FOUNDATION-II MODULE

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

Teaching Hours Allocation

Table 2: Hours allocation for different subjects

S. No	Subject	Hours
1	Science of Dental Materials	39
2	Community and Preventive Dentistry	22
3	Pharmacology	21
4	General Pathology & Microbiology	16
5	Oral Pathology	1
7	Junior Operative	16
8	Junior Prosthodontics	8
9	Physiology	2
10	General Medicine	1

Learning Objectives

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. Perform essential lab techniques such as gram staining and culture media preparation, interpreting results to identify bacterial infections.
11. Perform and Practice self-protection protocol during laboratory sessions.
12. Perform and practice the self-protection protocol in the clinical skill laboratory.
13. Establish the importance of empathic communication in clinical practice during discussion sessions.
14. Define health and wellbeing, and explain their changing concepts and dimensions.

15. Identify responsibilities and indicators of health, and describe their significance.
16. Discuss the levels of health care and the Alma-Ata Declaration.
17. Explain the principles, functions, and gaps in primary health care, especially in dental care.
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.

Table 1: Learning Objectives Theme Wise

Theme I: Cellular Response to Injury & Drugs			
SNo	**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.

7.	Pathologic calcification	1	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 of protein accumulation, glycogen accumulation and lipid accumulation.
9.	Pigmentation	1	9.1 Describe types of pigments. 9.2 Differentiate between endogenous and exogenous pigments.
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 and Gonorrhea diseases	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 of 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 of bacterial cell	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	1	14.1 Describe medically important members of normal flora and their anatomic location. 14.2 Describe various phases of bacterial growth curve.
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 to basic pharmacology terms	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	1	19.1 Enlist various sources of drugs. 19.2 Describe the genetic engineering source of drugs with examples
20.	Active principles of drugs	1	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 of 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) of drugs	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		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 State Concentration (Css) and Kinetics of Drug Elimination	1	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 Css 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 agonist. 33.5 Classify agonist. 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 and Tachyphylaxis	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 drug reactions		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.
Community Dentistry			
41.	Introduction to Epidemiology	1hr	41.1 Define epidemiology. 41.2 Describe uses of epidemiology. Classify epidemiological study designs
42.	Measurements of epidemiology	1 hr	42.1 Discuss the measurements in epidemiology. 42.2 Differentiate between rate, ratio and proportion. Differentiate between incidence and prevalence.
43.	Descriptive Study	2 hrs	43.1 Explain the characteristics of a descriptive study and its role in oral health research. 43.2 Identify the strengths and limitations of descriptive studies. 43.3 Interpret findings from descriptive studies in a population 43.4 Discuss the features of case report and case series.
44.	Cross-sectional study design	1hr	44.1 Differentiate between descriptive and analytical study design. 44.2 Discuss the distinct features of cross-sectional study. 44.3 Discuss the steps in a cross-sectional study.

			Discuss the strength and weaknesses of cross-sectional studies.
45.	Case-control study design	2hr	45.1 Discuss the distinct features of case-control study design. 45.2 Discuss the steps in a case-control study design. 45.3 Define matching and its concept in selection of cases and control. 45.4 Discuss the types of bias in a case-control study. 45.5 Discuss the strength and weaknesses of case-control studies. 45.6 Discuss the concept of confounding factor. Calculate odds ratio for a given 2×2 table.
46.	Cohort study design	2hrs	46.1 Discuss the distinct features of cohort study design. 46.2 Discuss the steps in a cohort study design. 46.3 Differentiate the types of cohort studies. 46.4 Differentiate between case-control and cohort study design. 46.5 Discuss the types of bias in a cohort study. 46.6 Discuss the strength and weaknesses of analytical studies. 46.7 Differentiate between relative risk and attributable risk.
47.	Experimental studies	2hrs	47.1 Classify experimental studies. 47.2 Define RCT. 47.3 Discuss the importance of randomization. 47.4 Discuss the steps carried out to conduct an RCT. 47.5 Explain types of blinding. 47.6 Discuss the strengths and weaknesses of a RCT.

			47.7 Discuss the bias and ethical considerations in a RCT. Discuss non-randomized control trails.
48.	Evidence Based Dentistry	1hr	48.1 Define evidence-based dentistry. 48.2 Discuss the importance of evidence-based dentistry in making clinical decisions. 48.3 Describe the Stages of evidence-based dentistry. Explain the hierarchy of evidence pyramid.
LAB WORK			
Pharmacology			
49.	Lab protocols	3	49.1 Describe the general protocols for working safely and efficiently in lab. 49.2 41.2 Describe biosafety procedures and precautions taken in labs.
50.	Solutions (5% dextrose, normal saline)	3	50.1 Identify the ingredients of 5% dextrose solution and normal saline. 50.2 Prepare and dispense 50ml of 5% dextrose solution and normal saline. 50.3 42.3 Describe its uses.
General Pathology			
51.	Gram staining	2	51.1 Perform gram staining. 51.2 Interpret the results of gram staining.
52.	Culture media	2	52.1 Identify different types of culture media.
53.	Coagulative necrosis		53.1 Identify the slide of coagulative necrosis under the microscope.
54.	Pathological calcification		54.1 Identify the slide of pathological calcification under the microscope.

55.	Hyperplasia		55.1 Identify the slide of hyperplasia under the microscope.
	Science of Dental Materials		
56.	Introduction to instruments that are used in dental materials laboratory	1	56.1 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			
57.	Orientation to Community Dentistry	1hr	57.1 Define the scope and importance of community dentistry in improving public health. 57.2 Recognize the role of a dentist in community oral health initiatives.

			57.3 Describe the association between community dentistry and public health policies. 57.4 Assess common challenges faced in delivering community dental services.
58.	Principles of Public Health	1hr	58.1 Define and explain the principles of public health 58.2 Identify and explain key principles of public health to dental care. 58.3 Describe how social, economic, and environmental factors affect oral health. 58.4 Compare different public health approaches to disease prevention and health promotion. 58.5 Discuss the role of public health in planning community-based dental care programs.
59.	Concepts of Health and Disease Prevention	4 hrs	59.1 Define health. 59.2 Define and identify the different types of changing concepts of health. 59.3 Explain the holistic concept of health. 59.4 Define and describe the dimensions of health. 59.5 Define the determinants of health. 59.6 Describe how these health determinants affect oral health. 59.7 Define and describe concepts of wellbeing. 59.8 Describe the indicators of health. 59.9 Define healthcare and levels of healthcare. 59.10 Discuss global health goals (MDG's and SDG's). 59.11 Define and describe the concept of causation. 59.12 Define and describe the concept of disease, the Natural history of the disease.

			59.13 Organize and explain the changing pattern of disease, community diagnosis and treatment. 59.14 Define and explain concepts of control. 59.15 Define the concept of prevention. 59.16 Identify the level of prevention and disease process. 59.17 Describe mode of prevention.
60.	Primary Health Care	2 hrs	60.1 Define Primary Healthcare. 60.2 Discuss declaration of Alama Ata. 60.3 Enlist and explain the principles of primary healthcare. 60.4 Describe the core elements of Primary Healthcare. 60.5 Enlist the requirements of Primary Healthcare (8 A's and 3C's). 60.6 Assess the integration of dental services within primary health care systems.
61.	Introduction to Health Care Systems	2 hrs	61.1 Discuss the health care systems. 61.2 Define and explain the structure of the healthcare system in Pakistan, with a focus on oral health services. 61.3 Identify challenges in delivering oral health care within the public health system. 61.4 Compare Pakistan's healthcare system to other countries of oral health outcomes.
Science of Dental Materials			
62.	Introduction, Selection &	2 hrs	62.1 Define the science of dental materials. 62.2 Classify dental materials.

	Evaluation of dental materials		62.3 Describe preventive dental materials. 62.4 Describe Auxiliary Dental Materials. 62.5 Describe Restorative Dental Materials. 62.6 Discuss the criteria for dental material selection and evaluation.
63.	Introduction to the Properties used to Characterize Materials	1 hr	63.1 Discuss the following:- • Properties during storage • Properties during setting/manipulation 63.2 Properties of the set material
64.	Mechanical properties Stress strain graph	2 hrs	64.1 Describe various properties that are manifested in stress strain graph
65.	Impact strength and fracture toughness	1 hr	65.1 Define impact strength and fracture toughness 65.2 Explain impact strength, fracture toughness and their significance in dental materials 65.3 Explain the test used to evaluate impact strength of dental materials
66.	Wear	1 hr	66.1 Discuss the following terms:- • Abrasion • Attrition 66.2 Erosion
67.	Hardness	1 hr	67.1 Define hardness of dental materials. 67.2 Discuss various tests used to evaluate the hardness of dental materials.
68.	Viscoelasticity	1 hr	68.1 Define & Discuss the following:- • Elasticity and viscoelasticity • Models used to represent elastic, plastic, viscoelastic materials 67.2 Creep
69.	Rheological properties of	1hr	69.1 Define the following terms:-

	materials		• Shear stress • Shear rate 69.2 Discuss the following:- • Newtonian fluids • Dilatant • Pseudoplastic • Viscosity • Flow • Mixing time • Working time • Setting time
70.	Thermal properties of materials	1hr	70.1 Discuss • Thermal conductivity • Thermal diffusivity • Exothermic Reactions
71.	Adhesion	1	71.1 Discuss • Types of Adhesion a. Factors Affecting Adhesion
72.	Miscellaneous physical properties	1	72.1 Discuss • Dimensional changes • Density Color
73.	Chemical Properties	1	73.1 Discuss • Solubility • Leaching of constituents Tarnish and corrosion

74.	Biological Properties	1	74.1 Explain • Biocompatibility • Toxicity • Bioinert Bioactive
75.	Synthetic Polymers	1 hour	75.1 Define • Monomer • Polymer • Polymerization 75.2 Classify Polymerization 75.3 Describe various steps of Addition polymerization 75.4 Discuss Factors affecting properties of resulting polymer) 75.5 Describe Chain branching or crosslinking (Factors affecting properties of resulting polymer) 75.6 Describe Condensation polymerization 75.7 Differentiate between thermosetting and thermoplastic polymers
76.	Structure and properties of synthetic polymers	1 hour	76.1 Discuss physical changes occurring during polymerization • Phase changes • Temperature changes • Dimensional changes • Factors which control properties of polymers • Glass transition temperature • Softening temperature 76.2 Discuss • Methods of fabricating polymers • Dough moulding • Injection moulding • Thermoplastic polymers

			Enlist advantages and disadvantages of synthetic polymers
Lab work			
77.	Wire bending exercise	1	77.1 Perform stainless steel wire bending according to the alphabetical shapes of A, B, F, G, S and K.
Junior Operative (Operative Dentistry and Endodontics)			
78.	Introduction to Operative Dentistry	4	78.1 Discuss operative dentistry and its historical background. 78.2 Discuss the indications, considerations, dynamics of operative dentistry. 78.3 Discuss the future prospects in operative dentistry. 78.4 Discuss about endodontics. 78.5 Enlist the main steps involved in RCT • Indications • Contra-indications • Considerations of endodontic procedures 78.6 Discuss the future prospects and advancements in endodontics.
79.	Introduction to equipment and instruments used in operative procedures	2	79.1 Identify the equipment used in a dental operatory. 79.2 Identify hand instruments used in restorative procedures. 79.3 Identify rotary cutting instruments used in restorative procedures. 79.4 Identify different parts of the dental chair. 79.5 Demonstrate how to operate the dental chair.
Junior Prosthodontics			

80.	Deteriorating adult dentition	1hr	80.1 Discuss the causes of deteriorating dentition. 80.2 Discuss the sequelae of tooth loss. 80.3 Define the partially dentate and complete edentulous conditions.
81.	Introduction to Prosthodontics	1hr	81.1 Define Prosthodontics. 81.2 Define Pre- Clinical Prosthodontics. 81.3 Discuss branches of Prosthodontics. 81.4 Explain the choice of treatment options according to patient-specific needs
82.	Complete Dentures	1hr	82.1 Define Complete Denture. 82.2 Discuss its role in rehabilitation of edentulous patients. 82.3 Enlist the parts and surfaces of complete dentures 82.4 Enlist the fabrication steps of Complete Dentures
Theme 3: Foundations of Pre-Clinical Skills			
S.No	**Topic**	**Hours**	**Learning objectives**
Science of Dental Materials			
83.	Impression material requirements	1	83.1 Define dental impression. 83.2 Describe significance of impression. 83.3 Discuss ideal requirements of dental impression materials. 83.4 Identify various types of impression trays 83.5 Explain the uses of different impression trays 83.6 Describe various impression making techniques

84.	Dental impression materials classification	1	84.1 Classify impression materials on the basis of • Elasticity/rigidity • Viscosity • Setting reaction • Uses • Applied stress
85.	Non-elastic impression materials - Impression Compound	1	85.1 Describe the composition of impression Compound. 85.2 Describe the manipulation of impression Compound 85.3 Describe the setting reaction of impression Compound 85.4 Describe the properties of impression Compound 85.5 Describe the application of impression Compound 85.6 Describe the advantages and disadvantages of impression Compound
86.	Non-elastic impression materials - Zinc Oxide eugenol Impression	1	86.1 Describe the composition of Zinc Oxide eugenol Impression material. 86.2 Describe the manipulation of Zinc Oxide eugenol Impression material. 86.3 Describe the setting reaction of Zinc Oxide eugenol Impression material. 86.4 Describe the properties of Zinc Oxide eugenol Impression material. 86.5 Describe the application of Zinc Oxide eugenol Impression material. 86.6 Describe the advantages and disadvantages of Zinc Oxide eugenol Impression material.
87.	Elastic impression materials –	1	87.1 Describe hydrocolloid. 87.2 Describe the composition of Agar.

	Hydrocolloids – Agar		87.3	Describe the manipulation of Agar.
			87.4	Describe the setting reaction of Agar.
			87.5	Describe the properties of Agar.
			87.6	Describe the application of Agar.
			87.7	Describe the advantages and disadvantages of Agar.
88.	Elastic impression materials – Hydrocolloids – Alginate	2	88.1	Describe the composition of Alginate.
			88.2	Describe the manipulation of Alginate.
			88.3	Describe the setting reaction of Alginate.
			88.4	Describe the properties of Alginate.
			88.5	Describe the application of Alginate.
			88.6	Describe the advantages and disadvantages of Alginate.
89.	Synthetic elastomers – Polysulphides	1	89.1	Discuss synthetic elastomers.
			89.2	Describe the composition of Polysulphides.
			89.3	Describe the manipulation of Polysulphides.
			89.4	Describe the setting reaction of Polysulphides.
			89.5	Describe the properties of Polysulphides.
			89.6	Describe the application of Polysulphides.
			89.7	Describe the advantages and disadvantages of Polysulphides.
90.	Synthetic elastomers – Condensation silicones	1	90.1	Describe the composition of Condensation silicones.
			90.2	Describe the manipulation of Condensation silicones.
			90.3	Describe the setting reaction of Condensation silicones.
			90.4	Describe the properties of Condensation silicones.

			90.5 Describe the application of Condensation silicones. 90.6 Describe the advantages and disadvantages of Condensation silicones
91.	Synthetic elastomers – Addition silicones	1	91.1 Describe the composition of Addition silicones. 91.2 Describe the manipulation of Addition silicones. 91.3 Describe the setting reaction of Addition silicones. 91.4 Describe the properties of Addition silicones. 91.5 Describe the application of Addition silicones. 91.6 Describe the advantages and disadvantages of Addition silicones.
92.	Synthetic elastomers – Polyether	1	92.1 Describe the composition of Polyether. 92.2 Describe the manipulation of Polyether. 92.3 Describe the setting reaction of Polyether. 92.4 Describe the properties of Polyether. 92.5 Describe the application of Polyether. 92.6 Describe the advantages and disadvantages of Polyether.
Lab work			
93.	Manipulation of Impression materials	8	93.1 Manipulations of various impression materials as per practical logbook (8 hours). 93.2 Perform Impression taking with alginate and model pouring with gypsum products (4 hours). 93.3 Perform Manipulation of impression compound (2 hours). 93.4 Demonstrate manipulation of zinc oxide eugenol and silicone impression materials (2 hours).

Junior Prosthodontics			
94.	Dental Impressions and tray selection	1hr	94.1 Define Dental Impression. 94.2 Understand the principles of impression making. 94.3 Classify dental trays. 94.4 Explain the significance of choosing an appropriate impression tray in the fabrication of complete dentures.
95.	Denture bearing areas	2hrs	95.1 Describe Anatomical Landmarks of Maxillary Arch for covering denture base area. 95.2 Describe Anatomical Landmarks of Mandibular Arch for covering denture base area.
96.	Impressions for complete denture	2hrs	96.1 Discuss initial impression in complete denture fabrication. 96.2 Discuss how initial impressions are used to fabricate custom trays. 96.3 Discuss final impression making in complete denture fabrication. 96.4 Explain the importance of final impressions
Junior Operative (Operative Dentistry and Endodontics)			
97.	Introduction to Phantom Head Lab	4	97.1 Describe the basics of Phantom head lab. 97.2 Discuss the SOPS of the lab.
98.	Chair Positioning	4	98.1 Realize the significance of chair proper positioning in operative dentistry. 98.2 Discuss the different chair positions for working on different teeth and arches for both the right- and left-handed operators. 98.3 Demonstrate different seating positions for different quadrants.

99.	Instruments	2	99.1	Classify Instruments.
			99.2	Identify different hand and engine driven instruments.
			99.3	Demonstrate different instrument’s grip.
			99.4	Identify different instruments and their functions.