regulation with highlighting autoreceptors and heteroreceptors 41.6 Postsynaptic regulation
42.	Parasympathomimetic drugs	1	42.1. Enlist major autonomic neurotransmitters. 42.2 Describe the organ system distribution of autonomic receptors. Classify cholinomimetic drugs. 42.3 Describe the mechanism of action of directly acting and indirectly acting cholinomimetics. 42.4 Describe the organ system effects of directly acting and indirectly-acting cholinomimetics with special reference to their effects on receptors. 42.5 Describe the clinical uses of cholinomimetics. 42.6 Describe the adverse effects of cholinomimetics. 42.7 Describe the clinical manifestations of organophosphate poisoning.

43.	Parasympatholytic drugs	1	43.1 Classify anticholinergic drugs 43.2 Describe the pharmacokinetics of antimuscarinic drugs with emphasis on metabolism and duration of action. 43.3 Describe the mechanism of action of antimuscarinic drugs. 43.4 Describe the organ system effects of antimuscarinic drugs with special
			reference to their effects on receptors. 43.5 Describe the clinical uses of antimuscarinic drugs. 43.6 Describe atropine fever
44.	Sympathomimetics drugs	2	44.1. Classify sympathomimetic drugs according to the spectrum of adrenoceptors they affect 44.2 Define Catecholamines with examples. 44.3 Describe the pharmacokinetics of sympathomimetic drugs 44.4 Describe the mechanism of action of sympathomimetics. 44.5 Compare the effects of Adrenaline, Noradrenaline, Phenylephrine and Isoprenaline on heart rate and blood pressure. 44.6 Describe the clinical uses of sympathomimetics. 44.7 Describe the drug treatment of Anaphylactic shock. 44.8 Describe the pharmacotherapy of glaucoma 44.9 Describe the adverse effects of sympathomimetics
45.	Sympatholytic drugs	2	45.1 Classify sympatholytic drugs 45.2 classify α-blockers. 45.3 Describe the mechanism of action of α-blockers. 45.4 Describe the organ system effects of α-blockers 45.5 Describe the clinical uses of α-blockers. 45.6. Describe the adverse effects of α-blockers. 45.7 classify the β-blockers based on receptor activity. 45.8. Enlist the β-blockers which are relatively safe in chronic stable heart failure. 45.9 Enlist the β-blockers which are relatively safe in asthmatic patients.

			45.10 Describe the pharmacokinetics of propranolol. 45.11 Describe the mechanism of action of β-blockers. 45.12 Describe the clinical uses of β-blockers. 45.13 Describe the adverse effects of β-blockers. 45.14 Describe the limitations of beta-blockers in patients with Diabetes Mellitus, Hyperlipidemias, Bronchial Asthma and peripheral arterial disease.
--	--	--	--

46.	Anti asthmatic drugs	1	46.1 Discuss types, MOA, uses and S/E of anti asthmatics (Short and long acting beta2 agonists 46.2 Discuss types, MOA, uses and S/E of Antimuscarinics, leukotriene inhibitors and xanthines
-----	----------------------	---	---

Community Dentistry

47.	Orientation to Community Dentistry	1hr	47.1 Define the scope and importance of community dentistry in improving public health. 47.2 Recognize the role of a dentist in community oral health initiatives. 47.3 Describe the association between community dentistry and public 47.4 Assess common challenges faced in delivering community dental services.
48.	Principles of Public Health	1hr	48.1 Define and explain the principles of public health 48.2 Identify and explain key principles of public health to dental care. 48.3 Describe how social, economic, and environmental factors affect oral health. 48.4 Compare different public health approaches to disease prevention and health promotion. 48.5 Discuss the role of public health in planning community-based dental care programs.

49.	Concepts of Health and Disease Prevention	4 hrs	49.1 Define health. 49.2 Define and identify the different types of changing concepts of health. 49.3 Explain the holistic concept of health. 49.4 Define and describe the dimensions of health. 49.5 Define the determinants of health. 49.6 Describe how these health determinants affect oral health. 49.7 Define and describe concepts of wellbeing. 49.8 Describe the indicators of health. 49.9 Define healthcare and levels of healthcare. 49.10 Discuss global health goals (MDG's and SDG's).
			49.11 Define and describe the concept of causation. 49.12 Define and describe the concept of disease, the Natural history of the disease. 49.13 Organize and explain the changing pattern of disease, community diagnosis and treatment. 49.14 Define and explain concepts of control. 49.15 Define the concept of prevention. 49.16 Identify the level of prevention and disease process. 49.17 Describe mode of prevention. 49.18 Describe preventive strategies in nutrition for improving community oral health outcomes.
50.	Health Promotion	3hrs	50.1 Explain health promotion 50.2 Discuss methods of public awareness. 50.3 Trace the historical evolution of health promotion 50.4 Recognize key milestones and shifts in health promotion strategies

51.	Health Education and oral Health education	5 hrs	51.1 Define health education. 51.2 Explain the principles of health education 51.3 Discuss the domains and nature of learning 51.4 Discuss the different approaches in dental health education 51.5 Describe different health education theories and models. 51.6 Discuss the methods of health education. 51.7 Enlist types of communication and barriers faces during communication in dental education.
-----	--	-------	---

LAB WORK

Pharmacology

52.	Lab protocols	1	52.1 Describe the general protocols for working safely and efficiently in lab. 52.2 Describe biosafety procedures and precautions taken in labs.
53.	Solutions dextrose,	2	53.1 Identify the ingredients of 5% dextrose solution and normal saline. 53.2 Prepare and dispense 50ml of 5% dextrose solution and normal saline. 53.3 Describe its uses.
54.	Rabbit eye experiments	2	54.1 Perform and observe the effects of parasympathetic / parasympatholytic drug effects on rabbit's eye. 54.2 Perform and observe the effects of sympathomimetic drug effects on rabbit's eye.

General Pathology

55.	Gram staining	2	55.1 Perform gram staining. 55.2 Interpret the results of gram staining.
56.	Culture media	2	56.1 Identify different types of culture media.
57.	Coagulative necrosis		57.1 Identify the slide of coagulative necrosis under the microscope.
58.	Pathological calcification		58.1 Identify the slide of pathological calcification under the microscope.

59.	Hyperplasia		59.1 Identify the slide of hyperplasia under the microscope.
Community Dentistry			
60.	Delivery of health education.	4 hrs	60.1 Deliver health education regarding general self-care advice, and for maintenance of oral health on simulated patients 60.2 Demonstrate effective interpersonal communication techniques (verbal, non-verbal, motivational interviewing basics). 60.3 Design Information, Education, and Communication Materials like posters, leaflets, infographics on health education
Science of Dental Materials			
61.	Introduction to instruments that are used in dental materials laboratory	1	62.1 Identify • Wax knife • Wax carver • Plaster knife • Rubber Bowl (hard & soft) • Mixing spatula (For Plaster) • Mixing spatula (For Alginate) • Cement Spatula • Glass Slab • Dental Flask with Press • Oil Painting Brush • Plain Line Articulator • Round Pliers • Flat Pliers • Cutting Pliers (wire cutter) • Ruler • Spirit Lamp • Ceramic Cup with lid for acrylic mixing • Impression Trays (Plastic & Metal) • Glass Beaker
Theme 2: Health and Oral Well Being			
S.No	Topic	Hours	Learning objectives
Community Dentistry			

62.	Introduction to Epidemiology	1hr	62.1 Define epidemiology. 62.2 Describe uses of epidemiology. 62.3 Classify epidemiological study designs
63.	Measurements of epidemiology	1hr	63.1 Discuss the measurements in epidemiology. 63.2 Differentiate between rate, ratio and proportion. 63.3 Differentiate between incidence and prevalence.
64.	Descriptive Study	2hrs	64.1 Explain the characteristics of a descriptive study and its role in oral health research. 64.2 Identify the strengths and limitations of descriptive studies. 64.3 Interpret findings from descriptive studies in a population 64.4 Discuss the features of case report and case series.
65.	Cross-sectional study design	1hr	65.1 Differentiate between descriptive and analytical study design. 65.2 Discuss the distinct features of cross-sectional study. 65.3 Discuss the steps in a cross-sectional study. Discuss the strengths and weaknesses of cross-sectional studies.
66.	Case control study design	2 hrs	66.1 Discuss the distinct features of case-control study design. 66.2 Discuss the steps in a case-control study design. 66.3 Define matching and its concept in selection of cases and control. 66.4 Discuss the types of bias in a case-control study. 66.5 Discuss the strength and weaknesses of case-control studies. 66.6 Discuss the concept of confounding factor. Calculate odds ratio for a given 2×2 table.

67.	Cohort study design	2 hrs	67.1 Discuss the distinct features of cohort study design. 67.2 Discuss the steps in a cohort study design. 67.3 Differentiate the types of cohort studies. 67.4 Differentiate between case-control and cohort study design. 67.5 Discuss the types of bias in a cohort study. 67.6 Discuss the strength and weaknesses of analytical studies. 67.7 Differentiate between relative risk and attributable risk.
68.	Experimental studies	2 hrs	68.1 Classify experimental studies. 68.2 Define Randomized controlled trial (RCT). 68.3 Discuss the importance of randomization. 68.4 Discuss the steps carried out to conduct an RCT. 68.5 Explain types of blinding. 68.6 Discuss the strengths and weaknesses of a RCT. 68.7 Discuss the bias and ethical considerations in a RCT 68.8 Discuss non-randomized control trials.

69.	Evidence Based Dentistry	1hr	69.1 Define evidence-based dentistry. 69.2 Discuss the importance of evidence-based dentistry in making clinical decisions. 69.3 Describe the Stages of evidence-based dentistry. 69.4 Explain the hierarchy of evidence pyramid.
Science of Dental Materials			

70.	Introduction, Selection & Evaluation of dental materials	2 hrs	70.1 Define the science of dental materials. 70.2 Classify dental materials. 70.3 Describe preventive dental materials. 70.4 Describe Auxiliary Dental Materials. 70.5 Describe Restorative Dental Materials. 70.6 Discuss the criteria for dental material selection and evaluation.
71.	Introduction to the Properties used to Characterize Materials	1 hr	71.1 Discuss the following:- • Properties during storage • Properties during setting/manipulation 71.2 Properties of the set material
72.	Mechanical properties Stress strain graph	2 hrs	72. 1 Describe various properties that are manifested in stress strain graph
73.	Impact strength and fracture toughness	1 hr	73.1 Define impact strength and fracture toughness 73.2 Explain impact strength, fracture toughness and their significance in dental materials 73.3 Explain the test used to evaluate impact strength of dental materials

74.	Wear	1 hr	74.1 Discuss the following terms:- • Abrasion • Attrition 74.2 Discuss Erosion
75.	Hardness	1 hr	75.1 Define hardness of dental materials. 75.2 Discuss various tests used to evaluate the hardness of dental materials.
76.	Viscoelasticity	1 hr	76.1 Define & Discuss the following:- • Elasticity and viscoelasticity • Models used to represent elastic, plastic, viscoelastic materials 76.2 Discuss Creep
77.	Rheological properties of materials	1hr	77.1 Define the following terms:- • Shear stress • Shear rate 77.2 Discuss the following:- • Newtonian fluids • Dilatant

			• Pseudoplastic • Viscosity • Flow • Mixing time • Working time • Setting time
78.	Thermal properties of materials	1hr	78.1 Discuss • Thermal conductivity • Thermal diffusivity • Exothermic Reactions
79.	Adhesion	1	79.1 Discuss • Types of Adhesion a. Factors Affecting Adhesion
80.	Miscellaneous physical properties	1	80.1 Discuss • Dimensional changes • Density • Color

81.	Chemical Properties	1	81.1 Discuss • Solubility • Leaching of constituents • Tarnish and corrosion
82.	Biological Properties	1	82.1 Define biocompatibility, bioinert and bioactive 82.2 Enlist factors affecting biocompatibility of materials 82.3 Differentiate between allergy and toxicity 82.4 Differentiate between carcinogenic and mutagenic 82.5 Identify materials in dentistry which have hazardous ingredients 82.6 Enlist different tests used to evaluate biocompatibility
83.	Synthetic Polymers	1	83.1 Define • Monomer • Polymer • Polymerization 83.2 Classify Polymerization 83.3 Describe various steps of Addition polymerization 83.4 Discuss Factors affecting properties of resulting polymer) 83.5 Describe Chain branching or crosslinking (Factors affecting properties of resulting polymer) 83.6 Describe Condensation polymerization 83.7 Differentiate between thermosetting and thermoplastic polymers

84.	Structure and properties of synthetic polymers	1	84.1 Discuss physical changes occurring during polymerization • Phase changes • Temperature changes • Dimensional changes • Factors which control properties of polymers • Glass transition temperature • Softening temperature
			84.2 Discuss • Methods of fabricating polymers • Dough moulding • Injection moulding • Thermoplastic polymers
			84.3 Enlist advantages and disadvantages of synthetic polymers

Junior Operative (Operative Dentistry and Endodontics)			
Introduction	1	85.1	Discuss operative dentistry and its historical background.
		85.2	Discuss the indications, considerations, dynamics
		85.3	Discuss the future prospects in operative dentistry.
		85.4	Discuss about endodontics.

Isolation	3	86.1	Define isolation in operative procedures and explain its rationale in terms of moisture control, cross-infection prevention, operator efficiency and patient safety.
		86.2	Discuss different isolation methods for operative procedures.
		86.3	Describe the components, indications and contraindications of commonly used isolation methods: rubber dam, cotton rolls, saliva ejectors and high-volume suction, gingival retraction chords.
		86.4	Explain the effects of inadequate isolation on operative procedures with specific reference to rubber dam its placement in maxillary and mandibular teeth via direct and indirect method.
Introduction to equipment and instruments used in operative procedures	2	87.1	Identify the equipment used in a dental operatory.
		87.2	Identify hand instruments used in restorative procedures.
		87.3	Identify rotary cutting instruments used in restorative procedures.
		87.4	Identify different parts of the dental chair.
		87.5	Demonstrate how to operate the dental chair.
Junior Prosthodontics			

88.	Deteriorating adult dentition	1hr	88.1	Discuss the causes of deteriorating dentition.
			88.2	Discuss the sequelae of tooth loss.
			88.3	Define the partially dentate and complete edentulous conditions.
89.	Introduction	1hr	89.1	Define Prosthodontics.
			89.2	Define Pre- Clinical Prosthodontics.
			89.3	Discuss branches of Prosthodontics.
			89.4	Explain the choice of treatment options according to patient-specific needs

90.	Complete Dentures	1hr	90.1	Define Complete Denture.
			90.2	Discuss its role in rehabilitation of edentulous patients.
			90.3	Enlist the parts and surfaces of complete dentures.
			90.4	Enlist the fabrication steps of complete dentures.
Lab work Dental Materials				
91.	Wire bending exercise	3hrs	91.1	Perform stainless steel wire bending according to the alphabetical shapes of A, B, F, G, S and K.
Theme 3: Foundations of Pre-Clinical Skills				
S.No	Topic	Hours	Learning objectives	
Oral Medicine				
92.	Approach to patient management	1hr	92.1	Discuss the approach to patient management in dentistry.
			92.2	Describe the overall process of patient management with a brief explanation of each component, i.e., history, examination, laboratory investigation, imaging, diagnosis, treatment plan and counselling.
Science of Dental Materials				

93.	Impression material requirements	1	93.1	Define dental impression.
			93.2	Describe significance of impression.
			93.3	Discuss ideal requirements of dental impression materials.
			93.4	Identify various types of impression trays
			93.5	Explain the uses of different impression trays
			93.6	Describe various impression making techniques
94.	Dental impression	1	94.1	Classify impression materials on the basis of

	materials classification		• Elasticity/rigidity • Viscosity • Setting reaction • Uses • Applied stress
95.	Non-elastic impression materials - Impression Compound	1	95.1 Describe the composition of impression Compound. 95.2 Describe the manipulation of impression Compound 95.3 Describe the setting reaction of impression Compound 95.4 Describe the properties of impression Compound
			95.5 Describe the application of impression Compound
			95.6 Describe the advantages and disadvantages of impression Compound
96.	Non-elastic impression materials - Zinc Oxide eugenol Impression	1	96.1 Describe the composition of Zinc Oxide eugenol Impression material. 96.2 Describe the manipulation of Zinc Oxide eugenol Impression material. 96.3 Describe the setting reaction of Zinc Oxide eugenol Impression material. 96.4 Describe the properties of Zinc Oxide eugenol Impression material.
			96.5 Describe the application of Zinc Oxide eugenol Impression material.
			96.6 Describe the advantages and disadvantages of Zinc Oxide eugenol Impression material.
97.	Elastic impression materials - Hydrocolloids - Agar	1	97.1 Describe hydrocolloid. 97.2 Describe the composition of Agar.
			97.3 Describe the manipulation of Agar. 97.4 Describe the setting reaction of Agar. 97.5 Describe the properties of Agar.

			97.6	Describe the application of Agar.
			97.7	Describe the advantages and disadvantages of Agar.
98.	Elastic impression materials - Hydrocolloids - Alginate	2	98.1	Describe the composition of Alginate.
			98.2	Describe the manipulation of Alginate.
			98.3	Describe the setting reaction of Alginate.
			98.4	Describe the properties of Alginate.
			98.5	Describe the application of Alginate.
			98.6	Describe the advantages and disadvantages of Alginate.
99.	Synthetic elastomers - Polysulphides	1	99.1	Discuss synthetic elastomers.
			99.2	Describe the composition of Polysulphides.
			99.3	Describe the manipulation of Polysulphides.
			99.4	Describe the setting reaction of Polysulphides.
			99.5	Describe the properties of Polysulphides.
			99.6	Describe the application of Polysulphides.
			99.7	Describe the advantages and disadvantages of Polysulphides.
100.	Synthetic elastomers - Condensation silicones	1	100.1	Describe the composition of Condensation silicones.
			100.2	Describe the manipulation of Condensation silicones.
			100.3	Describe the setting reaction of Condensation silicones.
			100.4	Describe the properties of Condensation silicones.
			100.5	Describe the application of Condensation silicones.
			100.6	Describe the advantages and disadvantages of Condensation silicones

101.	Synthetic elastomers - Addition silicones	1	101.1	Describe the composition of Addition silicones.
			101.2	Describe the manipulation of Addition silicones.
			101.3	Describe the setting reaction of Addition silicones.
			101.4	Describe the properties of Addition silicones.
			101.5	Describe the application of Addition silicones.
			101.6	Describe the advantages and disadvantages of Addition silicones.
102.	Synthetic elastomers - Polyether	1	102.1	Describe the composition of Polyether.
			102.2	Describe the manipulation of Polyether.
			102.3	Describe the setting reaction of Polyether.
			102.4	Describe the properties of Polyether.
			102.5	Describe the application of Polyether.
			102.6	Describe the advantages and disadvantages of Polyether.
103.	Clinical considerations of dental materials regarding cross infection control	1	103.1	Define cross-infection
			103.2	Define disinfection and sterilization
			103.3	Discuss various methods of disinfection and sterilization used in dentistry.
Lab work of Dental Materials				

104.	Manipulation of Impression materials	8	104.1 Manipulations of various impression materials as per practical logbook (8 hours). 104.2 Perform Impression taking with alginate and model pouring with gypsum products (4 hours). 104.3 Perform Manipulation of impression compound (2 hours). 104.4 Demonstrate manipulation of zinc oxide eugenol and silicone impression materials (2 hours).
------	--------------------------------------	---	--

Junior Prosthodontics LGF			
105.	Dental Impressions and tray selection	1hr	104.1 Define a dental impression and related key terms. (impression material, impression tray) 104.2 Explain the principles of impression making (accuracy, retention, stability, support and extension) 104.3 Classify impression trays based on materials, design and clinical use. 104.4 Identify clinical situations requiring special tray. 104.5 Explain the significance of choosing an appropriate impression tray in fabrication of CD.

106.	Denture bearing areas	2hrs	105.1 List the major anatomical landmarks of the maxillary and mandibular arches relevant to complete dentures. (STRESS BEARING AREAS, LIMITING AREAS AND RELIEF AREAS). 105.2 Define stress bearing area, relief area and limiting area. 105.3 Describe the functional significance of maxillary landmarks (e.g., hamular notch, incisive papilla, vibrating line) in denture extension and retention. 105.4 Describe the functional significance of mandibular landmarks (e.g., retromolar pad, buccal shelf, lingual flange area) in denture support and stability
107.	Impressions for complete denture	2hrs	107.1 Define initial (primary) and final (secondary) impressions and their purpose in complete denture fabrication. 107.2 Discuss the clinical steps involved in making an initial impression and the rationale behind each step. 107.3 Discuss how initial impressions are used to fabricate custom trays. 107.4 Discuss the clinical steps involved in making a final impression and the rationale behind each step. 107.5 Explain the importance of final impression

2nd Year BDS Assessment Plan

Theory Paper	Modules	Theory Marks	Internal Assessment Theory Marks (10%)	OSPE/OSCE Marks	Internal Assessment OSPE/OSPE Marks (10%)	Total Marks
Paper D	Foundation -2	120	13	120	13	266

MCQs Distribution

SNo	Subject	Total MCQs
1	Chemistry of Dental Materials	30
2	Physiology	02
3	General Pathology & Microbiology	14
4	Pharmacology	22
5	Oral Pathology	01
6	Community & Preventive Dentistry	27
7	Pre-Clinical Operative Dentistry	06
8	Pre-Clinical Prosthodontics	08
9	General Medicine	01
10	Oral Medicine	01
11	PRIME	08
Total		120

OSPE Distribution

SNo	Subject	OSPE/OSCE	Viva Stations
1	Chemistry of Dental Materials	03	01
2	Pharmacology	01	01
3	General Pathology & Microbiology	01	01
4	Community & Preventive Dentistry	02	
5	Pre-Clinical Operative Dentistry	02	-
6	Pre-Clinical Prosthodontics	02	-
7	PRIME	01	-
Total		15	

Module 2

**INFLAMMATION, INFECTION &
AUXILIARY DENTAL MATERIALS**

2nd Year BDS

Table 1: Themes

S.NO	Theme	Duration in Weeks/hours
1.	Pain and fever	1.5 weeks (54 hours)
2.	Inflammation of Oral Tissues	1.5 weeks (52 hours)
3.	Ulcers, Vesicle and Discoloration	2.5 weeks (80 hours)
4.	Lymphadenopathy and generalized malaise	0.5 week (14 hours)
	Total	6 weeks (199 hours)

Teaching Hours Allocation

Table 2: Hours allocation for different subjects

S. No	Subject	Hours
1.	Physiology	1
2.	General Pathology	46
3.	Pharmacology	34
4.	Community & Preventive dentistry	28
5.	Science of Dental Materials	46
6.	Periodontology	09
7.	Oral Pathology	16
8.	Oral Medicine	13
9.	Pre-Clinical Operative Dentistry	03
10.	Pre-Clinical Prosthodontics	03
	Total	199

Learning Outcomes

By the end of this Module, 2nd year BDS students will be able to:

1. Define inflammation, describe cellular and vascular events during inflammation, and differentiate between acute and chronic inflammation.
2. Discuss the various cell and plasma-derived mediators and the role they play in inflammation.
3. Explain the role of the immune system in inflammation.
4. Describe different types of hypersensitivity reactions and their clinical significance.
5. Identify different microbial agents through various lab techniques including staining, culture, and biochemical tests.
6. Discuss the pathogenesis and histo-pathological features of different types of infections including bacteria, virus & fungi, and their oral manifestations
7. Discuss the initiation and progression of dental caries, etiological factors, classification, and diagnosis.
8. Distinguish between reversible and irreversible pulpitis based on clinical and histological features
9. Classify and discuss different periodontal diseases.
10. Classify and describe the mechanism of action, uses, adverse effects, indications, and contraindications of NSAIDs and COX inhibitor
11. Classify and describe the mechanism of action, uses, adverse effects, indications, and contraindications of antibiotics, anti-mycobacterial antivirals, and antifungals.
12. Classify and describe the mechanism of action, uses, adverse effects, indications, and contraindications of corticosteroids.
13. Classify and describe the mechanism of action, adverse effects, uses, indications, and contraindications of DMARDs.
14. Enlist the ideal properties of dental liners and bases used in treating inflamed pulpal tissues and their application.
15. Discuss various auxiliary materials used during the fabrication of prosthesis.
16. Explain the different concepts of Biostatistics
17. Describe screening of diseases
18. Describe prevention of infection and methods of sterilization and disinfection
19. Discuss waste disposal methods.
20. Describe the epidemiology of Dental caries with risk assessment
Describe the epidemiology and prevention of periodontal disease

21. Describe the epidemiology of Dental caries with risk assessment
22. Describe the epidemiology and prevention of periodontal disease
23. Define and explain factors related to common oral diseases and their prevention.
24. Explain the infection control in Prosthodontics
25. Fabrication of temporary denture bases.
26. Discuss the role of commonly used medicaments in the prevention and treatment of oral infections.
27. Write prescriptions for various oral and dental infectious disease.

Table 1: Learning Objectives Theme Wise

Theme 1: Pain and Fever			
S. No	Topic	Hours	Learning Objectives
Physiology			
1.	Normal Host Defense	1 hour	1.1. Describe Specific and nonspecific defense (Innate and acquired immunity. Active & passive Immunity). 1.2. Define and discuss Antigen, antibodies and complement with significance. 1.3. Discuss the role of nutrition in immunity.
General pathology			
2.	Acute Inflammation	1 hour	2.1 Define acute inflammation and its causes. 2.2 Describe the cellular events of inflammation particularly process of chemotaxis, opsonization and phagocytosis. 2.3 Describe the vascular events and morphological changes related to inflammation. 2.4 Discuss the outcomes of acute inflammation. 2.5 Discuss the systemic manifestation of inflammation.

3.	Mediators (Cell Derived and Plasma Derived)	2 hours	3.1 Describe the important chemical mediators (cell & plasma derive) of inflammation. 3.2 Describe the pathway particularly the complement & coagulation pathways, Arachidonic Acid metabolism/ Derivatives.
			3.3 Describe the mechanism for development of fever, with reference to exogenous and endogenous pyrogens.
4.	Major Histocompatibility Complex	1 hour	4.1 Describe MHC Class 1 and MHC Class 2. 4.2 Describe Transplants and transplant rejection.
5.	Hypersensitivity	1 hour	5.1 Define Hypersensitivity reactions. 5.2 Describe its Type and examples. 5.3 Enlist common food allergies and intolerances.
6.	Immunodeficiency and autoimmunity disorders	1 hour	6.1 Define and Classify immunodeficiency disorders. 6.2 Define Autoimmunity & self-tolerance. 6.3 Describe the role of nutrition in autoimmune disorders.
7.	Streptococcus	2 hours	7.1 Discuss each bacterium in detail in reference to, Spectrum of diseases, important properties, pathogenesis, clinical features, lab diagnosis, prevention, and treatment.
8.	Introduction to Parasitology	1 hour	8.1 Define and classify parasites in detail. 8.2 Describe different types of Hosts.

9.	Malaria	1.5 hour	9.1 Discuss Malaria in detail in reference to: Spectrum of diseases, important properties, pathogenesis, clinical features, lab diagnosis, prevention, and treatment. 9.2 Discuss the nutritional management of patients with malaria.
10.	Dengue	1.5 hour	10.1 Discuss dengue in detail in reference to: Spectrum of diseases, important properties, pathogenesis, clinical features, lab diagnosis, prevention, and treatment. 10.2 Discuss the nutritional management of patients with dengue.
Pharmacology			
11.	Anti-inflammatory drugs	2 hours	11.1 Classify anti-inflammatory drugs. 11.2 Describe the role of DMARDs and glucocorticoids as anti-inflammatory agents. 11.3 Classify DMARDs 11.4 Discuss uses, adverse effects and MOA of DMARDs. 11.5 Classify anti-inflammatory drugs. 11.6 Describe the role of DMARDs and glucocorticoids as anti-inflammatory agents. 11.7 Discuss the drug nutrient interaction.

12.	NSAIDs	1 hours	12.1 Classify, describe clinical uses and the adverse effects NSAIDs. 12.2 Differentiate between non-selective COX inhibitors and selective COX-2 inhibitors based on mechanism of action. 12.3 Enlist the prototype non-selective COX inhibitor. 12.4 Describe the mechanism of action of aspirin. 12.5 Discuss Aspirin poisoning and its management. 12.6 Give the dose of Aspirin as anti-platelet, analgesic/antipyretic, and as anti-inflammatory drug. 12.7 Describe the pharmacokinetics of Diclofenac, Ibuprofen, Indomethacin, Mefenamic acid and Piroxicam. 12.8 Relate pharmacokinetics and pharmacodynamics of NSAIDs to their clinical applications.
-----	--------	------------	---

			15.6 Enlist the drugs used for migraine.
16.	Opioids	1 hours	16.1 Identify common opioids used in dentistry. 16.2 Classify opioids. 16.3 Explain opioid mechanisms of action in pain relief. 16.4 Recognize adverse effects like sedation, constipation, and addiction risk. 16.5 Discuss safe prescribing practices, including dosage and duration. 16.6 Identify alternatives to opioids (e.g., NSAIDs, acetaminophen). 16.7 Discuss safe opioid use, storage, and disposal with patients. 16.8 Recognize signs of opioid misuse or

			dependence. 16.9 Monitor and adjust opioid use to minimize risks.
Community & Preventive Dentistry			
17.	Prevention of Infection	1.5 hour	17.1 Describe the Dynamics of Disease Transmission. 17.2 Explain Different Modes of Disease Transmission. 17.3 Describe Different Stages of Infectious Diseases. 17.4 Explain the infectious diseases terms (Epidemic, endemic, pandemic). 17.5 Describe the role of nutrition in strengthening immune system and infection prevention.
18.	Screening of Diseases	2 hours	18.1 Define Screening. 18.2 Differentiate between screening and diagnostic test. 18.3 Distinguish between the types of screening. 18.4 Describe the uses of screening. 18.5 Outline the principles of screening. 18.6 Describe The Criteria for Screening Tests. 18.7 Differentiate between specificity and sensitivity of screening tests. 18.8 Evaluate the Screening Tests. 18.9 Describe the types of biases in screening.
19.	Introduction to Biostatistics	1 hour	19.1 Define Biostatistics. 19.2 Define description statistics and inferential statistics 19.3 Classify types of data 19.4 Classify types of variables 19.5 Differentiate between data and variable 19.6 List the uses of biostatistics in community dentistry

20.	Descriptive Statistics	2 hour	20.1 Explain measures of central tendency (mean, median and mode), and measures of dispersion (range, mean deviation, variance, standard deviation) 20.2 Explain normal distribution curve.
21.	Inferential statistics	1 hour	21.1 Briefly discuss correlation and regression models. 21.2 Explain standard error 21.3 Explain rules of probability Confidence level, Confidence interval and p value 21.4 Briefly discuss Chi Square, T test and Anova. 21.5 Define hypothesis and discuss its types. 21.6 Differentiate between types of errors in hypothesis. 21.7
22.	Data Presentation	1 hour	22.1 Discuss types of data. 22.2 State the different methods to depict quantitative and qualitative data. 22.3 Describe pie chart, bar chart and histogram.
23.	Sampling Technique	2 hours	23.1 Define sampling technique. 23.2 Describe sampling techniques namely simple random, systematic, stratified, cluster, multistage, quota, snowball, convenience, consecutive, purposive. 23.3 Classify sampling techniques. 23.4 Differentiate between probability and non-probability techniques.

Science of Dental Material

24.	Composition, setting and manipulation of gypsum products	2 hours	24.1 Discuss • Composition of gypsum products • Setting Reaction of gypsum in dentistry • Manipulation and Setting characteristics • Water/Powder ratio • Gauging water • Fluidity tests
			• Setting process • Initial and final setting time • Setting expansion • Factors affecting setting time
25.	Properties and applications of gypsum products	1 hour	25.1 Describe • Properties of set material • Applications • Advantages and Disadvantages • Differentiate between alpha and beta hemihydrate
26.	Introduction to dental waxes	1 hour	26.1 Define wax and wax pattern 26.2 Explain role of blending various waxes for dental applications 26.3 Explain various methods of softening dental waxes 26.4 Describe Lost wax technique Direct and indirect wax patterns. 26.5 Discuss ideal requirements of wax pattern materials 26.6 Discuss composition of waxes 26.7 Classify dental waxes 26.8 Discuss applications of various dental waxes

27.	Properties and applications of dental waxes	1 hour	27.1 Discuss • Thermal properties • Mechanical properties 27.2 Describe 27.2.1 Denture modelling waxes 27.2.2 Inlay waxes 27.3 Differentiate between direct and indirect techniques
Oral Pathology			
28.	Periapical Abscess	1 hour	28.1 Describe periapical abscess its clinical features, histopathology, and complications. 28.2 Describe progression of pulpitis to periapical abscess.
29.	Spread of Infection	1 hour	29.1 Identify the facial planes involved in the spread of infections. 29.2 Describe routes of spread of infection. 29.3 Define cellulitis and describe its complications. 29.4 Differentiate between abscess and cellulitis. 29.5 Discuss the nutritional management of patients with severe facial space

			infection.
Oral Medicine			
30.	Orofacial pain	1 hour	30.1 Enumerate conditions that can cause facial pain 30.2 Briefly discuss referred and projected pain. 30.3 Define important neurological terms such as allogenic, allodynia, analgesia, anesthesia, dysesthesia, hyperalgesia, neuropathic pain
Junior Operative (Operative Dentistry and Endodontics)			
31.	Hypersensitivity and pain	1 hour	31.1 Discuss hypersensitivity and pulpal pain.
Junior Prosthodontics			
32.	Basics of infection control in prosthodontics	1hr	32.1 Discuss infection control in prosthodontics. 32.2 Identify Potential Hazards in Prosthodontic department. 32.3 Describe Standard Precautions. 32.4 Enlist steps to disinfect impressions, laboratory tools, dental chairs, countertops, and other surfaces in the prosthodontics ward
Lab Work			

Science of Dental Materials

33.	Fabrication of model/ cast using gypsum products	2 hours	33.1 Manipulate hard plaster and soft plaster for pouring into impression/silicon mold. 33.2 Perform mixing of soft plaster and make base of the model.
34.	Making of C-clasp	4 hours	34.1 Perform making of C-clasp over the model using stainless steel wire.
35.	Manipulation of Modelling wax	3 hours	35.1 Perform making of wax pattern for partial denture.
General Pathology			
36.	Bacterial motility	1 hour	36.1 Identify motile bacteria.
37.	Plasmodium	2 hours	37.1 Identify the different species of Plasmodium.
38.	Acute inflammation	2 hours	38.1 Identify the cells involved in acute inflammation under the microscope.
THEME 2: INFLAMMATION OF ORAL TISSUES			
Oral Pathology			
39.	Dental Caries	2 hours	39.1 Discuss in detail the role of Dental Plaque, Microorganisms, Carbohydrates, and other variables in the development of dental caries. 39.2 Classify dental caries. 39.3 Describe the enamel and dentin caries. 39.4 Explain the clinical and histopathological features of enamel and dentin caries.
40.	Pulpitis	1 hour	40.1 Describe and distinguish between reversible and irreversible pulpitis. 40.2 Discuss pulp necrosis.

41.	Periapical Periodontitis	1 hour	41.1 Define periapical Periodontitis, its clinical features and histopathology. 41.2 Describe the complications of acute and chronic periapical periodontitis.
Periodontology			
42.	Classification of periodontal diseases	2 hours	42.1 Recall the Classification of Periodontal Diseases and Conditions from the 1999 International Workshop for a Classification of Periodontal Diseases and Conditions. 42.2 Describe the types of Gingival Diseases. 42.3 Differentiate between Chronic and Aggressive forms of periodontitis with respect to history, clinical and radiographic findings. 42.4 Identify Periodontitis as a Manifestation of Systemic Diseases. 42.5 Enlist types of abscesses of periodontium. 42.6 Classify Periodontitis Associated with Endodontic Lesions. 42.7 Explain Developmental or Acquired Deformities and Conditions.
43.	Gingival inflammation and pathogenesis	3 hours	43.1 Define a Biofilm. 43.2 Describe dental plaque as biofilm. 43.3 Appraise the clinical significance of Dental Plaque in the initiation of gingivitis. 43.4 Explain salient features of the initial, early, established, advanced lesion of gingivitis. 43.5 Classify different types of Gingivitis. 43.6 Describe gingival bleeding on probing.

44.	Acute Gingival conditions & Abscesses of periodontium	4 hours	44.1 Explain the clinical features, pathogens involved, diagnosis, treatment, and complications of peri-coronitis. 44.2 Explain the clinical features, microbiology involved, diagnosis and treatment of Primary Herpetic Gingivostomatitis. 44.3 Explain the etiology, clinical features, pathogens involved, diagnosis and treatment of Necrotizing ulcerative Gingivitis. 44.4 Explain etiology, clinical features, pathogen involved, diagnosis and treatment of Necrotizing ulcerative periodontitis. 44.5 Identify and distinguish between gingival, periapical, and peri-coronal abscess. 44.6 Describe the effect of compromised nutritional well-being on disorders of oral mucosa and periodontium
Community & Preventive Dentistry			
46.	Dental Caries	1 hour	46.1 Define and classify dental caries. 46.2 Explain Theories of Dental Carries
47.	Epidemiology of Dental caries	1 hour	47.1 Discuss Epidemiological factors Of Dental Caries.

48.	Role of saliva and Diet in dental Caries	2 hours	48.1 Explain the Role of Saliva and diet In Dental Caries. 48.2 Discuss Stephan curve. 48.3 Discuss various interventions in dietary practices to prevent dental caries. 48.4 Discuss factors affecting cariogenicity of food.
49.	Caries Risk Assessment	1.5 hours	49.1 Define Caries Risk Assessment. 49.2 Enlist Factors Relevant Assessment of Caries Risk. Enlist oral nutrition risk assessment tools.
50.	Cariogram	1 hour	50.1 Discuss components and uses of cariogram.
51.	Caries Activity Tests	1 hour	51.1 Classify Caries Activity Tests. Explain Different Types of Caries Activity Tests.
52.	Epidemiology of periodontal diseases.	1 hour	52.1 Discuss the epidemiology of periodontal diseases. 52.2 Explain local and systemic factors for periodontal diseases. Discuss the chemical and mechanical plaque control.
53.	Prevention Of Periodontal Diseases	1 hour	53.1 Discuss the prevention of periodontal diseases. Discuss chemical and mechanical plaque control.

General Pathology			
54.	Sterilization and disinfection	1 hour	54.1 Define sterilization 54.2 Define disinfection 54.3 Discuss the various methods of sterilization and disinfection.
Pharmacology			
55.	Local anesthetics	1 hour	55.1 Explain mechanism of action of Local anesthetics 55.2 Differentiate types of local anesthetics (e.g., esters and amides) based on properties and applications. 55.3 Identify clinical indications for local anesthetic use in dental procedures. 55.4 Determine appropriate dosages and routes of administration for patients. 55.5 Recognize potential side effects and complications of local anesthetics.
56.	Antiseptics antimicrobials & Disinfectants	1 hour	56.1 Define common terms related to chemical and physical killing of microorganisms including antisepsis, decontamination, disinfection, Sanitization, sterilization. 56.2 Identify commonly used antiseptics (e.g., chlorhexidine) and antimicrobials (e.g., metronidazole). 56.3 Recognize their clinical indications (e.g., infections, periodontal disease) and prescribe its dosage. 56.4 Identify potential side effects and resistance risks. 56.5 Identify common disinfectants (e.g., alcohol, bleach, iodine). 56.6 Explain the role of disinfectants in clinical and laboratory settings 56.7 Explain proper dilution, application, and safety practices. Recognize microbial resistance and how to reduce it.
57.	Desensitizing agents	1 hour	57.1 Describe mechanism of action. 57.2 Describe different types of commonly used agents e.g, potassium nitrate, calcium phosphate, glut aldehyde, NaF Compounds, acidulated phosphate fluoride. Enlist indications and contraindications.

58.	Mouth rinses and mouth washes	1 hour	58.1 Enlist different types of Mouth rinses and mouthwashes. 58.2 Describe their mechanism of action. 58.3 Discuss their dosage and clinical indications for use. Discuss Adverse effects of mouth washes
59.	Dentifrices	1 hour	59.1 Define dentrifice. 59.2 Discuss the composition and ideal properties of dentifrices. 59.3 Discuss the pharmacological role of each component in oral health. Discuss recommendations for choosing appropriate dentifrices based on patient needs (e.g. caries risk, sensitivity, inflamed oral tissues, tooth whitening).

Science of Dental Materials

60.	Introduction to investment materials	1 hour	60.1 Define - Investment - Refractory die material
			60.2 Discuss ideal requirements of investments for alloy casting procedures
61.	Gypsum bonded and silica bonded investment material	2 hours	61.1 Discuss - Composition of gypsum bonded investments - Types of gypsum bonded investments - Silica - Inversion phenomena - Hygroscopic expansion - Setting reaction of gypsum bonded investments - Properties of gypsum bonded investments - Applications of gypsum bonded investments - Advantages/ disadvantages of gypsum bonded investments 61.2 Discuss - Composition of silica bonded investment material - Setting reaction of silica bonded investment material - Properties of silica bonded investment material - Applications of silica bonded investment material Advantages/ disadvantages of silica bonded

			investment material
62.	Phosphate bonded investment material	1 hour	62.1 Discuss • Composition of Phosphate bonded investment material • Setting reaction of Phosphate bonded investment material • Colloidal solution • Types of phosphate bonded investment of Phosphate bonded investment material • Applications of Phosphate bonded investment material Advantages and disadvantages of Phosphate bonded investment
			• Curing Investment • Sagging Investment • Casting Investment - Soldering Investment

Junior Operative (Operative Dentistry and Endodontics)

63.	Caries classification	1 hours	63.1 Define caries classification based on the location and activity. 63.2 Differentiate between affected and infected dentin. 63.3 Discuss the diagnosis of Dental Caries. 63.4 Differentiate between caries white spots and idiopathic white spots.
64.	Principles of cavity prep	1 hour	64.1 Discuss line angles, point angles, cavity walls and floors. 64.2 Describe the outline form and steps required to achieve it. 64.3 Discuss the resistance form and retention form and how both can be achieved. 64.4 Describe the convenience form. 64.5 Describe how to eliminate infected and softened dentin 64.6 Describe how to finish cavity walls. 64.7 Describe how to clean the cavity.

Junior Prosthodontics

65.	Dental cast	1hr	65.1 Define dental cast. 65.2 Discuss the parts of dental cast. 65.3 Explain different types of dental cast. 65.4 Discuss step by step pouring of impressions for fabricating dental cast.
-----	-------------	-----	---

Lab Work**Oral Pathology**

66.	Dental caries	2 hours	66.1 Interpret histopathological section of dental caries.
-----	---------------	---------	--

Community & Preventive Dentistry

67.	Brushing techniques	2 hours	67.1 Perform brushing techniques in skill lab on a given model.
68.	Flossing techniques	2 hours	68.1 Perform flossing techniques in skill lab.
69.	Disinfection and sterilization	2 hours	69.1 Describe the infection control procedure in a dental care setting. 69.2 Describe disinfection and sterilization in dental care setting.
70.	Waste segregation and disposal	2 hours	70.1 Describe the various types of waste in health care. 70.2 Categorize the biomedical waste according to the color-coding system. 70.3 Discuss the management of mercury spill.

Pharmacology

71.	Gingivitis	2 hours	71.1 Prescription writing for gingivitis, acute odontogenic infection (periapical abscess), periodontitis, Postoperative Pain, and Inflammation Following Tooth Extraction.
-----	------------	---------	---

General pathology

72.	Sterilization and disinfection	2 hours	72.1 Identify various means of sterilization and Disinfection 72.2 Recognize the methods to detect their efficacy
-----	--------------------------------	---------	--

Science of Dental Material

73.	Articulation	3	73.1 Perform articulation of waxed dental models using hinge/hanau articulator.
THEME 3: ULCERS, VESICLE AND DISCOLORATION			
General pathology			
74.	Staphylococci	1	74.1 Explain the pathogenesis of the bacterium. 74.2 Explain clinical features, lab diagnosis and prevention of bacteria.
75.	Spore forming gram positive rods	1	75.1 Enumerate spore forming GP rods 75.2 Describe the important properties, pathophysiology, clinical features, and lab diagnosis of spore forming GP rods
76.	Non spore forming gram positive rods	1	76.1 Enumerate non-spore forming GP rods 76.2 Describe the important properties, pathophysiology, clinical features and lab diagnosis of non-spore forming GP rods
77.	Treponema Pallidum	1	77.1 Explain the pathogenesis of the bacterium. 77.2 Explain clinical features, lab diagnosis and prevention of bacteria.
78.	Actinomycosis	1 hour	78.1 Explain the pathogenesis of the bacterium. 78.2 Explain clinical features, lab diagnosis and prevention of bacteria.
79.	Human Herpes virus Human papilloma virus, Ebstein barr virus.	1 hour	79.1 Explain the pathogenesis of the virus. 79.2 Explain clinical features, lab diagnosis and prevention of virus.
80.	Measles Mumps	1 hour	80.1 Discuss Spectrum of diseases, Important properties, Pathogenesis, Clinical features, Lab diagnosis, Prevention and treatment.
81.	Rubella Rabies	1 hour	81. 1 Discuss Spectrum of diseases, Important properties, Pathogenesis, Clinical features, Lab diagnosis, Prevention and treatment.
82.	HIV	1 hour	82.1 Discuss Spectrum of disease, Important properties, Pathogenesis, Clinical features, Lab diagnosis, Prevention and treatment.
83.	CMV	1 hour	83.1 Discuss Spectrum of disease, Important properties, Pathogenesis, Clinical features, Lab diagnosis, Prevention and treatment.

84.	Leshmania	1 hour	84.1 Discuss Spectrum of diseases, Important properties, Pathogenesis, Clinical features, Lab diagnosis, Prevention, and treatment.
85.	Toxoplasma	1 hour	85.1 Discuss Spectrum of diseases, Important properties, Pathogenesis, Clinical features, Lab diagnosis, Prevention, and treatment.
86.	Mycology	1 hour	86.1 Discuss the general characteristics, pathogenesis & lab diagnosis of fungi. 86.2 Discuss candida spp general characteristics, pathogenesis & lab diagnosis. Aspergillus, Mucor and Rhizopus
Pharmacology			
87.	Introduction to chemotherapeutics	1hour	87.1 Define basic terms like chemotherapy, antibiotic, antimicrobial, MIC, MBC, chemoprophylaxis, empirical therapy and post-antibiotic effect, bacteriostatic and bactericidal antimicrobials. 87.2 Explain advantages of drug combinations. 87.3 Describe various mechanisms of bacterial resistance against antibiotics. 87.4 Differentiate between concentration and time dependent killing with examples. 87.5 Classify antimicrobials on the basis of mechanism of action (MOA).

88.	Penicillin	1hours	88.1 Classify beta-lactam antibiotics. 88.2 Enlist narrow and broad-spectrum Penicillin. 88.3 Enlist anti-pseudomonal, anti-staphylococcal/ beta lactamase resistant Penicillin. 88.4 Enlist long- and short-acting Penicillin. 88.5Describe anti-bacterial spectrum of Penicillin. 88.6 Describe pharmacokinetics in respect of emphasis on route of administration and excretion of Penicillin. 88.7 Describe mechanism of action and resistance of Penicillin. 88.8Describe clinical uses of Penicillin. 88.9 Describe adverse effects of Penicillin. 88.10 Describe contraindications of Penicillin. 88.11 Describe principal mechanism of bacterial resistance to Penicillin. 88.12 Describe drug interactions of Penicillin.
			88.13 Apply formula for interconversion of milligrams and units of Penicillin G. 88.14 Relate pharmacokinetics and pharmacodynamics of Penicillin with their clinical applications / uses.

89.	Cephalosporins	1 hour	89.1 Classify Cephalosporins. 89.2 Discuss MOA and MOR of cephalosporins 89.3 Describe anti-bacterial spectrum of Cephalosporins. 89.4 Describe pharmacokinetics of Cephalosporins with special emphasis on route of administration and excretion. 89.5 Describe clinical uses of Cephalosporins. 89.6 Describe the adverse effects of Cephalosporins. 89.7 Describe drug interactions of Cephalosporins with Ethanol. 89.8 Describe the principal bacterial mechanism of resistance to Cephalosporins. 89.9 Relate pharmacokinetics and pharmacodynamics of Cephalosporin with their clinical applications / uses.
90.	Beta lactamase inhibitors, Monobactams & Carbapenem	1 hour	90.1 Enlist beta-lactamase inhibitors. 90.2 Explain the rationale for using beta lactamase inhibitors in combination with β-lactam antibiotics. 90.3 Describe the antibacterial spectrum of Monobactams and Carbapenem. 90.4 Describe the clinical uses of Monobactams and Carbapenem.
91.	Vancomycin, Fosfomycin, Bacitracin & Cycloserine	1 hour	91.1 Describe the MOA and resistance of Vancomycin. 91.2 Describe clinical uses of Vancomycin. 91.3 Describe the use of vancomycin in MRSA (Methicillin-resistant Staph aureus). 91.4 Describe adverse effects of Vancomycin 5. Describe "Red man/Red neck" syndrome. 91.5 Enlist clinical uses of Fosfomycin, Bacitracin & Cycloserine.

92.	Protein Synthesis Inhibitors & Tetracycline	1 hour	92.1 Classify bacterial protein synthesis inhibitors. 92.2 Classify Tetracyclines. 92.3 Describe anti-bacterial spectrum of Tetracyclines. 92.4 Describe the pharmacokinetics of Tetracycline with special emphasis on absorption of Tetracyclines. 92.5 Describe mechanism of action and resistance of Tetracyclines. 92.6 Describe the principal mechanism of resistance to Tetracyclines. 92.7 Describe clinical uses of Tetracyclines. 92.8 Describe adverse effects of Tetracyclines. 92.9 Describe the teratogenic effects of Tetracyclines. 92.10 Describe drug interactions of Tetracyclines. 92.11 Describe the adverse effect related to the use of outdated (expired) Tetracycline products. 92.12 Relate pharmacokinetics and pharmacodynamics of Tetracycline with their clinical applications.
93.	Aminoglycosides	1 hour	93.1 Enlist Aminoglycosides. 93.2 Describe anti-bacterial spectrum of Aminoglycosides. 93.3 Describe the pharmacokinetics of Aminoglycosides with special emphasis on route of administration, concentration-dependent killing, and post-antibiotic effect. 93.4 Describe mechanism of action of Aminoglycosides. 93.5 Describe the principal mechanism of resistance to Aminoglycosides.

			93.6 Describe clinical uses of Aminoglycosides. 93.7 Describe adverse effects of Aminoglycosides. 93.8 Describe the drug interactions of Aminoglycosides. 93.9 Relate pharmacokinetics and pharmacodynamics of Aminoglycosides with their clinical applications / uses.
94.	Macrolides	1 hour	94.1 Enlist Macrolides. 94.2 Describe anti-microbial spectrum of Macrolides. 94.3 Describe pharmacokinetics of Macrolides. 94.4 Describe the mechanism of action of Macrolides. 94.5 Describe the principal mechanism of resistance to Macrolides. 94.6 Describe clinical uses of Macrolides. 94.7 Describe adverse effects of Macrolides. 94.8 Describe drug interactions of Macrolides. 94.9 Differentiate the salient features of Erythromycin, Clarithromycin and Azithromycin in respect of dosing and clinical use. 94.10 Relate pharmacokinetics and pharmacodynamics of Macrolides with their clinical applications / uses.
95.	Linezolid and clindamycin	1 hour	95.1 Describe mechanism of action of Linezolid. 95.2 Describe clinical uses of Linezolid with special emphasis on methicillin-resistant staphylococci and vancomycin-resistant enterococci. 95.3 Describe mechanism of action of Clindamycin. 95.4 Enumerate clinical uses of Clindamycin. 95.5 Describe antibiotic-associated (pseudomembranous) colitis.

96.	Streptogramins and Chloramphenicol	1 hour	96.1 Enumerate Streptogramins. 96.2 Describe clinical use of Quinupristin-Dalfopristin in VRE (Vancomycin-resistant enterococci). 96.3 Describe anti-microbial spectrum and mechanism of action of Chloramphenicol. 96.4 Enlist clinical uses of Chloramphenicol and reason for obsoleting the systemic use. 96.5 Enlist adverse effects of Chloramphenicol.
97.	Quinolones	1 hour	97.1 Classify Quinolones. 97.2 Describe the pharmacokinetics of Fluroquinolones with special emphasis on half-life of Moxifloxacin. 97.3 Enlist respiratory Quinolones. 97.4 Describe anti-microbial spectrum of Fluoroquinolones. 97.5Describe mechanism of action and resistance of Fluoroquinolones. 97.6Describe clinical uses of Fluroquinolones. 97.7Describe adverse effects of Fluroquinolones. 97.8Describe drug interactions of Fluroquinolones.
			97.9Relate pharmacokinetics and pharmacodynamics of Fluoroquinolones with their clinical applications / use.
98.	Sulfonamides	1 hour	98.1 Classify Sulfonamides. 98.2 Describe anti-microbial spectrum of Sulfonamides. 98.3 Describe mechanism of action of Sulfonamides and Trimethoprim. 98.4Describe mechanism of resistance

			to Sulfonamides. 98.5 Describe clinical uses of Sulfonamides and Trimethoprim. 98.6 Describe adverse effects of Sulfonamides and Trimethoprim. 98.7 Describe the advantages of combining sulfamethoxazole with trimethoprim (Co-Trimoxazole). 98.8 Describe the drug interaction of Sulphonamides with Phenytoin.
99.	Antifungals	1 hour	99.1 Classify Antifungal drugs. 99.2 Describe the pharmacokinetics of Amphotericin B and Ketoconazole. 99.3 Describe the advantages of liposomal preparation of Amphotericin B. 99.4 Describe mechanism of action of Azoles, Amphotericin B, Griseofulvin, Turbinafine, and Nystatin. 99.5 Describe clinical uses of Azoles, Amphotericin B, Griseofulvin, Turbinafine, and Nystatin. 99.6 Describe adverse effects of Azoles, Amphotericin B, Griseofulvin, Turbinafine, and Nystatin. 99.7 Describe drug interactions of Ketoconazole and Amphotericin B. 99.8 Recognize clinical indications of antifungals in dental practice (e.g., oral candidiasis). 99.9 Follow appropriate dosing regimens for oral fungal infections. 99.10 Identify potential adverse effects and drug interactions relevant to

			dental care.
100	Antivirals	2 hours	100.1 Classify antivirals. 100.2 Describe the role of antiviral drugs in managing oral viral infections (e.g., herpes simplex, varicella-zoster). 100.3 Identify key antiviral agents used in dentistry (acyclovir, valacyclovir, famciclovir). 100.4 Explain antiviral mechanisms of action in inhibiting viral replication in oral tissues. 100.5 Recognize clinical indications and dosage for prescribing antivirals in dental practice (e.g., oral herpes, herpetic gingivostomatitis). 100.6 Identify potential adverse effects and drug interactions relevant to dental care. 100.7 Describe antiviral prophylaxis for immunocompromised dental patients. 100.8 Apply evidence-based antiviral therapy for managing oral health in dentistry

Oral Pathology			
101.	Oral Ulcers	1 hour	101.1 Classify the different types of oral ulcers based on their etiology and differentiate between different ulcers (aphthous ulcers and herpetic ulcers). 101.2 Discuss the role of B-complex and other nutrients in oral ulcers.

102.	Viral Infections	4 hours	102.1 Describe the histopathology, oral manifestation, and laboratory diagnosis of Herpes Simplex virus infection. 102.2 Describe the pathogenesis, oral manifestation, and laboratory diagnosis of Varicella Zoster virus infection. 102.3 Describe the oral manifestation, and laboratory diagnosis Epstein-bar virus infection. 102.4 Describe the oral manifestation and laboratory diagnosis and clinical features of Cytomegalovirus infection. 102.5 Describe the oral manifestation, and laboratory diagnosis Paramyxovirus infection. 102.6 Describe the oral manifestation, and laboratory diagnosis Coxsackie virus infection. 102.7 Describe the histopathology, oral manifestation, and laboratory diagnosis of Human Papilloma virus infection. 102.8 Describe the histopathology, oral manifestation, and laboratory diagnosis of Retrovirus (HIV) infections.
------	------------------	---------	---

103.	Bacterial Infections	2 hours	103.1 Define, classify & identify the virulent organism's, interpret the histopathology of Necrotizing Ulcerative gingivitis and Noma. 103.2 Define, classify & identify the virulent organism's, interpret the histopathology of Tuberculosis. 103.3 Define, classify & identify the virulent organism's, interpret the histopathology and laboratory diagnosis of Syphilis. 103.4 Define, classify & identify the virulent organism's, interpret the histopathology of oral cervicofacial Actinomycosis.
104.	Fungal Infections	1 hour	104.1 Define, classify & identify the virulent organism's, interpret the histopathology of Oral Candidiasis.

Oral Medicine			
105.	Oral Ulcer	1 hour	105.1 Define ulcer. 105.2 Enlist principal causes of oral ulcer 105.3 Define traumatic ulcer 105.4 Discuss etiology of traumatic ulcer
106.	Viral, Fungal and Bacterial Infections	11 hour	106.1 Define vesiculoulcerative lesions. 106.2 Enumerate vesiculoulcerative lesions of oral cavity 106.3 Enumerate bacterial infections of oral cavity 106.4 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of tuberculosis. 106.5 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of actinomycosis. 106.6 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of syphilis. 106.7 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of gonorrhoea.
			106.8 Enumerate STI (sexually transmitted infections) of oral cavity 106.9 Enumerate viral infections of oral cavity 106.10 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of primary and secondary herpes simplex virus infection. 106.11 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of varicella-zoster virus infection. 106.12 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of herpes zoster,

			postherpetic neuralgia and Ramsay Hunt syndrome. 106.13 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of Epstein-Barr virus infection. 106.14 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of cytomegalovirus infection. 106.15 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of HIV and AIDS. 106.16 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of paramyxovirus infection. 106.17 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of Coxsackie virus infection (herpangina and hand, foot and mouth disease) 106.18 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of measles and herpangina. 106.19 Enlist common oral fungal infections. 106.20 Discuss predisposing conditions that can lead to oral fungal infections. 106.21 Describe in detail the mode of spread, clinical features, complications, diagnosis and management of primary oral candidiasis (acute and chronic) 106.22 Discuss secondary oral candidiasis as oral manifestation of systemic candidiasis. 106.23 Discuss in detail the clinical features, diagnosis and management of Candida-associated lesions: Candida-associated denture-induced
--	--	--	--

			stomatitis, angular cheilitis and median rhomboid glossitis.
--	--	--	--

Science of Dental Materials			
107.	Denture Base Polymers	1 hour	107.1 Describe • Denture base polymers • Dough molding technique • Requirements of denture base polymers 107.2 Classify Acrylic denture base materials 107.3 Discuss Composition of type 1 and 2 materials
108.	Manipulation of acrylic resin	1 hour	108.1 Discuss Suspension polymerization 108.2 Describe • Mixing • P/L ratio • Stages through acrylic material pass • Doughing time • Dough time • Working time • Trial closure • Bench curing • Flash • Different curing cycles
109.	Porosities in acrylic	1 hour	109.1 Describe • Granular porosity • Contraction porosity • Gaseous porosity

110.	Properties, uses and modifications	1 hour	110.1 Discuss • Properties of acrylic resin • Applications of acrylic resin • Advantages/ disadvantages of acrylic resin 110.2 Define Fatigue and differentiate between static and dynamic fatigue
			110.3 Discuss significance of fatigue with respect to denture base materials 110.4 Enlist Modifications • Acrylic elastomer • Carbon fibers • Aramid fibers • Kevlar • Glass fibers • Bromine containing monomers 110.5 Enlist Alternative polymers
111.	Finishing and polishing of acrylic resin	1 hour	111.1 Define finishing and polishing 111.2 Discuss the significance of finishing and polishing of materials 111.3 Describe abrasives and factors affecting abrasives 111.4 Enlist different materials that are used for finishing and polishing of acrylic resins
112.	Denture Lining Materials	1 hour	112.1 Discuss the Uses of Denture Lining Materials 112.2 Classify Denture Lining Materials 112.3 Differentiate between relining and rebasing 112.4 Describe Hard relining materials P/L auto polymerizing system in terms of their composition, manipulation and properties.
113.	Tissue conditioners	1 hour	113.1 Discuss • Tissue conditioner • Applications of tissue conditioners • Functional impression materials • Requirements of tissue conditioners • Composition of tissue conditioners • Manipulation of tissue conditioners • Properties of tissue conditioners • Permanent soft lining materials • Temporary soft lining materials
			• Self-administered relining materials

114.	Artificial Teeth	1 hour	114.1 Discuss • Artificial teeth • Requirements of artificial teeth • Available materials • Acrylic resins • Porcelain • Properties of artificial teeth 114.2 Compare properties of acrylic and porcelain artificial teeth
115.	Temporary crown and bridge resins	1 hour	115.1 Discuss the use of Temporary crown and bridge 115.2 Enlist the ideal requirements for the temporary crown and bridge material 115.3 Explain in detail acrylic crown and bridge resins

Junior Prosthodontics

116.	Temporary denture bases	1hr	116.1 Define temporary denture bases. 116.2 List the materials commonly used for making temporary denture bases. 116.3Discuss a step-by-step protocol for the fabrication of temporary denture bases. 116.4Discuss fabrication of wax occlusal rims on temporary denture bases
------	-------------------------	-----	---

Lab work

Pharmacology

117.	Oral ulcer and candidiasis	1 hour	117.1 Prescription writing for oral ulcer and candidiasis.
------	----------------------------	--------	--

General pathology

118.	Parasites Leshmaniasis	2 hours	118.1 Identify eggs under microscope. 118.2 Identify the slide of leshmania under light microscope.
119.	Biochemical tests (Catalase, coagulase, oxidase)	2 hours	119.1 Differentiate between streptococcus and staphylococcus.

Science of Dental Materials			
120.	Teeth Setup	2 hours	120.1 Perform teeth setup on the articulated models
121.	Packing and dewaxing	2 hours	121.1 Perform the making of split mold by using dental flask. 121.2 Perform dewaxing
122.	Separating Media	2 hours	122.1 Identification and application of separating media over the model
123.	Acrylic packing	2 hours	123.1 Perform mixing of heat cure acrylic resin 123.2 Identify different physical stages through which acrylic resin passes 123.3 Perform packing of acrylic resin into the mold as per compression molding technique
124.	Acrylic curing	3 hours	124.1 Perform curing of the heat cure acrylic in water
125.	Deflasking	2 hours	125.1 Retrieve the cured acrylic partial denture from the flask
126.	Finishing and polishing of denture	3 hours	126.1 Perform finishing and polishing of the acrylic partial denture

THEME 4: LYMPHADENOPATHY AND GENERALIZED MALAISE

General Pathology

127.	Chronic inflammation/Granuloma	2 hours	127.1 Describe causes and morphological features of chronic inflammation. 127.2 Define granuloma, its type, and causes. 127.3 Discuss the relationship between nutrition and chronic inflammation.
128.	TB/Leprosy	2 hours	128.1 Discuss Mycobacteria in detail in reference to: Spectrum of diseases, Important properties, Pathogenesis, Clinical features, Lab diagnosis, Prevention, and treatment. 128.2 Discuss the role of nutrition in prevention and management of TB.
129.	Trichomonas Tenax parasite	1 hour	129.1 Discuss the parasite in detail in reference to: Spectrum of diseases, Important properties, Pathogenesis, Clinical features, Lab diagnosis and its Prevention

Pharmacology

130.	Antituberculosis drugs	1 hour	130.1 Identify first-line anti-TB drugs and their mechanisms of action 130.2 Identify 2nd-line anti-TB drugs and their mechanisms of actions and mechanism of resistance 130.3 Recognize key adverse effects of TB drugs, such as hepatotoxicity and neurotoxicity. 130.4 Describe the importance of drug regimens for preventing drug
------	------------------------	--------	---

			resistance. 130.5 Enlist drug nutrient interactions of ATT.
131.	Corticosteroids	1 hour	131.1 Explain the mechanism of action of corticosteroids in reducing inflammation. 131.2 Identify clinical indications for corticosteroid use in dentistry (e.g., oral lesions, allergic reactions). 131.3 Enlist drug nutrient interactions of Corticosteroids.
			131.4 Differentiate between types of corticosteroids (e.g., hydrocortisone, prednisone) and their formulations. 131.5 Discuss

			appropriate dosing regimens for acute vs. chronic corticosteroid use.
		131.6	Recognize potential local and systemic adverse effects, including delayed healing and systemic effects.
		131.7	Develop strategies to manage complications associated with corticosteroid therapy.
		131.8	Identify contraindications and precautions for corticosteroid use in dental patients.
		131.9	Formulate treatment plans incorporating corticosteroids for anti- inflammatory therapy.
		131.10	Explain the benefits and risks of corticosteroid therapy to

			patients
--	--	--	----------

Lab work			
General Pathology			
132.	ZN staining	2 hours	132.1 Stain and differentiate acid fast bacilli.
133.	Chronic Inflammation	2 hours	133.1 Identify the cells of chronic inflammation under Light microscope
134.	Granuloma	2 hours	134.1 Identify the granuloma under Light microscope.
Pharmacology			
135.	Tuberculosis	1 hour	135.1 Prescription writing for Tuberculosis.

Assessment Plan

Theor y Paper	Modules	Theor y Marks	Internal Assessmen t Theory Marks (10%)	OSPE/OSCE Marks	Internal Assessment OSPE/OSPE Marks (10%)	Total Marks
Paper E	Inflammation, infection & auxiliary materials	120	13	120	13	266

Paper-E MCQs Distribution

SNo	Subject	Total MCQs
1	General Pathology & Microbiology	24
2	Physiology	01
3	Pharmacology	25
4	Chemistry of Dental Materials	15
5	Community & Preventive Dentistry	16
6	Periodontology	7
7	Oral Pathology	12
8	Oral Medicine	11
9	Pre-Clinical Operative Dentistry	03
10	Pre-Clinical Prosthodontics	03
11	PRIME	03
Total		120

OSPEs /OSCEs DISTRIBUTION

SNo	Subject	OSPE/O SCE	Viva Stations
1	General Pathology	02	01
2	Pharmacology	01	-
3	Chemistry of Dental Materials	04	01
4	Oral Pathology	01	-
5	Pre-Clinical Operative Dentistry	03	-
6	Pre-Clinical Prosthodontics	04	-
7	Community & Preventive Dentistry	01	01
8	PRIME	01	
Total		20	

Module 3

**PRE-CLINICAL DENTISTRY I (Healing,
Repair & Dental Restorations -I)**

2nd Year BDS

Themes

Table 1: Themes

S.NO	Theme	Duration in Weeks/hours
1.	Discolored Tooth/Teeth	49 hrs
2.	Damaged Anterior Tooth/Teeth	29 hrs
3.	Damaged Posterior Tooth/Teeth	76 hrs
	Total hours	154 hrs

Teaching Hours Allocation

Table 2: Hours allocation for different subjects

S. No	Subject	Hours
1.	General Pathology	25
2.	Pharmacology	20
3.	Chemistry of Dental Materials	49
4.	Community & Preventive Dentistry	37 (20 school visit hours)
5.	Oral Pathology	07
6.	Oral Biology	02
7.	Oral Medicine	02
8.	Pre-Clinical Operative Dentistry	04
9.	Pre-Clinical Prosthodontics	04
9.	Pediatric Dentistry	04
	Total	154

Learning Outcomes

By the end of this Module, 2nd year BDS students will be able to:

1. Describe the classification, composition, setting reaction, properties, applications, advantages, and disadvantages of direct restorative materials.
2. Explore metals and alloy systems to improve performance, biocompatibility and esthetic properties of various direct and indirect restorations.
3. Describe the composition, classification, setting reaction, properties, indications, and advantages/disadvantages of composite.
4. Discuss the enamel bonding system & dentine bonding system in detail.
5. Describe dental Amalgam's composition, classification, setting reaction, properties, indications, and advantages/disadvantages.
6. Discuss the composition, classification, setting reaction, properties, indications, and advantages/disadvantages of GIC.
7. Describe the Resin-modified glass ionomer, compomer, giomer, & cermets in detail.
8. Define & classify veneers, describe their fabrication methods and clinical techniques for placement, and highlight recent advancements in veneers.
9. Describe all aspects of fluorosis in detail.
10. Discuss the epidemiology and prevention of anterior teeth trauma.
11. Describe in detail all aspects of Atraumatic Restorative Treatment.
12. Discuss dental indices in detail.
13. Discuss the importance of school dental health for the community.
14. Describe wound healing and the process of repair by scarring, discuss steps and mediators involved in scarring.
15. Describe the cell cycle, discuss cells capable of entering the cell cycle, and the proliferative capabilities of various cells.
16. Enlist various factors and mechanisms by which these factors affect wound healing, discuss the formation of keloid and hypertrophic scars.
17. Discuss the medically important enterobacteriaceae diseases, important properties, clinical findings, laboratory diagnosis, and prevention.
18. Discuss the medically important entameba spp diseases, important properties, clinical findings, laboratory diagnosis and prevention.
19. Discuss minimal invasive dentistry.
20. Identify the types and ingredients of dentifrice.
21. Recognize drugs causing teeth discoloration.

Theme -01 (Discolored Tooth/teeth)			
Topic	Learning Objectives	Hours	
Oral Biology			
Introduction & Etiology of tooth discolouration	1.1 Identify the causes of tooth discoloration 1.2 Differentiate between extrinsic and intrinsic discoloration 1.3 Discuss the developmental process of amelogenesis & Dentinogenesis in relation to discoloration	02 hrs	
Oral Pathology			
2. Systemic causes of discolored teeth	2.1 Enlist systemic causes of discolored teeth. e.g. (Sickle Cell Anemia, B12 deficiency & Celiac Disease) 2.2 Discuss the role of iron in tooth discoloration.	02 hrs	
3. Amelogenesis Imperfecta.	3.1 Define Amelogenesis Imperfecta. 3.2 Explain its genetic basis. 3.3 Identify the various types of Amelogenesis Imperfecta (hypoplastic, hypocalcified, and hypomaturational forms). 3.4 Describe the clinical	01 hrs	

	features of Amelogenesis Imperfecta, 3.5 Discuss the complications associated with this condition		
4. Dentinogenesis imperfecta.	4.1 Define Dentinogenesis Imperfecta. 4.2 Describe the genetic inheritance pattern of Dentinogenesis Imperfecta. 4.3 Differentiate between the three types of Dentinogenesis Imperfecta (Type I, Type II, and Type III). 4.4 Recognize the clinical presentation of Dentinogenesis Imperfecta 4.5 Discuss the histopathological characteristics of abnormal dentin and the associated structural defects.	01 hrs	
5. Enamel Hypoplasia	5.1 Define Enamel Hypoplasia	02 hrs	

	5.2 Differentiate Enamel Hypoplasia from other enamel defects. 5.3 Explain the etiological factors leading to Enamel Hypoplasia. 5.4 Describe the clinical manifestations of Enamel Hypoplasia, 5.5 Explain how Enamel Hypoplasia affects tooth structure, strength, and long-term prognosis. 5.6 Identify the diagnostic methods used to differentiate Enamel Hypoplasia from other conditions like fluorosis or amelogenesis imperfecta. 5.7 Discuss the treatment options for Enamel Hypoplasia.		
--	---	--	--

Oral Medicine			
6. Discolora tion of teeth related to enamel and	6.1 Discuss causes of discoloration of teeth 6.2 Discuss causes of discoloration of teeth related to disturbance in structure of enamel and dentin 6.3 Discuss dietary modification to avoid tooth discoloration	2 hr	

dentin			
--------	--	--	--

Community Dentistry			
7. Fluoride	7.1 Describe different types of fluorides.	1 hr	
	7.2 Discuss the mechanism of action of fluoride in prevention of dental caries.		
	7.3 Briefly describe the history of fluoride in dental public health.		
	7.4 Discuss water fluoridation and defluoridation.		
	7.5 Discuss methods of fluoride delivery.		
8. Fluorosis	8.1 Define Fluorosis	01 hrs	
	8.2 Describe types of fluorosis		
	8.3 Describe the Etiology of fluorosis.		
	8.4 Describe the different types of fluoride toxicity.		

Pharmacology

9. Anti-Plaque Agents	9.1 Define dental plaque. 9.2 Describe the mechanism of action of pharmacological agents used to remove dental plaque including: • Antibacterial agents • Triclosan • Chlorhexidine • Fluorides • Xylitol • Pyrophosphate and Bicarbonates	01 hr	
10. Bleaching Agents & Drugs causing tooth discoloration	10.1 Define bleaching agents. 10.2 Describe types of bleaching agents. 10.3 Enlist different types of bleaching agents for special stains. 10.4 Enlist the adverse effects of bleaching agents 10.5 Enlist the drugs causing teeth discoloration.	01 hr	

Dental Materials

11. Requirements of cavity lining, base and luting	11.1 Enlist the requirements of dental cements for lining, base and luting 11.2 Differentiate between cement thickness and film thickness 11.3 Describe types of cavity lining materials. 11.4 Discuss requirements of cavity linings and intermediate restorative materials.	2 hrs	
12. Zinc Phosphate Cements	12.1 Enlist various cements based on phosphoric acid. 12.2 Describe the composition and properties of zinc phosphate cement. 12.3 Explain the importance of proper mixing and handling techniques when working with zinc phosphate cement.	1 hr	
	12.4 Explain the setting reaction of zinc phosphate cement in detail. 12.5 Enlist the applications of zinc phosphate cement.		

13. Silicate Cements	13.1 Describe the composition and properties of silicate cement. 13.2 Explain the importance of proper mixing and handling techniques when working with silicate cement. 13.3 Explain the setting reaction of silicate cement. 13.4 Enlist the applications of silicate cement.	1hr	
14. Silicophosphate & Copper Cements	14.1 Describe the composition and properties of silicophosphate & copper cement. 14.2 Explain the setting reaction of silicophosphate & copper cement. 14.3 Enlist the applications of silicophosphate & copper cements.	1hr	
15. Zinc Oxide Eugenol Cement and its modifications	15.1 Enlist various cements based on organometallic chelate compounds. 15.2 Describe the composition and properties of zinc oxide eugenol cement.	2 hrs	

	15.3 Explain the importance of proper mixing and handling techniques when working with zinc oxide eugenol cement. 15.4 Explain the setting reaction of zinc oxide eugenol cement in detail. 15.5 Enlist the applications of zinc oxide eugenol cement. 15.6 Discuss the modifications in zinc oxide eugenol cement with respect to • Composition • Manipulation • Setting Reaction • Properties • Applications		
16. Calcium Hydroxide Cement	16.1 Describe the composition and properties of calcium hydroxide cement. 16.2 Explain the importance of proper mixing and handling techniques when working with calcium hydroxide cement. 16.3 Explain the setting reaction of calcium hydroxide cement in detail. 16.4 Enlist the applications of using calcium hydroxide cements.	1 hrs	

17. Mineral Trioxide Aggregate (MTA)	17.1 Describe the composition, setting reaction and properties of Mineral Trioxide Aggregate. 17.2 Recognize the various clinical applications of MTA in endodontics and restorative dentistry. 17.3 Describe the benefits of using MTA, including its biocompatibility and sealing ability.	1 hr	
18. Polycarboxylate cement.	18.1 Describe the composition and properties of polycarboxylate cement. 18.2 Explain the importance of proper mixing and handling techniques when working with polycarboxylate cement. 18.3 Explain the setting reaction of polycarboxylate cement in detail. 18.4 Enlist the applications of polycarboxylate cement.	1 hr	

General Pathology & microbiology			
19. Gram negative rods related to	19.1 Introduction to entrobacteriace and related organism	02	
enteric tract (E. Coli, Sallmonella, shigella & h. pylori)	19.2Discuss the diseases, important properties, clinical findings, laboratory diagnosis and prevention of E. coli	01	
	19.3Discuss diseases, important properties, clinical findings, laboratory diagnosis and prevention of Salmonella	01	
	19.4Discuss the diseases, important properties, clinical findings, laboratory diagnosis and prevention of Shigella	01	
	19.5 Discuss the diseases, important properties, clinical findings, laboratory diagnosis and prevention of H. pylori		
	19.6 Discuss the food safety practices to prevent bacterial infection.	01	

Junior Prosthodontics			
20. Maxilla-mandibular relation:	20.1 Define maxillo-mandibular relation and explain its importance in complete denture construction. 20.2 Define the three types of jaw relations: vertical, horizontal, and orientation. 20.3 Explain the importance of accurate maxillomandibular relations for retention, stability.	01 hr	
Junior conservation			
21. Contacts and Contours	21.1 Describe the different tooth contacts Explain the different wedging techniques.	01 hr	
LAB WORK			
General Pathology			
22. Study of Various pathology lab instruments, machines, and rapid diagnostic devices	22.1 Analyze different aspects of Laboratory instruments and machines. 22.2 Demonstrate the proper use. 22.3 Summarize the proper care	02 hrs	
23. Preparation of blood film	23.1 Demonstrate different techniques of	02 hrs	

	blood film and smear preparation		
24. Elisa	24.1 Analyze and interpret ELISA results in diagnosing infections like HIV and hepatitis	02 hrs	

Pharmacology			
25. Dosage forms	25.1 Identify different pharmaceutical dosage forms	01 hrs	
26. Prescription order	26.1 Identify the parts of the prescription order. 26.2 Discuss the significance of nutritional instruction while writing a prescription and counsel a patient on dietary modifications after a dental procedure	01 hrs 0.5 hrs	
27. Prescription writing of diseases	27.1 Write the prescription for acute tonsillitis 27.2 Write the prescription for pharyngitis	01 hrs	

Dental Materials			
28. Manipulation of zinc phosphate cement	28.1 Manipulate zinc phosphate cement according to manufacturer's guidelines. 28.2 Analyze the following characteristics of zinc phosphate cement: a. Working consistency b. Working time c. Setting time d. Properties	2 hr	

29. Manipulation of polycarboxylate cement	29.1 Manipulate polycarboxylate cement according to manufacturer's guidelines.	2 hr	
	29.2 Analyze the following characteristics of zinc polycarboxylate cement: a. Working consistency		
	b. Working time c. Setting time d. Properties		
30. Manipulation of zinc oxide eugenol cement	30.1 Manipulate zinc oxide eugenol cement according to manufacturer's guidelines.	2 hr	
	30.2 Analyze the following characteristics of zinc oxide eugenol cement: a. Working consistency b. Working time c. Setting time d. Properties		
31. Manipulation of calcium hydroxide cement	31.1 Manipulate calcium hydroxide cement according to manufacturer's guidelines. 31.2 Analyze the following characteristics of calcium hydroxide cement: a. Working consistency b. Working time c. Setting time d. Properties	2 hr	

Theme- 02 (Damaged anterior Tooth/teeth)
Oral Pathology

32. Pulpitis	32.1 Define pulpitis 32.2 Explain the etiology of pulpitis. 32.3 Describe the clinical signs and symptoms of pulpitis. 32.4 Discuss the histopathological changes that occur during pulpitis. 32.5 Explain the biological mechanisms involved in pulp healing. 32.6 Identify factors that influence the healing process of dental pulp.	01 hrs	
Pediatric Dentistry			
33. Sequelae of displacement injuries	33.1 Enumerate the different possible sequelae of Displacement injuries 33.2 Discuss the dietary instructions and modifications following dentoalveolar injuries.	02 hr	
	33.2 Define root resorption and discuss different types of root resorption. 33.3 Explain the physiological and pathological processes involved in root resorption. 33.4 Identify the common causes and risk factors associated with root resorption. 33.5 Discuss the role of trauma, and systemic conditions in the development of root resorption.		

Dental Materials			
34. Glass Ionomer Cements - introduction	34.1 Discuss the historical context and development of glass ionomer cement (GIC). 34.2 Classify GIC on the basis of a. Clinical applications. b. Compositional modifications 34.3 Discuss cermets. 34.4 Describe the composition of GIC. 34.5 Explain the setting reaction of GIC in detail.	1 hr	
35. Glass Ionomer Cements - properties	35.1 Describe the properties of GIC. 35.2 Discuss the adhesion of GIC with tooth structure.	1 hr	
36. Glass Ionomer Cements - manipulative techniques	36.1 Describe following manipulative techniques of GIC with respect to clinical applications. • Matrix techniques • Atraumatic restorative technique (ART) 36.2 Sandwich technique	1 hr	

37. Requirements for direct filling materials	37.1 Define direct filling materials. 37.2 Enumerate reasons to restore tooth. 37.3 Explain various ideal requirements for direct filling materials. 37.4 Discuss historical perspectives of using direct filling materials.	2 hrs	
38. Resin based filling materials	38.1 Discuss • Resin based filling materials • Acrylic resins ○ Chemical Composition ○ Setting reaction ○ Applications ○ Properties ○ Advantages and disadvantages ○ Current status	1 hour	
39. Composites	39.1 Define composite and dental composites. 39.2 Describe the composition of the composite 39.3 Explain different types of resins and resin's properties. 39.4 Discuss the fillers and their role in composite.	1 hour	

40. Composites	40.1 Classify composite on base of filler, curing method, viscosity (flowable packable), and indications (core build-up, luting, anterior and posterior). 40.2 Explain polymerization reaction. 40.3 Discuss the depth of cure. 40.4 Discuss C - Factor. 40.5 Describe different light-curing units.	1 hour	
	41.2 Discuss polymerization shrinkage, reasons, effects, and methods to reduce it. 41.3 Discuss advantages & disadvantages of composites in association with clinical scenarios.		
42. RMGIC and related materials	42.1 Define hybrid materials/products. 42.2 Classify hybrid products that involve blending of GIC and dental composites. 42.3 Compare glass ionomer cements, and dental composites. 42.4 Discuss modified composites in terms of composition, setting reaction, properties, and advantages /disadvantages. 42.5 Discuss resin modified glass ionomer cements in terms of composition, setting reaction, properties, and advantages /disadvantages.	1 hrs	

43. Giomers and compomers	43.1 Discuss giomers in terms of composition, setting reaction, properties, and advantages /disadvantages. 43.2 Discuss compomers in terms of composition, setting reaction, properties, and advantages /disadvantages.	1 hrs	
44. Adhesion and enamel bonding	44.1 Define adhesion 44.2 Describe three main mechanisms of adhesion of resins with the tooth structure. 44.3 Explain the enamel bonding system. 44.4 Explain acid etch technique and factors which affect success and failure of acid-etch bonding system. 44.5 Explain uses of acid etch technique.	1 hrs	
45. Dentine bonding	45.1 Describe dentine bonding system 45.2 Discuss smear layer in relation to bonding. 45.3 Explain dentine priming and hybrid layer. 45.4 Understand current concepts in dentine bonding.	1 hr	

46. Evolution of bonding systems	46.1 Discuss the total etch and self-etch method. 46.2 Discuss evolution of bonding system including polymerizable luting agent.	2 hr	
47. Bonding of resins to materials and bond strength	47.1 Discuss bonding resins to alloys, amalgam and ceramics. 47.2 Discuss bond strength and leakage measurements.	1 hrs	

Community Dentistry			
48. Epidemiology & Prevention of Trauma in anterior teeth of school-going children	48.1 Discuss the Epidemiology of anterior teeth trauma. 48.2 Enlist the causes & risk factors of anterior teeth trauma. 48.3 Discuss the prevention of trauma to anterior teeth.	1 hour	

Prosthodontics			
49. Articulators	49.1 Define an articulator and explain its purpose in complete denture fabrication. 49.2 Enlist its uses in Prosthodontics.	01 hr	
	49.3 List the different types of articulators based on its adjustability.		

LAB WORK			
General Pathology			
50. Collecting and transporting specimen	50.1 Identify Common Types of Clinical Specimens. 50.2 Demonstrate the appropriate techniques for collecting various clinical specimens. 50.3 Analyze and compare different techniques used for the transportation of various forms of specimen.	02 hrs	
Pharmacology			
51. Tyrode's solution	51.1 Prepare Tyrode's solution.	01 hrs	
52. Tissue organ bath and Kymograph	52.1 Identify the parts of kymograph and tissue organ bath assembly.	01 hrs	
Dental Materials			
53. Manipulation of glass ionomer cement	53.1 Manipulate glass ionomer cement according to manufacturer's guidelines. 53.2 Analyze the following characteristics of glass ionomer cement a. Working consistency b. Working time c. Setting time d. Properties	2 hr	
54. Manipulation of dental composites	54.1 Identify various components which needed for proper restoration with dental composites. 54.2 Manipulate dental composites according to manufacturer's guidelines	2 hr	

Theme- 03 (Damaged Posterior Tooth/teeth)			
Dental Materials			
56. Introduction to Metals and Alloys	56.1 Define metallurgy. 56.2 Define metals and alloys. 56.3 Enumerate steps by which metals are extracted. 56.4 Explain with examples methods by which shaping of metals and alloys can be accomplished.	1 hr	
57. Structure and Properties of Metals and Alloys	57.1 Explain the concept of crystal structure. 57.2 Describe the arrangement of atoms within a crystal lattice and its importance in determining material properties. 57.3 Identify alloys on the basis of elements present in the mixture. 57.4 Describe different types of solid solutions. 57.5 Explain the relationship between the composition and structure of solid solutions and their properties.	1 hr	
58. Cooling Curves and Phase Diagrams	58.1 Interpret cooling curves to determine the solidification behavior of metals and alloys. 58.2 Explain the effects of cooling rate on the microstructure and properties of alloys. 58.3 Interpret phase diagrams to determine the equilibrium phases present in an alloy system. 58.4 Interpret eutectic phase	1 hr	

	diagrams to predict the properties of alloys. 58.5 Explain the effects of composition and temperature on the phase behavior of alloys.		
59. Amalgam	59.1 Define amalgam and dental amalgam. 59.2 Describe the composition of conventional and copper enriched alloy and identify function of each component of alloy used for dental amalgam. 59.3 Discuss manufacturing of different dental amalgam alloys. 59.4 Explain the setting reactions of conventional and copper-enriched alloys. 59.5 Describe the properties of dental amalgam and factors which have effects on these properties.	2 hrs	
60. Amalgam - Toxicity, manipulation and advantages/disadvantages	60.1 Discuss the importance of mercury toxicity and possible hazards. 60.2 Explain the steps of manipulations of amalgam. 60.3 Discuss pros and cons of amalgam. 60.4 Discuss the dietary instructions and modifications	2 hrs	

	following dentoalveolar injuries.		
61. Direct Gold Restorations	61.1 Describe the properties and characteristics of pure gold that make it suitable for dental restorations. 61.2 Define cohesive and non-cohesive gold. 61.3 Explain the manipulative technique required for direct gold restorations, including: - Correct handling and condensation of gold foil - Shaping and adapting gold to the tooth preparation Sandwich Technique	2 hrs	

General Pathology			
62. Overview to tissue healing and repair	62.1 Differentiate between regeneration and repair 62.2 Describe various steps involved in the process of tissue healing and repair 62.3 Discuss the role of nutrition in healing and repair	01 hr	

63. Tissue regeneration	63.1 Define regeneration 63.2 Enlist organs capable of regeneration 63.3 Describe the process and mediators involved in regeneration	01 hr	
64. Cell Cycle and its role in repair	64.1 Define cell cycle 64.2 Describe the initiation, various phases, and proteins involved in the cell cycle 64.3 Discuss cells capable of entering the cell cycle 64.4 Describe the proliferative capabilities of various cells	01 hr	
65. Selected Clinical Examples of Tissue Repair and fibrosis	65.1 Describe the Healing of Skin Wounds both primary and secondary 65.2 Explain the mechanism of Fibrosis in Parenchymal Organs	01 hr	
66. Repair by scarring	66.1 Describe the various steps involved in the process of repair by scarring 66.2 Describe the various mediators involved in the steps of scarring	01 hr	
67. Growth factors and receptors	67.1 Enumerate various growth factors and their receptors 67.2 Describe the most common pathways by which growth factors affect tissue repair and regeneration	01 hr	
68. ECM	68.1 Classify various components of ECM 68.2 Describe the role and importance of ECM in tissue repair	01 hr	

69. Factors affecting wound healing/abnormal scarring	69.1 Enlist the various factors that influence wound healing 69.2 Describe the mechanism by which these factors affect wound healing 69.3 Describe the abnormalities of repair and their consequences 69.4 Describe the formation of keloid and hypertrophic scar	01 hr	
70. Amyloid	70.1 Analyze the role amyloid in health and disease 70.2 Evaluate the diagnostic approaches	01 hr	

Community Dentistry			
71. Atraumatic Restorative Technique (ART)	71.1 Define Atraumatic Restorative Treatment 71.2 Discuss its indications, contraindications, and method of application 71.3 Explain the procedure of ART. 71.4 List the advantages and disadvantages of ART.	01 hr	
72. Minimal invasive dentistry	72.1 Define MID. 72.2 Discuss its indication, contraindications and method of application.	1hour	

73. Dental Indices	73.1 Define an index 73.2 Explain the properties of an ideal index, 73.3 Discuss the purpose and uses of an index 73.4 Discuss the various indices such as dental caries and fluorosis (DMFT, DMFS, deft, dmfs, Dean's FI, CFI), gingival (GI, GBI, SBI), oral hygiene (Plaque Index, OHI, OHI-S, PHP) and periodontal (PI, CPITN) indices in detail 73.5 Discuss the advantages and limitations of different indices	04 hrs	
74. School dental health programmes and outreach programmes	74.1 Define the concept of school health programs and describe their importance in community health (WHO initiative). 74.2 Explain the aims of school dental health and the role it	20 hrs	
	plays in preventing oral diseases among children.		
	74.3 Discuss the importance of early detection and the		

	prevention of dental diseases in the school setting.		
	74.4 Critically assess the challenges and limitations of		
	implementing comprehensive dental care in schools		
	74.5 Develop effective communication skills tailored to		
	interacting with children and their caregivers about oral health.		
	74.6 Propose strategies for integrating dental health education into existing school health curricula to enhance long-term dental care among children		

Pharmacology			
75. Anesthetics -II (General Anesthetics)	75.1 Enumerate drugs used for pre-anesthetic medication.	02 hrs	
	75.2 Classify general anesthetics.		
	75.3 Describe the pharmacokinetics of general anesthetics.		
	75.4 Describe the mechanism of action, adverse effects, and drug interactions of inhalational anesthetics:		
	• Nitrous oxide • Halothane • Isoflurane • Desflurane • Sevoflurane		
	75.5 Describe the pharmacokinetics of intravenous anesthetics.		
	75.6 Describe the mechanism of actions, adverse effects, and drug interactions of intravenous anesthetics:		
	• Propofol • Ketamine • Etomidate • Barbiturates • Benzodiazepines • Opioids		

76. Neuromuscular blocking agents	76.1 Classify neuromuscular blocking agents 76.2 Describe the mechanism of action, pharmacological actions, therapeutic uses, adverse effects, contraindications, and drug interactions of depolarizing & non depolarizing agents.	02 hrs	
77. Anxiolytics-I (Benzodiazepines)	77.1 Classify Benzodiazepines 77.2 Describe the pharmacokinetics of benzodiazepines. 77.3 Describe the mechanism of action, pharmacological actions, adverse effects, and drug interactions of benzodiazepines	02 hrs	

	77.4 Enlist the therapeutic uses of benzodiazepines. 77.5 Describe benzodiazepine antagonist (Flumazenil)		
78. Anxiolytics-II (Antidepressants)	78.1 Classify antidepressants 78.2 Describe the pharmacokinetics of antidepressants 78.3 Describe the mechanism of action, pharmacological actions, therapeutic uses, adverse effects, contraindications, and drug interactions of: • SSRI's • SNRIs • Tricyclic Antidepressants • Atypical Antidepressants • MAOIs	02 hrs	

79. Antiepileptics	79.1 Classify antiepileptics 79.2 Describe the pharmacokinetics of antiepileptics 79.3 Describe the mechanism of action, pharmacological actions, therapeutic uses, adverse effects, contraindications, and drug interactions of: • Carbamazepine, • Phenytoin • Gabapentin and pregabalin • Valproic acid 79.4 Discuss the role of the ketogenic diet in epileptic patients	03 hrs	
	79.5 Enlist seizure-triggering foods for epileptic patients		

Pediatric Dentistry

80. Scientific basis of caries prevention	80.1 Appreciate the role of dental health education 80.2 Enlist the aims in providing dietary advice and diet modification to reduce caries. 80.3 Explain oral hygiene instructions to the child and parents 80.4 Communicate the current messages in prevention of caries in children 80.5 Explain prevention of caries by increasing the resistance of the tooth and role of fissure sealants 80.6 Enlist various types of fissure sealants 80.7 Differentiate between various types of sealant materials 80.8 Describe their properties, advantages, and disadvantages of different fissure sealant materials 80.9 Decide why, who, when and where apply the fissure sealants 80.10 Explain how fissure sealants can be applied efficiently (step by step) on young children	02 hrs	
--	---	---------------	--

	80.11 Explain the mechanism of action of pits and fissure sealant in prevention of caries.		
--	--	--	--

Junior Operative			
81. Restoration of Class 2 Cavity	81.1 Explain the different features of class 2 cavity for amalgam and composite restorations 81.2 Explain the advantages and disadvantages of amalgam and composite restorations in class 2 cavity.	1 Hrs	
82. Matrix & Retainer System	82.1 Define & classify matrix and retainer systems 82.2 Enlist indications for the use of matrix systems 82.3 Enlist advantages of using matrix systems 82.4 Plan use of different matrix systems according to different clinical	01 hrs	

	situations		
83. Pulp Protecting Agents	83.1 Classify liners and bases 83.2 Describe their composition and properties 83.3 Enlist their indications and advantages 83.4 Demonstrate application liners & bases	01 hr	

Prosthodontics			
84. Tooth setup	84.1 Explain positioning of anterior teeth as seen in frontal, lateral and incisal/ occlusal view. 84.2 List the anatomical and esthetic guidelines for positioning maxillary and mandibular anterior teeth 84.3. Define key terms used in anterior tooth setup (midline, incisal edge position, labial inclination, cervical prominence, overjet, overbite). 84.4. Explain the ideal positioning of anterior teeth as viewed from the frontal, lateral, and incisal/occlusal perspectives.	2hrs	
	84.5 Describe how lip support, esthetics, phonetics, and occlusion influence the placement of anterior teeth.		

LAB WORK			
General Pathology			
85. Healing by connective tissue-	85.1 Enlist the components of granulation tissue	02 hrs	

ulcer-Granulation tissue	85.2 Identify the gross and microscopic picture of granulation tissue		
Pharmacology			
86. IV setup	86.1 Identify the parts and working of basic IV setup	02hrs	
Community Dentistry			
87. Atraumatic restorative treatment	87.1 Demonstrate the application of atraumatic restorative procedures in a community/ simulated environment.	02 hrs	
88. Dental Indices	88.1 Demonstrate the measurement of different indices on study models 88.2 Discuss the merits and demerits of different oral disease indices	04 hrs	
89. Fluorosis index	89.1 Explain fluorosis Index. 89.2 Calculate dean's fluorosis index on the given model.	2 hr	
Dental Materials			
90. Manipulation of dental amalgam	90.1 Manipulate dental amalgam according to manufacturer guidelines.	02 hr	

Assessment Plan

Theory Paper	Modules	Theory Marks	Internal Assessment Theory Marks (10%)	OSPE/OSCE Marks	Internal Assessment OSPE/OSPE Marks (10%)	Total Marks
Paper F	Pre-Clinical I	120	13	120	13	266

Paper-F MCQs Distribution

SNo	Subject	Total MCQs
1	General Pathology & Microbiology	18
2	Pharmacology	15
3	Chemistry of Dental Materials	35
4	Community & Preventive Dentistry	29
5	Oral Pathology	7
6	Oral Biology	2
7	Oral Medicine	2
8	Pre-Clinical Operative Dentistry	3
9	Pre-Clinical Prosthodontics	3
10	Paediatric Dentistry	3
11	PRIME	3
Total		120

Paper-F OSCPs/ Distribution

SNo	Subject	OSPE/O SCE	Viva Stations
1	General Pathology & Microbiology	03	01
2	Pharmacology	02	01
3	Community & Preventive Dentistry	02	01
4	Chemistry of Dental Materials	03	01
5	Pre-Clinical Operative Dentistry	02	-
6	Pre-Clinical Prosthodontics	02	-
7	PRIME	02	-
Total		20	

Module 4

PRE-CLINICAL DENTISTRY II

**(Neoplasia & Dental
Rehabilitation)**

2nd Year BDS

Themes Table 1: Themes

S.NO	Theme	Duration in Weeks/hours
1.	Lumps, Bumps & its triggers	2.5 weeks (84 hrs)
2.	Repair/Rehabilitate	1.5 weeks (56 hrs)
3.	A patient with Chest Pain & Shortness of Breath requiring extraction	1 weeks (24 hrs)
	Total hours	5 weeks (164 hrs)

Teaching Hours Allocation

Table 2: Hours allocation for different subjects

S. No	Subject	Hours
1.	General Pathology	70
2.	Pharmacology	19
3.	Chemistry of Dental Materials	44
4.	Community & Preventive Dentistry	13
5.	Oral Pathology	4
6.	Physiology	2
7.	Oral Medicine	2
8.	Oral & Maxillofacial Surgery	1
9.	Periodontology	4
10.	Pre-Clinical Prosthodontics	5
	Total	164

Learning Outcomes

By the end of this module the students of 2nd year BDS will be able to:

1. Define neoplasia and oncology, Classify the tumors with respect to their tissue of origin and nature
2. Discuss the common tumor terminology for benign epithelial tumors and enlist the basic components of tumors
3. Define differentiation and anaplasia, compare invasion and metastasis and discuss the main pathways of spread of a cancer.
4. Define various benign oral epithelial tumors, Compare the characteristics of benign and malignant tumors
5. Relate the genetic alteration to pathogenesis of neoplastic disorders
6. Relate the role of carcinogenic agents to neoplastic disorders
7. Describe the sequence of events leading to hemostasis, roles of the platelets, coagulation factors, endothelium in hemostasis, and compare hyperemia and congestion.
8. Discuss the pathophysiology of edema and shock and differentiate between inflammatory and non-inflammatory edema, exudate, and transudate.
9. Describe diagnosis and prognosis of squamous cell carcinoma, basal cell carcinoma and malignant melanoma
10. Define, enlist and briefly describe precancerous lesions & conditions
11. Define grading of tumors and its significance, define staging of tumors, discuss basis of TNM system
12. Discuss and classify anti-cancer drugs and describe the pharmacology of anti-tumor drugs
13. Discuss Primary Healthcare
14. Explain healthcare delivery systems.
15. Discuss planning and evaluation
16. Explain the steps and roles of oral health surveys
17. Explain the principles of oral health nutrition and diet counselling
18. Discuss the role of dental auxiliaries in dentistry
19. Discuss classifications, pharmacological actions, MOAs, uses and adverse effects of CVS Drugs
20. Discuss, chelating agents and Anti-diarrheal agents' types, applications, MOA, adverse effects
21. Discuss Immunosuppressant drugs and endocrine drugs; types, applications, MOA, adverse effects
22. Discuss and classify anti-cancer drugs and describe the pharmacology of anti-tumor drugs

23. Discuss classifications, pharmacological actions, MOAs, uses and adverse effects of CVS Drugs
24. Discuss, chelating agents and Anti-diarrheal agents' types, applications, MOA, adverse effects
25. Discuss Immunosuppressant drugs and endocrine drugs; types, applications, MOA, adverse effects
26. Define and discuss various terms like narcosis, analgesics and opiates, Classify and identify various opioids agonist.
27. Discuss and classify drug used for treatment of amebiasis and Anthelmintics
28. Explain health education and health promotion, discuss methods of public awareness and shifts in health promotion strategies
29. Discuss epidemiology of oral cancers and Prevention of Oral cancers .
30. Define Occupational Hazards, discuss Occupational hazards, discuss relationship between dentistry and associated health hazards
31. Explore metals and alloy systems to improve performance, biocompatibility and esthetic properties of various indirect restorations.
32. Explore ceramic compositions, processing techniques, and technologies to improve durability, esthetics, and biocompatibility.
33. Define Base metal alloys, Describe the composition, manipulation, properties, biocompatibility of alloys.
34. Describe the composition and Properties of steel and stainless steel, describe the method for fabrication of stainless-steel denture bases and discuss their importance.
35. Discuss Dental wires with special reference to its Requirements and available materials.
36. Describe morphology, transmission, clinical findings, and diagnosis of Entamoeba histolytica, Free-Living Amoebae, Taenia & Echinococcus, Ascaris, Ankylostoma & Enterobius

THEME 1: Lumps, Bumps & its triggers		
Topic	Hr	Learning Outcome
General Pathology		
1. Intro to neoplasia with nomenclature	2	1.1 Define neoplasia and oncology 1.2 Classify the tumors with respect to their tissue of origin and nature/ behavior 1.3 Discuss the common tumor terminology for benign epithelial tumors 1.4 Enlist the basic components of tumors 1.5 Differentiate choristoma and hemartoma from the tumors
2. Characteristics of Benign and malignant tumors	3	2.1 Define differentiation and anaplasia 2.2 Compare invasion and metastasis 2.3 Discuss the main pathways of spread of a cancer 2.4 Compare the characteristics of benign and malignant tumors
3. Effects of tumors on host	2	3.1 Define cancer cachexia 3.2 Explain the cancer cachexia with malnutrition 3.3 Discuss the effects of tumors on the host. 3.4 Define the paraneoplastic syndromes 3.5 Define the paraneoplastic syndromes with examples and its underlying tumors.
4. Predisposing Conditions	1	4.1 Discuss the interaction between environmental factors, age, acquired predisposing conditions and genetic factors in cancer development 4.2 Discuss dietary intake as predisposing condition to oral cancer development.
5. The Genome	3	5.1 Discuss the role of protein coding and Non-coding DNA 5.2 Discuss the role of epigenetics changes in diseases 5.3 Describe the role of Micro-RNA and Non-coding RNA in diseases 5.4 Discuss the gene editing
6. Genetic Diseases	2	6.1 Define the terms hereditary, familial and congenital diseases 6.2 Discuss the various genetic changes that can affect the structure and function of proteins contributing to diseases.
7. Cancer Genes: Genetic lesions in cancers	3	7.1 Define cancer genes 7.2 Enlist the four major functional classes of cancer genes 7.3 Give the inherited predisposition to cancers 7.4 Define driver and passenger mutation

		7.5 Define the terms point mutation, gene rearrangement, deletion, gene amplification, aneuploidy, microRNAs
8. Carcinogenesis: A multistep process	4	8.1 Enumerate the hall marks of carcinogenesis 8.2 Discuss the control of cell cycle 8.3 Define proto-oncogenes and discuss its significance 8.4 Give the therapeutic targeting of hall marks of cancers
9. Carcinogenesis: Tumors suppressor genes	1	9.1 Discuss the role of RB genes in regulation of cell cycle 9.2 Describe the role of Tp53 in maintaining the integrity of the genome
10. Chemical carcinogens and radiation carcinogens	1	10.1 Classify the chemical carcinogens 10.2 Enlist common chemical carcinogens with their corresponding cancers 10.3 Discuss the oncogenic properties of the radiations
11. Viral and microbial carcinogens	2	11.1 Enlist the oncogenic viruses and bacteria with their corresponding cancers
12. Laboratory diagnosis of cancers	2	12.1 Enumerate the various lab. Modalities (including morphologic, biochemical and molecular) available for tumor diagnosis 12.2 Define tumor markers 12.3 Discuss the significance of tumor markers 12.4 Explain the importance of molecular profiling of tumors.
13. Grading and staging of cancers	1	13.1 Define grading of tumors and its significance 13.2 Define staging of tumors 13.3 Give basis of TNM system 13.4 Give significance of staging of cancer
Oral Pathology		
14. Benign Epithelial Tumors	1	14.1 Define Squamous cell papilloma, condyloma acuminatum & melanocytic naevi 14.2 Describe their etiology and risk factors 14.3 Explain their clinical features 14.4 Describe their histopathological features

15. Precancerous Lesions & Conditions	3	15.1 Describe the Architectural and Cellular features of Epithelial Dysplasia and its various grades. 15.2 Define, enlist and briefly describe precancerous lesions & conditions • Oral submucous fibrosis • Oral lichen planus • Actinic keratosis • Discoid Lupus Erythematosus (DLE) • Sideropenic Dysphagia (Plummer-Vinson Syndrome) 15.3 Describe role of vitamin A and iron in precancerous lesions and condition.
Oral Medicine		

		7.5 Define the terms point mutation, gene rearrangement, deletion, gene amplification, aneuploidy, microRNAs
8. Carcinogenesis: A multistep process	4	8.5 Enumerate the hall marks of carcinogenesis 8.6 Discuss the control of cell cycle 8.7 Define proto-oncogenes and discuss its significance 8.8 Give the therapeutic targeting of hall marks of cancers
9. Carcinogenesis: Tumors suppressor genes	1	9.3 Discuss the role of RB genes in regulation of cell cycle 9.4 Describe the role of Tp53 in maintaining the integrity of the genome
10. Chemical carcinogens and radiation carcinogens	1	10.4 Classify the chemical carcinogens 10.5 Enlist common chemical carcinogens with their corresponding cancers 10.6 Discuss the oncogenic properties of the radiations
11. Viral and microbial carcinogens	2	11.1 Enlist the oncogenic viruses and bacteria with their corresponding cancers
12. Laboratory diagnosis of cancers	2	12.5 Enumerate the various lab. Modalities (including morphologic, biochemical and molecular) available for tumor diagnosis 12.6 Define tumor markers 12.7 Discuss the significance of tumor markers 12.8 Explain the importance of molecular profiling of tumors.
13. Grading and staging of cancers	1	13.5 Define grading of tumors and its significance 13.6 Define staging of tumors 13.7 Give basis of TNM system 13.8 Give significance of staging of cancer

Oral Pathology		
14. Benign Epithelial Tumors	1	14.5 Define Squamous cell papilloma, condyloma acuminatum & melanocytic naevi 14.6 Describe their etiology and risk factors 14.7 Explain their clinical features 14.8 Describe their histopathological features
15. Precancerous Lesions & Conditions	3	15.4 Describe the Architectural and Cellular features of Epithelial Dysplasia and its various grades. 15.5 Define, enlist and briefly describe precancerous lesions & conditions • Oral submucous fibrosis • Oral lichen planus • Actinic keratosis • Discoid Lupus Erythematosus (DLE) • Sideropenic Dysphagia (Plummer-Vinson Syndrome) 15.6 Describe role of vitamin A and iron in precancerous lesions and condition.
Oral Medicine		

16. Malignant Transformation of Oral potentially malignant disorders OPMD & Clinical features of suspicious malignant lesions	1	16.1 Discuss transformation of OPMDs 16.2 Discuss clinical features of malignant lesions.
17. Oral Cancer	1	17.1 Define Oral Carcinoma 17.2 Discuss etiology of oral carcinomas 17.3 Discuss TNM staging for oral cancers
Periodontology		
18. Gingival enlargement	2	18.1 Enlist classification of gingival enlargement 18.2 Describe inflammatory/idiopathic/drug induced gingival enlargement 18.3 Discuss the Enlargement associated with systemic diseases/conditions/false enlargement 18.4 Management of gingival enlargement (Non-surgical and surgical)
Oral and Maxillofacial Surgery		

19. Identification of suspicious lesions	1	19.1 Evaluate suspicious oral lesions, including ulcers, masses, and discolorations. 19.2 Enlist the type of biopsies of suspicious lesions to obtain tissue samples for histological examination. 19.3 Enlist various imaging techniques to assess the extent of tumor growth and involvement of surrounding structures
Community Dentistry		
20. Occupational Hazards	1	20.1 Define Occupational Hazards 20.2 Discuss Occupational hazards 20.3 Discuss relationship between dentistry and associated health hazards 20.4 Discuss Recommendations
21. Epidemiology of oral cancers	2	21.1 Discuss the burden of oral cancers in a global scenario. 21.2 Discuss the etiological risk factors of oral cancers 21.3 Describe the steps of smoking cessation using 5A's. 21.4 Discuss the role of dentist in prevention of oral cancers. 21.5 Discuss the protective dietary factors in the prevention of oral cancer.
Dental Materials		
22. Overview of Dental waxes	1	22.1 Understand the fundamental principles and applications of dental waxes in dentistry.
23. Overview of Investment Materials	1	23.1 Compare various investment materials. 23.2 Understand the fundamental principles and applications of investment materials in dentistry.
24. Introduction to Gold and Noble Metal Alloys	2	24.1 Describe properties of gold. 24.2 Differentiate between carat and fineness.

		24.3 Describe pure gold fillings with respect to properties, and advantages in clinical dentistry.
25. Traditional Casting Gold Alloys	2	25.1 Classify dental casting gold alloys according to ISO 1562:1995. 25.2 Explain typical composition of casting gold alloys 25.3 Differentiate various dental casting gold alloys with respect to properties.

26. Hardening Heat Treatments	3	26.1 Describe different types of hardening heat treatments of alloys. 26.2 Describe the effects of hardening heat treatments of the microstructure and properties of silver-copper system and gold-copper system. 26.3 Discuss the clinical importance of heat treatments. 26.4 Describe low gold-content alloys and silver-palladium alloys
27. Soldering and Brazing	2	27.1 Define soldering and brazing. 27.2 Enlist steps of soldering technique 27.3 Explain factors affecting the result of soldering 27.4 Describe the clinical significance soldering and brazing.
Junior Prosthodontics		
28. Premolars Teeth Setup:	1hr	28.1 Explain positioning of maxillary and mandibular premolars as seen in frontal, lateral and incisal/ occlusal view. 28.2 List the anatomical and functional guidelines for arranging maxillary and mandibular premolars in complete dentures. 28.3 Define key terms such as buccal corridor, cusp angulation, central fossa position, and compensating curve. 28.4 Explain the correct positioning of premolars when viewed from the frontal, lateral, and incisal/occlusal occlusion, mastication, and denture stability.
General Pathology & Microbiology (Parasitology)		
29. Entamoeba histolytica & dispar	1	29.1 Describe morphology, transmission, clinical findings, and lab diagnosis of Entamoeba histolytica (amoebiasis) & Dispar.
30. Entamoeba gingivalis	1	30.1 Describe morphology, transmission, clinical findings, and lab diagnosis of Entamoeba gingivalis
31. Porphyromonas gingivalis	1	31.1 Describe morphology, transmission, clinical findings, and lab diagnosis of Porphyromonas gingivalis
32. Giardia spp	1	32.1 Describe morphology, life cycle, transmission, clinical findings, and lab diagnosis of Giardia spp
33. Taenia spp	1	33.1 Describe morphology, transmission, clinical findings, and diagnosis of Taenia saginata and Taenia solium

34. Echinococcus spp	1	34.1 Describe morphology, transmission, clinical findings, and diagnosis of Hydatid cysts
35. Introduction to Nematodes	1	35.1 Discuss the general characteristics of nematodes
36. Ascaris	1	36.1 Describe morphology, transmission, complications, and diagnosis of Ascaris infections.
37. Ankylostoma	1	37.1 Describe morphology, life cycle, and lab diagnosis of Ankylostoma (hookworm)
38. Enterobius	1	38.1 Describe morphology, life cycle, and lab diagnosis of Enterobius (pinworm).
39. Trematodes/ Schistosoma	1	39.1 Describe morphology, transmission, complications, and diagnosis of Schistosoma
Pharmacology		
40. Drug treatment of amebiasis	2	40.1 Classify anti amebic drugs on chemical and therapeutic basis 40.2 Describe the MOA, antimicrobial spectrum, clinical uses, ADRs, drug interactions of: • Metronidazole • Diloxanide furoate • Ipodoquinol • Emetine • Dehydroemetine • Chloroquine
41. Anthelminitics	1	41.1 Classify anthelmintics on the basis of type of parasite 41.2 Describe the MOA, anthelmintic spectrum, clinical uses, ADRs, drug interactions of: • Praziquantel • Niclosamide • Benzimidazoles • Albendazole • Mebendazole
42. Anti diarrheal drugs	1	42.1 Describe the Classifications, uses, MOA and adverse effects of antidiarrheal drugs
43. Chelating agents	1	43.1 Describe the Classifications, MOA, adverse effects and application of common chelating agents like dimercaprol, DMSA, EDTA, unithiol, penicillamine, deferoxamine, deferasirox
Lab Work		
Pharmacology		
44. Prescription writing	1	44.1 Construct prescriptions for tapeworm infestation and ascariasis.
General Pathology		

45. Ascaris	2	45.1 Identify the egg of the parasite
46. Ankylostoma	2	46.1 Identify the egg of the parasite
47. Tenia	2	47.1 Identify the egg of the parasite
48. Hydatid cyst	2	48.1 Identify the specimen
49. Enterobius	2	49.1 Identify the egg of the parasite
50. Squamous cell carcinoma	2	50.1 Identify the slide of squamous cell carcinoma under light microscope
51. Basal Cell carcinoma	2	51.1 Identify the slide of basal cell carcinoma under light microscope
52. Pleomorphic adenoma	2	52.1 Identify the slide of pleomorphic adenoma under light microscope
THEME 2: REPAIR / REHABILITATE		
Dental Materials		
53. Base Metal Alloys - Cobalt Chromium	2	53.1 Describe Cobalt-chromium alloys with respect to • Composition • Manipulation • Properties • Biocompatibility • Applications
54. Base Metal Alloys - Nickle Chromium	2	54.1 Describe Nickle-chromium alloys with respect to • Composition • Manipulation • Properties • Biocompatibility • Applications
55. Comparison of Base Metal and Casting Gold Alloys	2	55.1 Compare base metal alloys with casting gold alloys with respect to • Physical Properties • Mechanical Properties • Biocompatibility

56. Casting	3	56.1 Define casting and investment mold 56.2 Describe various components of a typical investment mold. 56.3 Explain the importance of investment mold for Casting procedure. 56.4 Discuss Casting machines.
-------------	---	--

		56.5 Explain the Faults produced during casting procedure.
57. Wrought Alloys - Steel & Stainless Steel	2	57.1 Define wrought alloys and give examples. 57.2 Define steel and stainless steel. 57.3 Describe the composition and properties of steel and stainless steel.
58. Applications of Stainless Steel	2	58.1 Describe the method for fabrication of stainless-steel denture bases and discuss their importance. 58.2 Discuss dental wires with special reference to its requirements and available materials.
59. Dental Porcelain - Composition, manufacturing, Properties and Types	3	59.1 Differentiate between ceramics and porcelain 59.2 Describe compositions of Dental Porcelain 59.3 Enlist various types of dental porcelains according to fusion temperature 59.4 Explain Manufacturing and Properties Porcelain with special reference to its composition.
60. All ceramic Restorations	3	60.1 Explain methods for strengthening ceramics 60.2 Explain all ceramic restorations with reference to materials used
61. CAD-CAM Restorations & Porcelain Veneers	2	61.1 Describe CAD-CAM restorations in dentistry. 61.2 Illustrate Porcelain Veneers
62. Porcelain Fused to Metal	2	62.1 Explain the requirements of alloys with respect to Porcelain fused to metal (PFM) restorations 62.2 Discuss the alloys that are currently available for porcelain bonding 62.3 Comprehend the fundamental principles of tooth preparation for PFM restorations including biomechanical considerations and esthetic requirements 62.4 Describe Capillary technology with respect to PFM restorations

J. Prosthodontics

63. Molar Teeth Setup	1hr	63.1 Explain positioning of maxillary and mandibular, molars as seen in frontal, lateral and incisal/ occlusal view 63.2 List the functional and anatomical guidelines for arranging maxillary and mandibular molars in complete dentures. 63.3 Define key terms such as central fossa position, compensating curve, curve of Wilson, and buccolingual inclination. 63.4 Explain the correct positioning of molars as seen from the frontal, lateral, and incisal/occlusal views, including cusp alignment, fossa
-----------------------	-----	---

		relationships, and occlusal plane orientation.
		63.5 Describe the role of molars in mastication, occlusal balance, denture stability, and load distribution.
64. Guidelines and compensating curves	1hr	64.1 Explain the Basic Guidelines for Tooth Setup. 64.2 Define Compensating Curves 64.3 List the basic guidelines for arranging teeth in complete dentures, including esthetics, phonetics, occlusion, and anatomical considerations. 64.4 Define the term Compensating Curves and related concepts (Curve of Spee, Curve of Wilson). 64.5 Explain the purpose of following standardized tooth setup guidelines in achieving esthetics, stability, and functional occlusion. 64.6 Describe how compensating curves contribute to balanced occlusion during functional movements (protrusive and lateral excursions).
65. Rehabilitation of function	2hrs	65.1 List the Laboratory Steps After Tooth Setup and Wax-Up. 65.2 Identify the basic trimming and finishing steps. 65.3 Describe the steps involved in polishing of final denture.
G.Pathology		
66. Overview of healing and repair	1	66.1 Define tissue repair 66.2 Enlist its two main reactions 66.3 Define the healing in terms of regeneration, fibrosis, resolution and organization. 66.4 Enlist the steps of scar formation.
67. Gram Negative rods related to respiratory tract (Haemophilus, Bordetella and Legionella)	3	67.1 Discuss the diseases, important properties, pathogenesis, Clinical findings, laboratory diagnosis and prevention Gram Negative rods related to respiratory tract

Community Dentistry		
68. Primary Health Care	2	68.1 Define Primary Healthcare. 68.2 Discuss declaration of Alama Ata. 68.3 Enlist and explain the principles of primary healthcare. 68.4 Describe the core elements of Primary Healthcare. 68.5 Enlist the requirements of Primary Healthcare (8 A's and 3C's). 68.6 Assess the integration of dental services within primary health care systems.
69. Introduction to healthcare systems	2	69.1 Discuss the health care systems. 69.2 Define and explain the structure of the healthcare system in Pakistan, with a focus on oral health services. 69.3 Identify challenges in delivering oral health care within the public health system. 69.4 Compare Pakistan's healthcare system to other countries of oral health outcomes.
70. Planning And Evaluation	1	70.1 Define plan. 70.2 Discuss planning cycle. 70.3 Discuss rational planning model 70.4 Define evaluation and discuss its types and steps.
71. Oral health survey	1	71.1 Define surveying and its role in dentistry. 71.2 Describe the steps of survey. 71.3 Describe pathfinder survey.
72. Oral Health and nutrition	1	72.1 Discuss the effect of nutritional deficiencies on oral health. 72.2 Describe the steps in dietary counselling. 72.3 Enlist WHO dietary goals.
73. Dental Auxiliaries	1	73.1 Define dental auxiliaries. 73.2 Classify dental auxiliaries. 73.3 List the role of dental auxiliaries. 73.4 Explain about their importance in community dental health.

Pharmacology		
74. Anticancer Drugs	2	74.1 Discuss and classify anti-cancer drugs. 74.2 Discuss & identify indications and adverse effects of alkylating agents. 74.3 Describe the pharmacology of anti-tumor drugs. 74.4 Summarize the regimens in the treatment of individual cancers 74.5 Describe the drug used in chemotherapy induced nausea and vomiting and other antitussive drugs
75. Anti-emetic drugs	1	75.1 Describe the Classification, pharmacological actions, MOA and adverse effects of Anti-emetics
Lab Work		
Community Dentistry		
76. Dietary counseling in a dental care setting	2	76.1 Assess patient's dietary habits and identify potential oral health risks by using FFQ and 24hrs dietary recall. 76.2 Provide personalized dietary advice to patient's specific needs and oral health status. 76.3 Apply oral health education principles to provide comprehensive dietary counseling. 76.4 Calculate and interpret Dental Health Score from patient's food diary
Periodontology		
77. Manual SRP/ Ultrasonic scaling	2	77.1 Identify the basic manual and ultrasonic scaling instruments.
Dental Materials		
78. Fabrication of Porcelain fused to Metal Prosthesis	10	78.1 Observe the steps during fabrication of Porcelain fused to Metal Prosthesis. 78.2 Recognize various materials and equipment

		used during fabrication of porcelain fused to metal prosthesis.
Theme 03: A patient with Chest Pain & Shortness of Breath requiring extraction		
General Pathology		

79. Hemostasis	1	79.1 Describe the sequence of events leading to hemostasis at a site of vascular injury 79.2 Discuss the roles of the platelets, coagulation factors, and endothelium in hemostasis
80. Hyperemia, congestion, Hemorrhage	1	80.1 Compare hyperemia and congestion 80.2 Describe the classification and pathophysiology of Hemorrhage
81. Edema	1	81.1 Define edema 81.2 Discuss the major pathophysiologic 81.3 Discuss the categories of edema 81.4 Distinguish between inflammatory and non-inflammatory edema. 81.5 Differentiate between exudate and transudate 81.6 Enlist the important clinical states associated with generalized or localized edema and the factors that underlie each condition
82. Shock	2	82.1 Describe the pathophysiology and types of shock 82.2 Describe the stages of shock 82.3 Define sepsis and septic shock 82.4 Discuss causes, pathogenesis, and laboratory findings in shock 82.5 Discuss Disseminated intravascular coagulation-DIC
83. Thrombosis	2	83.1 Describe the mechanism and pathogenetic mechanisms of vascular thrombosis 83.2 Enumerate hypercoagulable states
84. Embolism	2	84.1 Define embolism. 84.2 Enumerate the types of thromboembolism 84.3 Describe the clinical manifestations and consequences of pulmonary thromboembolism
85. Infarction	1	85.1 Define infarction 85.2 Discuss the pathogenesis and its various types.
Physiology		
86. Autonomic nervous system	2	86.1 Differentiate between the anatomical origin, neurotransmitters, and physiological functions of the sympathetic and parasympathetic divisions of the autonomic nervous system 86.2 Classify the major adrenergic (α_1 , α_2 , β_1 , β_2 , β_3) and cholinergic (nicotinic and muscarinic) receptors based on their location and functional response.

		86.3 Explain the mechanism of action of drugs that stimulate (agonists) or inhibit (antagonists) adrenergic and cholinergic receptors
Pharmacology		
87. CVS Drugs	5	87.1 Describe the Classification, pharmacological actions, MOA and adverse effects of • Antihypertensives • Diuretics • Antiarrhythmics • Drugs for CCF • Antianginal/MI
88. Drugs used in Bleeding disorders	3	88.1 Describe the Classification, Pharmacological actions, MOA and adverse effects of 1. Thrombolytics 2. Anticoagulants 3. Antiplatelets 4. Antihyperlipidemic
LAB WORK		
Pathology		
89. Lipid profile	2 hr	89.1 Identify lipemic serum 89.2 Learn and apply the techniques for accurately measuring serum lipid levels (Cholesterol, triglycerides HDL, and LDL)
Pharmacology		
90. Prescription writing	2	90.1 Construct Prescription for hypertension, angina/MI and CCF with dietary guidelines

Assessment Plan

Theory Paper	Modules	Theory Marks	Internal Assessment Theory Marks (10%)	OSPE/OSCE Marks	Internal Assessment OSPE/OSPE Marks (10%)	Total Marks
Paper G	Pre-Clinical II	120	13	120	13	266

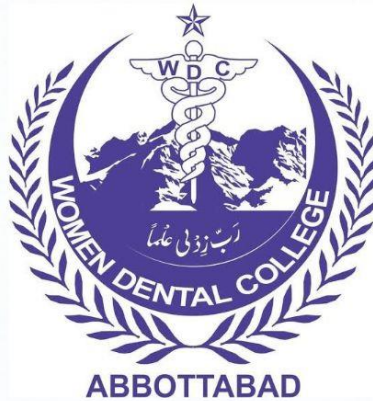
Pepper-G MCQs Distribution

SNo	Subject	Total MCQs
1	General Pathology & Microbiology	47
2	Pharmacology	15
3	Chemistry of Dental Materials	30
4	Community & Preventive Dentistry	11
5	Oral Pathology	4
6	Periodontology	2
7	Oral Medicine	2
8	Physiology	2
9	Pre-Clinical Prosthodontics	5
10	PRIME	2
Total		120

Pepper-G OSCEs Distribution

SNo	Subject	OSPE/O SCE	Viva Stations
1	General Pathology & Microbiology	05	01
2	Pharmacology	01	01
3	Community & Preventive Dentistry	01	01
4	Chemistry of Dental Materials	03	01
5	Pre-Clinical Operative Dentistry	2	-
6	Pre-Clinical Prosthodontics	2	-
7	PRIME	2	-
Total		20	

End of Study Guide



COLLEGE OF DENTISTRY



Contact Us



Address: Awami Road, Murree Rd,
Nawansher NawanShehr Town,
Abbottabad, Khyber Pakhtunkhwa.



Phone: +92(0)992-391443, 390337,
390090, +92 (0) 992 416073



Email: info@wdc.edu.pk



www.edu.pk