

Block 1 - 1st Spiral

Module I: Dental Health

Theme: Foundation II

Duration: 06 Weeks

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1 st module, the students of 2 nd Year BDS should be able to:			
Properties of Dental Materials	*Outline physicommechanical, chemical, thermal and rheological properties of dental materials. *Relate properties of restorative materials to clinical applications.	<u>Knowledge</u> *Describe the structure of matter. *Explain the principles of adhesion among dental materials. *Differentiate between primary and secondary bonds. *Describe the principles of surface interaction including the concept of substrate, adhesive, adherend and processes which occur at the interface. *Demonstrate knowledge of the fundamental mechanical, chemical, thermal and physical principles that make the foundation of the clinical behaviour and application of dental materials. *Infer stress-strain graphs for the	Interactive Lectures SGDs CBLs	MCQs SEQs/SAQs Viva Voce

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1 st module, the students of 2 nd Year BDS should be able to:			
		elaboration of mechanical properties. *Differentiate between various properties of materials e.g. dimensions of colour, tarnish and corrosion, fracture toughness and resilience, syneresis and imbibition, creep and flow etc. *Differentiate between erosion, abrasion, abfraction and attrition. *Outline the need for biological considerations regarding the selection and performance of dental materials for clinical applications. *Differentiate between toxicity, inflammation and allergic response. *Explain nickel hypersensitivity, mercury toxicity and latex allergy.		
		<u>Skill</u> *Demonstrate the	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1 st module, the students of 2 nd Year BDS should be able to:			
		use of weighing scales, cylinders, and beakers for manipulation of materials *Perform wire bending activity (Bend Stainless Steel wire to make different alphabets A, C, D, S, T and X		
Gypsum Products	*Relate chemistry and properties of gypsum products, waxes and investment materials to relevant clinical procedures.	<u>Knowledge</u> *Classify gypsum Products. *Describe the sources, chemistry and properties of gypsum products used In dentistry. *Relate the composition And crystalline structure of dental stone and dental plaster. *Compare the dental stone and dental plaster. *Describe setting reactions of dental stone and dental plaster. *Describe the manipulation factors which affect the setting time and physico-mechanical	Interactive Lectures SGDs CBLs	MCQs SEQs/SAQs Viva Voce

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1 st module, the students of 2 nd Year BDS should be able to:			
		properties of the final set product. *Explain the methods used for the disinfection of Dental gypsum models and study casts. *Demonstrate the proper mixing technique of dental gypsum used for preparing study models and casts.		
		<u>Skill</u> *Demonstrate the manipulation of Gypsum. *Perform the fabrication of the plaster slab.		
Dental Waxes	*Describe the classification, properties, and uses of Dental Waxes *Explain applications of waxes in dentistry	<u>Knowledge</u> *Describe the classification, properties, and uses of Dental Waxes *Explain applications of waxes in dentistry *Identify different types of dental waxes e.g. Sticky, *Ortho, Inlay, Modelling and Carding wax.	Interactive Lectures SGDs CBLs	MCQs SEQs/SAQs Viva voce

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1 st module, the students of 2 nd Year BDS should be able to:			
		*Manipulate Modelling wax.		
		<u>Skill</u> *Fabricate wax pattern for acrylic partial dentures *Identify the types of waxes available in the dental laboratory	Demonstrations Practicals	OSPE

Block 1 – 1st Spiral

Module II: Dental Cariology

Theme: Essentials of Dentistry II

Duration: 06 Weeks

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2 nd module, the students of 2 nd Year BDS should be able to:			
Dental amalgam	*Outline compositional characteristics, properties and manipulative variables of dental amalgam.	<u>Knowledge</u> *Classify Dental Amalgam based on composition. *Describe the setting mechanism of different types of dental amalgams e.g. low copper Vs. high copper amalgam alloys. *Describe trituration and the effect of mercury-alloy ratio on the properties of set materials. *Explain the hazards associated with mercury. *Demonstrate the correct dispensing, trituration and application of dental amalgam. *Demonstrate hand mixing and mechanical mixing of dental amalgam.	Interactive Lectures SGDs CBLs	MCQs SEQs/SAQs Viva Voce
		<u>Skill</u> *Identify dental amalgam kit and armamentarium *Perform hand-trituration of dental amalgam		

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools	
	By the end of the 2 nd module, the students of 2 nd Year BDS should be able to:				
				MCQs SEQs/SAQs Viva Voce	Interactive lectures SGDs CBLs
		Cements, Liners & Bases	*Relate the physico mechanical properties of dental cements to respective clinical applications	<u>Knowledge</u> *Outline basic terminologies related to dental cements e.g. liners, bases. *Explain the setting mechanism of different dental cements. *Describe the clinical applications of different dental cements. *Describe luting agents, types and their properties *Infer the use of temporary restorative materials, properties and their uses. *Interpret techniques for handling and manipulation of various dental cements. *Describe the Atraumatic Restorative Technique(ART) and Sandwich Technique. *Analyse modifications in Glass-ionomer cements. *Demonstrate the correct dispensing, manipulation and handling of Zinc phosphate cement, Zinc oxide eugenol cement, Glass ionomer cement, and Calcium hydroxide cement.	
Dentifrices & Fluoride Agents	*Appraise use of preventive materials	<u>Knowledge</u> *Describe the	Interactive lectures	MCQs SEQs/SAQs	

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2 nd module, the students of 2 nd Year BDS should be able to:			
Pit & Fissure Sealants	in dentistry.	composition, properties and clinical application of pit and fissure sealants. *Outline the types, composition and purpose of dentifrices and mouthwashes. *Identify different types of fluoride agents, their mode of action and application.	SGDs CBLs	Viva Voce

Dental Materials

Block 2 – 1st Spiral

Module III: Oral Disease Management I

Theme: Dental Rehabilitation I

Duration: 06 Weeks

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 3 rd module, the students of 2 nd Year BDS should be able to:			
Composites	*Relate compositional characteristics and properties of resin- based materials to clinical applications.	<u>Knowledge</u> *Describe the history and classification of restorative composites *Discuss the properties of different components of restorative composites *Describe the history and classification of restorative composites *Discuss the properties of different components of restorative composites *Compare the characteristics and clinical applications for composite restorative materials *Explain different modifications concerning restorative composites *Describe finishing and polishing procedures for restorative composites *Explain the biocompatibility issue related to restorative composites *Describe the recent	Interactive lectures SGDs CBLs	MCQs SEQs/SAQs Viva voce

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 3 rd module, the students of 2 nd Year BDS should be able to:			
		advances in restorative composites		
		<u>Skill</u> *Identify all the components in a dental composite kit *Demonstrate the steps of composite manipulation	Demonstrations Practicals	OSPE
Adhesion & Bonding	*Recall the composition of Dental composites. *Classify dental composite based on: **Activation methods **filler particle sizes **newer generations (Flowable, Packable, Bulk-fill)	<u>Knowledge</u> *Infer the concept of bonding and adhesion in dentistry *Appraise the significance of enamel and dentine bonding *Describe various generations of bonding *Compare the development of the smear layer and hybrid layer *Describe the acid- etch technique and dentin bonding	Interactive lectures SGDs CBLs	MCQs SEQs/SAQs Viva voce
	*Analyse the evolution of light- curing systems			
	*Relate the properties of resin- based composites to clinical situations *Explain the basic mechanisms of bonding *Infer the ideal adhesive characteristics	<u>Skill</u> *Identify all the components in a dental composite kit *Demonstrate the steps of composite manipulation	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 3 rd module, the students of 2 nd Year BDS should be able to:			
	*Review in detail the enamel and dentine bonding systems *Discuss the evolution of Bonding systems *Classify adhesive systems			

Block 2 – 1st Spiral

Module IV: Oral Disease Management II

Theme: Dental Rehabilitation I

Duration: 06 Weeks

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4 th module, the students of 2 nd Year BDS should be able to:			
Synthetic Polymers	*Relate the properties of prosthetic polymers and associated materials to respective clinical applications.	<u>Knowledge</u> *Describe the definition of denture base material *Describe the ideal properties and types of denture base materials *Describe the chemical composition of denture base materials *Describe the properties of denture base materials *Describe the procedures involved in the fabrication of denture base materials *Discuss clinical application, manipulation, processing, and care of dentures for laboratory-processed prosthetic resins *Describe biocompatibility issues associated with denture base materials *Describe various methods of polymerization of denture base materials	Interactive lectures SGDs	MCQs SEQs/SAQs Viva voce
		<u>Skill</u> *Manipulate acrylic		

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4 th module, the students of 2 nd Year BDS should be able to:			
		(polymer and liquid) and identify the physical changes taking place during the mixing and setting of polymers *Demonstrate the mixing of heat cure acrylic resin *Demonstrate the steps of acrylic denture fabrication *Compare heat and self-cure acrylic resin	Practicals	
Denture Base Polymers & Liners	*Describe the physical, chemical, and mechanical properties of denture base polymers *Classify of acrylic denture base materials *Describe the composition of acrylic denture base materials *Describe the processing of heat and chemically activated resins *Compare compression moulding technique and injection moulding technique for complete denture processing *Compare heat-activated and chemically activated acrylic resins	<u>Knowledge</u> *Appraise the concept of relining and rebasing. *Differentiate between temporary and permanent soft relining materials. *Compare hard and soft relining materials. *Describe the procedure of relining and rebasing. *Outline the need for tissue conditioning. *Demonstrate the correct dispensing, manipulation and application of self-cure and heat-cure dental acrylic resin (e.g. for fabrication of custom tray)	Interactive lectures SGDs	MCQs SEQs/SAQs Viva voce
		<u>Skill</u> *Manipulate acrylic (polymer and liquid) and identify the	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4 th module, the students of 2 nd Year BDS should be able to:			
	*Describe the defects during denture processing Enlist repair materials for dentures	physical changes taking place during the mixing and setting of polymers *Demonstrate the mixing of heat cure acrylic resin *Demonstrate the steps of acrylic denture fabrication Compare heat and self-cure acrylic resin		
Artificial Teeth	*Relate the properties of prosthetic polymers and associated materials to respective clinical applications.	<u>Knowledge</u> *Compare types of artificial teeth *Discuss their advantages and disadvantages	Interactive lectures SGDs	MCQs SEQs/SAQs Viva voce
Impression Materials	*Identify ideal properties of impression materials *Classify impression materials based on: **Mechanical Properties **Viscosity **Elastic properties and non-elastic behaviour **Setting Reaction *Identify the composition of various impression materials *Describe the properties of impression materials *Manipulate the variables of Impression	<u>Knowledge</u> *Classify impression materials used in dentistry. *Describe the characteristics and properties of elastic and non-elastic impression materials. *Differentiate between reversible and irreversible hydrocolloids.*Define duplicating materials, applications and techniques. *Describe modifications in alginate. *Compare different types of elastomers based on properties. *Define working and	Interactive lectures SGDs	MCQs SEQs/SAQs Viva voce

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4 th module, the students of 2 nd Year BDS should be able to:			
	materials *Classify Non-elastic Impression Materials: **ImpressionCompound d **Impression Plaster **Zinc-Oxide Eugenol Paste **Impression Waxes *Classify Elastic Impression Materials **Reversible & Irreversible Hydrocolloids **Non-aqueous Elastomers	setting time *Infer the importance of correct manipulation of impression materials. *Outline various methods of disinfecting different impression materials. *Identify different impression materials *Demonstrate the correct dispensing, manipulation and handling of Alginate, ZnO - Eugenol paste and Impression compound		
		<u>Skill</u> *Demonstrate proper techniques used for mixing, handling and performing manipulation of impression material (Zinc Oxide Eugenol) *Demonstrate proper techniques used for mixing, handling and performing manipulation of impression materials (Alginate)	Demonstrations Practicals	OSPE

Block 3 – 1st Spiral

Module V: Medical & Dental Healthcare

Theme: Dental Rehabilitation II

Duration: 06 Weeks

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5 th module, the students of 2 nd Year BDS should be able to:			
Metals	*Correlate basic concepts of metallurgy to prosthesis design and implantology.	<u>Knowledge</u> *Infer the basic concepts related to the processing and solidification of dental alloys. *Describe different types of metals and alloys used in the fabrication of dental prostheses. *Interpret the alloy phase diagrams. *Explain the types, processing and clinical applications of high noble, noble and base metal alloys. *Explain the casting procedures for metal alloys. *Explain the types, processing and clinical applications of stainless steel in dentistry. *Discuss the composition of various orthodontic wires.	Interactive lectures SGDs CBLs	MCQs SEQs/SAQs Viva Voce
		<u>Skill</u> *Identify different metallic components of a Cast Partial Denture. *Fabricate different alphabets to practice the manipulation of wire. *Draw the alloy-phase diagrams *Identify metals (clasps and connectors) *Identify the differences between NiTi and SS		

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5 th module, the students of 2 nd Year BDS should be able to:			
		wires		
RM-GIC	*Relate compositional characteristics and properties of resin- based materials to clinical applications	*Describe the composition and properties of Resin modified materials (e.g. RMGIC) *Compare Giomers and Compomers.	Interactive lectures SGDs CBLs	MCQs SEQs/SAQs Viva Voce

Block 3 – 1st Spiral

Module VI: Evidence-Based Rehabilitation

Theme: Dental Rehabilitation II

Duration: 06 Weeks

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6 th module, the students of 2 nd Year BDS should be able to:			
Casting	*Enumerate the steps of investment and basic casting. *Describe the factors which effect the final cast. *Explain compensation for shrinkage during the casting process. *Interpret the defects of casting.	<u>Knowledge</u> *Enumerate various steps involved in the casing procedure. *Illustrate sprue design. *Describe the causes of defective casting. *Analyse measures to overcome defective casting.	Interactive lectures SGDs CBLs	MCQs SEQs/SAQs Viva Voce
		<u>Skill</u> *Identify the steps of fabrication of porcelain fused to metal crowns. *Identify steps of the casting procedure.	Demonstrations Practicals	OSPE
Ceramics/ Porcelain-fused metal crowns	*Appraise casting procedures for fabrication of ceramic fused to metal prosthesis.	<u>Knowledge</u> *Classify dental ceramics. *Relate the basic chemistry and composition of ceramics. *Compare and contrast general procedures involved in the fabrication of dental ceramics. *Infer the concept of metal-ceramic bonding. *Describe metal-ceramic restorations, their uses and properties. *Describe all-ceramic restoration.	Interactive lectures SGDs CBLs	MCQs SEQs/SAQs Viva Voce

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6 th module, the students of 2 nd Year BDS should be able to:			
		their uses and properties. *Illustrate methods of strengthening ceramics. *Describe CAD-CAM in the context of ceramics *Identify different ceramic restorations e.g. PFM crown and bridge		
		<u>Skill</u> *Identify different materials used in the ceramic laboratory. *Identify the steps in the construction of a PFM crown in a ceramic workshop *Perform the procedure of ceramic bonding	Demonstrations Practicals	OSPE
Investment Materials	Discuss the salient requirements for a material to be used as an investment material	<u>Knowledge</u> *Classify investment materials used in dentistry. *Describe the composition, setting reaction and properties of different types of investment materials used in dentistry. *Identify different types of investment materials	Interactive lectures SGDs CBLs	MCQs SEQs/SAQs Viva Voce
		<u>Skill</u> *Identify casting defects	Demonstrations Practicals	OSPE