BDS
Year-II

Integrated Curriculum
(2025)

National University of Medical Sciences
Pakistan

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Acknowledgements

The Integrated Curriculum for 2nd Year BDS has been planned, designed and compiled by Dental College, HITEC-IMS Team including Dr. Ambreen Gul, Chair curriculum committee C Dr. Faizan Munir Khan, HoD Dental Education Department along with the worthy subject specialist HoDs.

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Preamble

The recently revised standards of the Pakistan Medical and Dental Council (PMCDC) encourage the integration of major subjects both horizontally and longitudinally. This curriculum meets the standards of the Pakistan Medical and Dental Council and our students, on completion of the program will develop the required competencies as defined worldwide in a graduate doctor.
It has been developed by the faculty of basic and clinical sciences, along with their respective HPE teams from the constituent/ affiliated colleges in collaboration with the NUMS Academic Directorate.

Curriculum Perspective

The NUMS curriculum has evolved, taking into consideration constructivists and behaviourists, withsome elements of the cognitive approach. It allows students to construct their knowledge based on what they already know and to use that knowledge in purposeful activities requiring decision-making, problem-solving, and judgments.

Level of Integration

NUMS will follow the correlation, that is, level 7 of Harden's levels of integration in this year. Emphasis remains on disciplines or subjects with subject-based courses that take up most of the curriculum. Within this framework, an integrated teaching session or course is introduced, in addition to subject-based teaching. This session brings together the areas of interest that are common to each subject. Although teaching is discipline-based, topics are correlated and taught in a clinical context for better understanding and application of concepts. Clinical teaching gradually increases over the subsequent years of the BDS program.

Curricular Organization and Structure

a. There are three blocks in year II, each having modules, the duration of which depends on the number and complexity of the objectives to be achieved in that module.
b. The curriculum will be delivered by modular teams of multidisciplinary basic science faculty and relevant clinical faculty members.
c. Planning and delivery will be coordinated by year coordinators, who guide module coordinators in their respective years for efficient implementation.
d. Modular Coordinator will be responsible for teaching and assessment during each module.
e. All NUMS colleges will provide the study guides for each module to students.
f. To attain integration in the BDS program, teaching will be conducted in two spirals as follows:
    1) **Basis of Medicine II** (including topics from the disciplines of Pharmacology C General Pathology)
    2) **Essentials of Dentistry II, Dental Rehabilitation Is Dental Rehabilitation II** (including topics from the disciplines of Dental Materials, Community Dentistry C Vertically Integrated Prosthodontics C Operative Dentistry)
    3) The longitudinal theme of behavioural sciences is an integral part of years II and III.

4) Professional Examinations, both theoretical and practical, are integrated and theme based
5) There are six theoretical examinations, one for each block of teaching, that will assess the themes of 'Basis of Medicine II', 'Essentials of Dentistry II', 'Dental Rehabilitation I'C 'Dental Rehabilitation II'
6) Students will be required to pass each discipline component in the integrated paper separately to discourage selective strategic learning behaviours.
7) If a student fails an exam, they will have to appear again in that integrated exam and be assessed by all the disciplines involved in the theme of the examination.

Competencies

The focus of this curriculum is on the role of a general physician, as identified in the CanMeds Competency Framework. These are Medical Expert, Manager, Communicator, Health Advocate, Collaborator, Professional and Scholar.The competencies focused on in year IIare as follows:

a. Medical Knowledge
b. Procedural skills
c. Problem-solving
d. Communication skills
e. Professionalism
f. Research

Learning Outcomes

By the end of Year II, students will be able to:

a. Demonstrate foundational knowledge of dental materials and their clinical applications, including understanding the physical, chemical, and mechanical properties of commonly used materials and their relevance to restorative and prosthetic dentistry.

b. Apply the basic principles of prosthodontics and restorative dentistry by recognizing anatomical landmarks, understanding edentulous impressions, and performing essential procedures involved in denture fabrication and cavity preparation.

c. Utilize appropriate instruments and techniques in operative dentistry, including restorative procedures and the application of liners, bases, and varnishes in various clinical scenarios.

d. Comprehend and apply principles of public and community dental health, including concepts of health, disease, epidemiology, oral indices, health education, health promotion, and Pakistan's healthcare delivery system.

e. Recognize the preventive role of fluoride and other public health measures in promoting oral health and preventing disease.

f. Interpret and apply basic principles of research methodology, biostatistics, and bioethics relevant to dental practice and scientific inquiry.

g. Demonstrate understanding of pharmacological principles and the clinical application of drugs affecting various systems of the body, including autonomic, central nervous, cardiovascular, respiratory, gastrointestinal, endocrine, and hematologic systems, along with anti-inflammatory and chemotherapeutic agents.

h. Explain the general principles of pathology, including mechanisms of cell injury, inflammation, hemodynamic disorders, neoplasia, immune responses, genetic and environmental diseases, and hematological conditions.

i. Demonstrate understanding of microbiology and infection control, including general microbiological principles, sterilization techniques, and clinically significant microorganisms in dentistry.

Educational Strategies

(These are proposed, but institutes can use other evidence-based teaching methodologies that suit their context)

a. Interactive Lectures
b. Small group discussion
c. Laboratory practical
d. Skill laboratory
e. Problem-based learning/ Case-based learning
f. Tutorials
g. Integrated sessions using any of the above strategies

Resources

(To be filled in by the institute)

a. Faculty
b. Facilities
c. Administration for Course
d. Administrative Structure
e. Communication with students

Internal Assessment

- Formative assessment (low stake) is at faculty discretion like mid module test and other class tests.
- There will be three end of blocks and one pre-annual examination in year II, which contributes towards the weighting of internal assessment i.e 20% in second professional BDS Examination.

Annual Professional Examination

- The University will take its first professional examination at the end of the academic year. There will be six papers in total (three for each spiral),

- Spiral 1. Three Papers (I, II, III) covers the disciplines of General Pathology C Microbiology, Pharmacology C Therapeutics for a total of 100 marks for each paper.
- Spiral 2. Three Papers (IV, V, VI) includes the disciplines of Community C Preventive Dentistry, Science of Dental Materials, Pre-Clinical Prosthodontics C Pre-clinical Operative Dentistry for 150 marks for each paper.
- There will be 2 x Integrated Practical Exam and structured viva block wise
- The pass score shall be 50% in theory and practical separately.
- MCQ's: SAQs will be in 70: 30 ratios.
- It is mandatory to secure minimum 50% passing Marks (aggregate), in theory C practical each, in Prof Exam. However, in theory paper of integrated exam, min. 40% Marks shall be secured in each subject component (Anatomy, Physiology, and Medical Biochemistry) in every paper. Student will have to repeat the block-wise paper in which he/she secures less than 40% Marks in any section.

General Education Courses.

- DME will be responsible for overseeing the teaching schedule and assessment of General Courses.
- Teaching methodology and mode of assessment for these courses, will be done by the institute.
- General Courses shall be assessed by concerned faculty
- Minimum passing criteria for each course - 50%
- Faculty of General Courses will submit the final results to Assistant Controller of Examinations of the institute for onward submission to NUMS Exam Dte
- Marks will not be included in total aggregate marks/ academic awards
- It is mandatory to pass these courses before final annual professional of MBBS/BDS.

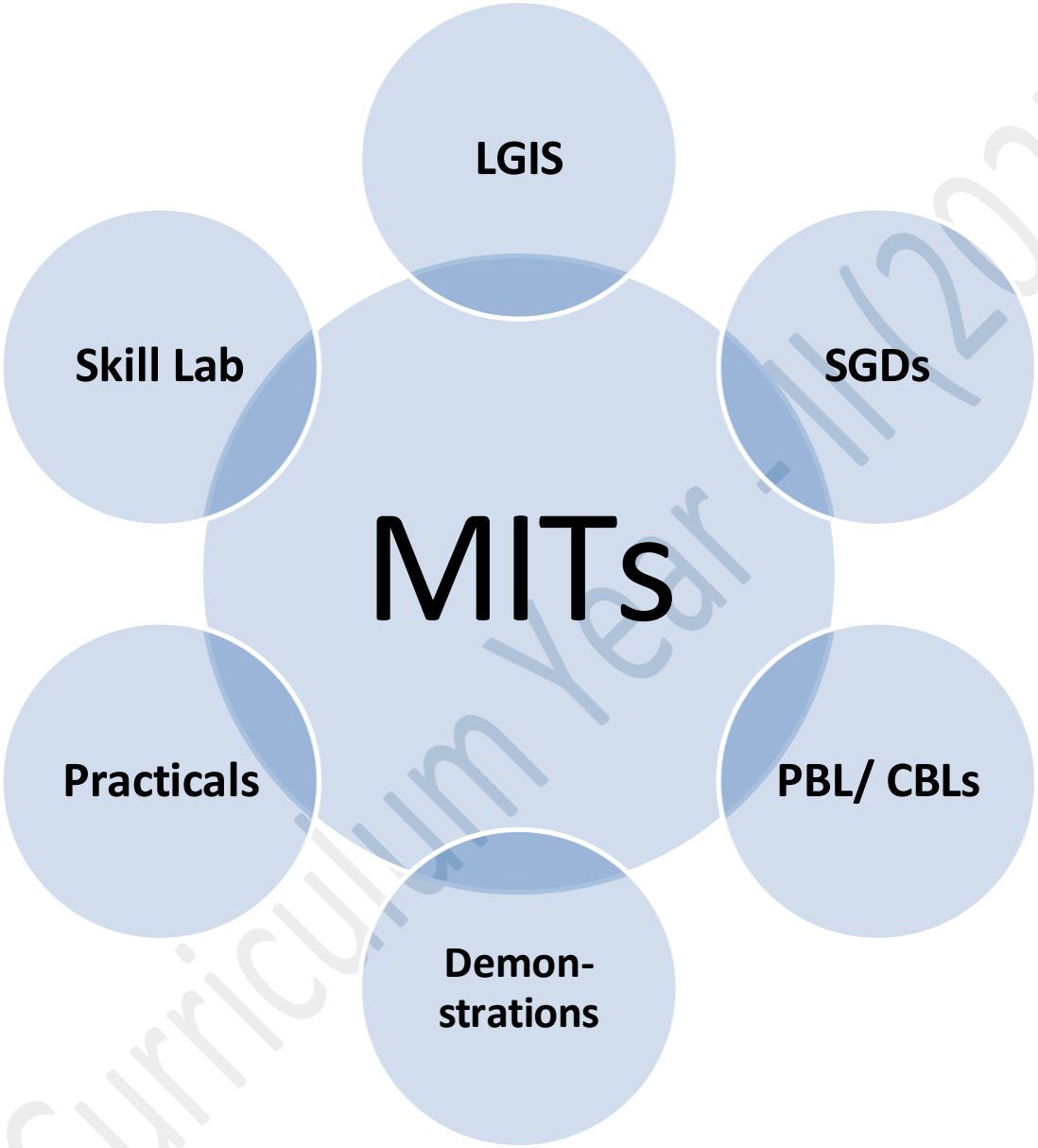
Evaluation of the Course

- To be filled in by the institute.
- The major goals of the evaluation are to monitor the quality of and improve the curriculum.
- Student portfolios shall be maintained in the departments in which students will give their feedback either by name or anonymously. Feedback may be taken at the end of the module, online and informal student feedback during the running module.
- Faculty suggestions, if any, for the improvement of training may be incorporated in the next session.

Implementation of curriculum

- The university will give academic calendar, block wise distribution of modules, learning outcomes, table of specifications and assessment policy
- Implementation of curriculum including timetable, distribution of content across the whole years and rotations plan is upon the discretion of the medical college/institute
- Early clinical exposure may be achieved by allocating hours to skill labs, ward visits in each module or patient may be brought before the students as per the decision of institute

Illustration of Modes of Information Transfer (MITs)



Academic Calendar Year II

1st Spiral Theme

Theme: Basics of Medical Sciences II						
Blocks	**Block 1** 12+1 Weeks		**Block 2** 12+1 Weeks		**Block 3** 12+1 Weeks	
Duration	6 Weeks	6 Weeks	8 Weeks	4 Weeks	5 Weeks	7 Weeks
Modules	**Module I** Foundation II	**Module II** Infectious Diseases	**Module III** Haemodynamics	**Module IV** Haematology	**Module V** Neurology	**Module VI** Multisystem
Horizontally Integrated Disciplines: Pharmacology, General Pathology *Vertically Integrated Disciplines*: General Medicine, General Surgery						

2nd Spiral Theme

Blocks	**Block 1** 12+1 Weeks		**Block 2** 12+1 Weeks		**Block 3** 12+1 Weeks	
Themes	**Essentials of Dentistry II**		**Dental Rehabilitation I**		**Dental Rehabilitation II**	
Modules	**Module I** Dental Health	**Module II** Dental Cariology	**Module III** Oral Disease Management I	**Module IV** Oral Disease Management II	**Module V** Medical C Dental Healthcare	**Module VI** Evidence-Based Rehabilitation
Horizontally Integrated Disciplines: Dental Materials, Community Dentistry, Behavioural Sciences *Vertically Integrated Disciplines*: Oral Biology, Preclinical Prosthodontics C Operative Dentistry, Periodontology, Oral Pathology, Prosthodontics, Orthodontics, Operative Dentistry						

Proposed Contact Hours Distribution Year-II

Discipline	NUMS Contact Hours
Science of Dental Materials	**200**
Pharmacology	250
General Pathology	250
Community C Preventive Dentistry	240
Vertically Integrated Prosthodontics	125
Vertically Integrated Operative Dentistry	125
Behavioural Sciences	**50**
Research Methodology C EBD	**20**
Total Contact Hours	**1260**

Overview of Vertical Integration of 2nd Year BDS Medical Basic Theme

Theme: Basics of Medical Sciences II						
1st Block 12+1 Weeks (4 Weeks for Module I, 6 Weeks for Module II)						
Modules		**Pharmacology**	**Integrated LOs**	**General Pathology**	**Microbiology**	**Integrated LOs**
I	**Foundation II**	• General Pharmacology • Antiseptics C Disinfectants	**Oral s Maxillofacial Surgery** Explain the role of antiseptics C disinfectants	• Cell Injury • Cellular adaptation • Pigmentation • Amyloidosis	• General Microbiology	**General Surgery** • Discuss the basic principles of **Tissue Repair.**

II	**Infectious Diseases**	• **Chemotherapeutic drugs**
		  ○ Cell wall synthesis inhibitors
		  ○ Protein synthesis inhibitors
		  ○ DNA glycate inhibitors
		▪ **Drugs acting on respiratory system**
		▪ **Anti – tuberculous drugs**
		▪ **NSAIDs**
			General Medicine
			• Outline the clinical features of **Tuberculosis.**
			• Discuss the relevant investigations for the diagnosis of **Tuberculosis.**
			• Discuss briefly the role of H.pylori in **Acid-Peptic Disease.**
			• Classify **Bronchial Asthma.**
			• Diagnose **Bronchial Asthma.**
			• Describe the pathophysiology of **Bronchial Asthma.**
				• Acute Inflammation
				• Chronic Inflammation
				• Healing C Repair
					• Gram positive cocci
					• Gram positive bacilli
					• Tuberculosis
						N/A

2nd Block 12+1 Weeks (8+ 4 weeks per module)						

III	**Haemodynamics**	▪ **Autonomic Nervous System (13)** ▪ **CVS (08)** o Anti-Hypertensives o Anti-Anginal o Anti-Arrhythmic o Drugs Used in Heart Failure (Total: 21)	**General Medicine** • Classify **Hypertension.** • Discuss briefly the complications of **Hypertension.** • Discuss the diagnostic investigations for **Ischemic Heart Disease.** • Classify **bleeding disorders** based on clinical features. • Outline the clinical features of **Heart Failure.** • Discuss the brief management of **Heart Failure.**	**Haemodynamic disorders** • Oedema C congestion • Haemorrhage • Shock • Thrombosis C embolism • Infarction	• Gram negative bacilli	**General Surgery** • Classify **Shock.** • Discuss briefly the types of **Shock.** **General Medicine** • Outline the clinical features of **Typhoid.** • Discuss briefly the diagnostic investigations C complications of **Typhoid.**
IV	**Haematology**	• Anti-Coagulants 3 • Haematinics1 • Anti-Folate 1 • Anti-parasitic drugs 3 (Total: 08)	**General Medicine** • Outline the clinical features of **Iron Deficiency Anaemia.** • Discuss the diagnostic investigations for **Iron Deficiency Anaemia.** • Outline the clinical features of **Malaria.**	• Haematology • Immunological Disorders	• Parasitology	**General Medicine** • Outline the clinical features of **Anaemias.** • Discuss the diagnostic investigations for **Anaemias.**

			• Discuss the relevant investigations for the diagnosis of **Malaria**.			
3rd Block 12+1 Weeks (5+ 7 weeks per module)						
V	**Neurology**	• Analgesics; Opioids = 2 • Drugs used in migraines= 1 • Anti-epileptics= 2 • Anti-depressants= 2 • Sedative Hypnotics=2 • Local C General Anaesthetics= 4 (Total: 13)	**General Medicine** • Classify **Epilepsy**. • Describe the clinical features of various types of **Epilepsy**. **Oral s Maxillofacial Surgery** • Discuss the clinical significance of local anaesthetics.	• Genetics	• Gram negative cocci	N/A
VI	**Multisystem**	• Drugs acting on GIT system= 7 • Drugs acting on endocrine system = 7 • Anti-viral drugs= 2 • Anti-fungal drugs=2 • Anti-neoplastic drugs = 2 (Total: 20)	**General Medicine** • Diagnose **Diabetes Mellitus**. • Discuss briefly the complications of uncontrolled **Diabetes Mellitus**. • Outline the clinical features of **Hyperthyroidism**. • Discuss briefly the aetiological factors of **Hyperthyroidism**. • Outline the clinical features of **Cushing Syndrome** C **Addison's Disease**.	• Neoplasia	• Virology • Mycology	**General Medicine** • Outline the clinical features of **Acute s Chronic Hepatitis.**

Block 1 - 1st Spiral

Module I: Dental Health

Theme: Foundation II

Duration: 06 Weeks

Integration of Disciplines in this Module

Dental Materials	• V.I Prosthodontics
Community Dentistry	• Oral Biology
V.I Operative Dentistry	• Oral Biology
V.I Prosthodontics	• Dental Materials

Block Planning Committee

(To be filled by each institution)

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Block Coordinator	Dr. Zuleikha Malik
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Integrated Disciplines Representatives	Dr. Saman Malik, HoD Oral Biology Dr. Maimoona Siddiq, HoD OMFS Dr. Afshan Haroon, General Surgery

Modular Learning Outcomes

By the end of the 1st module, the students of 2nd Year BDS should be able to:

1. Correlate the basic sciences with their application in the lab and relevant clinical conditions and public health.

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1st module, the students of 2nd Year BDS should be able to:			
Properties of Dental Materials	*Outline physicomechanical, chemical, thermal and rheological properties of dental materials. *Relate properties of restorative materials to clinical applications.	**Knowledge** *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 elaboration of mechanical properties. *Differentiate between various properties of materials e.g. dimensions of colour,	Interactive Lectures SGDs CBLs	MCQs /SAQs Viva Voce

		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.		
		Skill *Demonstrate the 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	Demonstrations Practicals	OSPE
Gypsum Products	*Relate chemistry and properties of gypsum products,waxes and investment materials to relevant clinical procedures.	**Knowledge** *Classify gypsum Products. *Describe the sources, chemistry and properties of gypsum products used	Interactive Lectures SGDs CBLs	MCQs /SAQs Viva Voce

		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 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.		
		Skill *Demonstrate the manipulation of Gypsum. *Perform the fabrication of the plaster slab.	Demonstrations Practicals	OSPE
Dental Waxes	*Describe the classification, properties, and uses of Dental Waxes *Explain applications of	**Knowledge** *Describe the classification, properties, and uses of Dental Waxes *Explain applications of	Interactive Lectures SGDs CBLs	MCQs /SAQs Viva voce

	waxes in dentistry	waxes in dentistry *Identify different types of dental waxes e.g. Sticky, *Ortho, Inlay, Modelling and Carding wax. *Manipulate Modelling wax.		
		Skill *Fabricate wax pattern for acrylic partial dentures *Identify the types of waxes available in the dental laboratory	Demonstrations Practicals	OSPE

Community Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1st module, the students of 2nd Year BDS should be able to:			
Introduction to Public and Dental Public Health	*Correlate the fundamental concepts of public health and public health dentistry to effectively contribute to community health and oral health initiative	**Knowledge** *Define public health *Define the vision and mission of public health *Discuss essential public health services *Describe different characteristics of public health methods *Describe public health techniques *Define objectives of public health dentistry *Define dental public health *Discuss core areas in public health dentistry	LGIS SGDs	MCQs SAQs/
Ergonomics, History Takings Clinical Examination	**Skill** *Demonstrate practical skills related to Ergonomics *Practice different components of history taking. *Apply the knowledge of intra-oral C extra-oral examination.		Practicals Demonstrations	OSPE

Vertically Integrated Operative Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1st module, the students of 2nd Year BDS should be able to:			
Introduction To Operative Dentistry	*Appraise factors affecting operative treatment and the future demand	**Knowledge** *Appraise the basic need to study the biological basis of operative dentistry *Highlight the importance of the development of psychomotor skills	LGIS SGDs	MCQs SAQs/
Introduction To Armamentarium	*Identify instruments C equipment used in restorative work, their uses C handling	**Knowledge** *Enumerate the basic equipment used in operative dentistry *Enlist clinical use of the armamentarium *Identify and classify instruments included in the armamentarium	LGIS SGDs	MCQs SAQs/
		Skill *Demonstrate the prevention ofhazardous effects of armamentarium *Demonstrate adequate handling C cleaning of instruments *Illustrate appropriate ergonomic chair positioning	Practicals Demonstrations	OSPE
Isolation s Moisture Control	*Perform single tooth isolation C quadrant isolation using rubber dam	**Knowledge** *Define isolation *Enumerate methods of isolation *Discuss the indications and advantages of isolation during operative work *Identify parts of rubber	LGIS SGDs	MCQs SAQ/

		dam components and their uses		
Rubber Dam		**Skill** *Demonstrate rubber dam application methods *Demonstrate the placement of a rubber dam for a single tooth isolation *Demonstrate the placement of the rubber dam in the posterior arch/ anterior arch/cross arch	Practicals Demonstrations	OSPE
Dental Cariology	*Explain the pathophysiology of carious lesion	**Knowledge** *Define caries *Identify the etiological factors leading to caries *Classify dental caries *Discuss the clinical characteristics of dental caries *Describe the steps involved in caries diagnosis *Outline definitive management of caries *Discuss the prevention of caries	LGIS SGDs	MCQs SAQs
Cavity Preparation	*Appraise the principles involved in cavity preparation	**Knowledge** *Define tooth preparation *Justify the need for restoration *Classify tooth preparations and their terminologies *Enlist the objective of tooth preparation *Identify the requirements of different armamentariumsfor specific cavity design *Describe the various stages and steps	LGIS SGDs	MCQs SAQs

		involved in tooth preparations *Explain the method of cavity preparation according to the extent of the lesion *Outline the principles of long-term maintenance of restorations in the oral cavity		

Vertically Integrated Prosthodontics

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1st module, the students of 2nd Year BDS should be able to:			
Introduction To Prosthodontics	*Appraise the scope of Prosthodontics as a speciality	**Knowledge** *Define prosthodontics *Enlist the different branches of Prosthodontics and their application in everyday life *Describe the implications of not addressing tooth loss at an appropriate time *Discuss the effect of a prosthetic replacement on thequality of life of an individual	LGIS SGDs	MCQs SAQs
Complete Denture **Anatomical Landmarks Of Denture Bearing Area**	*Correlate the significance of anatomical landmarks of the maxilla concerning biomechanics of a complete denture	**Knowledge** *Enlist the anatomical landmarks of the maxillary arch. *Differentiate between the supporting structures, limiting structures Crelief areas *Differentiate between the primary stress-bearing area and thesecondary stress-bearing area *Discuss the significance of relevant oralstructures in relation to a complete	LGIS SGDs	MCQs SAQs

		denture		
		Skill *Identify the anatomical landmarks of the maxilla on a dental cast	Demonstrations Practicals	OSPE
	*Correlate the significance of anatomical landmarks of the maxilla concerning biomechanics of a complete denture	**Knowledge** *Enlist the anatomical landmarks of the mandibular arch *Differentiate between the supporting structures, limiting structures Crelief areas *Differentiate between the primary stress-bearing area and secondary stress-bearing area *Discuss the significance of relevant oral structures in relation to a complete denture	LGIS SGDs	MCQs SAQs
		Skill *Identify the anatomical landmarks of the mandible on cast *Identify primary stress-bearing areas	Demonstrations Practicals	OSPE
Impressions For Complete Dentures	*Identify the factors affecting impression registrations in complete dentures	**Knowledge** *Identify the maxillary and mandibular impression trays *Differentiate between the dentate and edentulous	LGIS SGDs	MCQs SAQs

		impression trays *Describe the selection criteria for an appropriate size of an impression tray *Describe the difference between a stock tray and a custom tray *Name different dental materials used in the fabrication of a custom tray		
		Skill *Fabricate a custom tray using self-cure acrylic resin	Demonstrations Practicals	OSPE
	*Extrapolate the concepts of impression registration to different edentulous situations	**Knowledge** *Define a dental impression *Enumerate the objectives of impression-making *Classify the types of impressions based on their usesC impression theories *Discuss the different theories of complete denture impression-making	LGIS SGDs	MCQs SAQs
		Skill *Record a mucostatic impression on a dental simulator	Demonstrations Practicals	OSPE
Casts s Models	*Appraise the importance of various dental casts used in denture fabrication	**Knowledge** *Define a dental cast *Classify dental casts *Describe the different types of dental casts *Identify the different parts of a dental cast	LGIS SGDs	MCQs SAQs
Denture Bases	*Outline the use of a record base in the	**Knowledge** *Define dental record	LGIS SGDs	MCQs SAQs

	fabrication of complete dentures	bases *Enumerate the requirements of record bases *Classify the types of record bases *Describe the various dental materials used to fabricate record bases		
		Skill *Perform wax-up for a record base *Fabricate a record base using acrylic resin *Perform the finishing and polishing procedures for the record base	Demonstrations Practicals	OSPE
Occlusal Rims	*Fabricate a pair of occlusion rims on an edentulous cast	**Knowledge** *Define occlusal rims *Enumerate the uses of occlusal rims *Describe the dimensions of occlusal rims for both maxillary and mandibular base plates	LGIS SGDs	MCQs SAQs
		Skill *Illustrate the various steps involved in the fabrication of occlusal rims *Fabricate occlusal rims of adequate dimensions for the maxilla and mandible using modelling wax	Demonstrations Practicals	OSPE

Block 1 – 1st Spiral

Module II: Dental Cariology

Theme: Essentials of Dentistry II

Duration: 06 Weeks

Integration of Disciplines in this Module

Dental Materials	• V.I Operative Dentistry
Community Dentistry	• V.I Operative Dentistry
V.I Operative Dentistry	• Dental Materials

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Zuleikha Malik
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	-

Modular Learning Outcomes

By the end of the 2nd module, the students of 2nd Year BDS should be able to:

1. Explain the fundamental concepts of cariology.

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of 2nd Year BDS should be able to:			
Amalgam	*Outline compositional characteristics, properties and manipulative variables of dental amalgam.	**Knowledge** *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-alloyratio 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 /SAQs Viva Voce
		Skill *Identify dental amalgam kit and armamentarium *Perform hand-trituration of dental amalgam	Demonstrations Practicals	OSPE
Cements, Liners s Bases	*Relate the physico mechanical properties of dental cements to respective clinical applications	**Knowledge** *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,	Interactive lectures SGDs CBLs	MCQs /SAQs Viva Voce

		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.		
		Skill *Demonstrate mixing of Zinc phosphate cement. *Demonstrate manipulation and placement of glass ionomer cement. *Perform manipulation and placement technique of calcium hydroxide liner. *Practice manipulation technique of zinc phosphate on slab/paper pad.	Demonstrations Practicals	OSPE
Dentifrices Fluoride Agents **Pit s Fissure Sealants**	*Appraise use of preventive materials in dentistry.	**Knowledge** *Describe the composition, properties and clinical application of pit and fissure sealants. *Outline the types, composition and purpose of dentifrices and mouthwashes.	Interactive lectures SGDs CBLs	MCQs /SAQs Viva Voce

		*Identify different types of fluoride agents, their mode of action and application.		

Community Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of 2nd Year BDS should be able to:			
Epidemiology of Oral Diseases **Introduction to Epidemiology**	*Discuss the basic principles of Epidemiology	**Knowledge** *Define epidemiology *Explain the history of the epidemiology of oral diseases	LGIS SGDs	MCQs SAQs
Epidemiology of Dental Caries	*Discuss the basic principles and epidemiology of dental caries	**Knowledge** *Define dental caries *Describe the epidemiological triad of dental caries *Outline theories related to causation *Identify factors associated with dental caries *Explain the prevalence of caries in Pakistan C its associated factors *Discuss the mechanism of caries *Classify caries *Discuss the mechanism of caries *Explain the clinical manifestation of the caries process *Interpret the role of diet on caries and of sugar on caries *Describe the indicators for increased caries risk *Explain the categories for caries risk assessment *Discuss the concept of a Cariogram *Describe the advantages of the caries activity test *Explain the various caries	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes By the end of the 2nd module, the students of 2nd Year BDS should be able to:	Learning Objectives	Instructional Strategies	Assessment Tools
		activity tests		
Oral Indices **Introduction to Oral Indices**	*Apply the knowledge of Oral Indices	**Knowledge** *Define an index *Explain the ideal requirements of an index *Describe the uses of an index *Describe the classification of oral indices	LGIS SGDs	MCQs SAQs
Indices for Dental Caries **DMFT** **DMFS** **DEFT and DEFS**	*Apply the knowledge and skills of Indices for Dental Caries.	**Knowledge** *Identify different indices used for diagnosis of dental caries *Define the DMFT and DFT Index *Explain the procedure to measure the score of the DMFT index *Discuss index teeth to be examined *Discuss the limitations of DMFT *Discuss the criteria for DMFS *Explain the procedure to measure DEFT and DEFS	LGIS SGDs	MCQs SAQs
		Skill *Illustrate the calculation of the DMFT score on models	Practicals Demonstrations	OSPE
Prevention of Caries **Levels of Prevention of Dental Caries**	*Outline the concepts of levels of prevention at different levels	**Knowledge** *Define prevention *Identify levels of prevention *Discuss levels of prevention of Dental Caries	LGIS SGDs	MCQs SAQs
Plaque Control	*Analyse the different methods of	**Knowledge** *Define plaque-disclosing	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes By the end of the 2nd module, the students of 2nd Year BDS should be able to:	Learning Objectives	Instructional Strategies	Assessment Tools
	plaque control and its application	agents *Describe the purpose C Types of disclosing agents *Describe the methods of plaque disclosing agents' application *Identify Plaque control methods *Describe Mechanical and chemical plaque control		
		Skill *Demonstrate the tooth brushing techniques on models *Demonstrate the different techniques of flossing *Demonstrate the application of plaque-disclosing agents	Practicals Demonstrations	OSPE
Pit s Fissure Sealants	*Apply the knowledge and skills related to pits and fissure sealants	**Knowledge** *Define pits and fissure sealants *Enlist the advantages of pits and fissure sealants *Describe Indications and contraindications of pits and fissure sealants	LGIS SGDs	MCQs SAQs
		Skill *Demonstrate the application of pit and fissure sealants	Practicals Demonstrations	OSPE
Atraumatic Restorative Treatment	*Apply the knowledge and skills of ART	**Knowledge** *Define ART *Describe history Crationale of ART *Outline principles of using ART, indications, and contraindications *Enlist instruments, essential material	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes By the end of the 2nd module, the students of 2nd Year BDS should be able to:	Learning Objectives	Instructional Strategies	Assessment Tools
		Cworking requirements *Describe the survival/success rate of restorations performed via ART		
		Skill *Identify the instruments of ART *Perform the procedure of ART	Practicals Demonstrations	OSPE
Caries Activity Test **Caries Vaccine**	*Correlate the concepts of caries activity test and its application in caries diagnosis	**Knowledge** *Describe caries activity test *Outline indications and advantages of caries test *Describe types of caries test C procedure to carry out test *Outline the importance of caries vaccine	LGIS SGDs	MCQs SAQs
Fluorides in Dentistry	*Outline the role of fluorides in dentistry	**Knowledge** *Describe the metabolism of fluoride *Describe the mechanism of actions of fluoride *Describe modes of administration of fluorides *Differentiate the methods of systemic delivery with their advantages and disadvantages *Define topical fluorides *List indications for topical fluoride use *Describe different topical fluoride vehicles *Define de-fluoridation *Describe the different methods of de-fluoridation along with the advantages,	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of 2nd Year BDS should be able to:			
		and disadvantages of each method *Define the term fluoride toxicity *Describe the types of fluoride toxicity *Define the lethal dose of fluoride *Describe the management of fluoride toxicity *Describe Dean's Fluorosis Index *Explain the procedure to measure the score of the Dean Fluorosis Index		
		Skill *Demonstrate the method of application of topical fluorides	Practicals Demonstrations	OSPE

Vertically Integrated Operative Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of 2nd Year BDS should be able to:			
Introduction To Restorative Materials (in integration with dental materials)	*Differentiate between various restorative materials	**Knowledge** *Classify restorative materials *Describe composition, structure C properties of restorative materials *Discuss the clinical considerations of restorative materials *Enlist the indications and contraindications of amalgam restorative material *Enumerate the advantages and disadvantages of using amalgam restorative material	LGIS SGDs	MCQs SAQs
Cavity Preparation For Class I Amalgam Restoration	*Outline the steps involved in a conservative class 1 amalgam restoration	**Knowledge** *Describe the initial clinical procedure for a Class I amalgam restoration *Explain the steps for tooth preparation for a conservative class I cavity utilizing principles of cavity preparations. *Explain the tooth preparation for an extensive class I cavity C class I occluso-lingual cavity	LGIS SGDs	MCQs SAQs
		Skill *Perform a class I cavity preparation for an amalgam restoration *Demonstrate the	Practicals Demonstrations	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of 2nd Year BDS should be able to:			
		restorative technique for class I amalgam restoration *Perform mixing of amalgam *Perform condensation, burnishing, carving, finishing Cpolishing of an amalgam restoration		
Pulp Protecting Agents	*Correlate the properties of cavity liners, bases and varnishes with their practical application	**Knowledge** *Differentiate between liners, bases and varnishes *Classify liners C bases with their composition and properties *Enlist indications and advantages of liners and bases *Highlight the importance of the clinical use of liners and bases in the restoration of different cavities	LGIS SGDs	MCQs SAQs
		Skill *Demonstrate the method of application of liner and bases	Practicals Demonstrations	OSPE
Pits s Fissure Sealants (In integration with dental materials)	*Differentiate between various restorative materials	**Knowledge** *Discuss the clinical consideration of materials used as pits and fissure sealants *Enlist the indications and contraindications of pit Cfissure sealants *Enumerate the advantages and disadvantages of pit C fissure sealants	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of 2nd Year BDS should be able to:			
		Skill *Demonstrate the application of pits and fissure sealants in posterior teeth in both maxillary and mandibular arches	Practicals Demonstrations	OSPE

Vertically Integrated Prosthodontics

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of 2nd Year BDS should be able to:			
Articulators And Face-bows	*Differentiate between various types of articulators used for prosthodontic work	**Knowledge** *Define an articulator *Differentiate between the varioustypes of articulators *Discuss the concept and rationale of the use of articulators *Define face-bow *Enumerate the uses of a face-bow	LGIS SGDs	MCQs SAQs
		Skill *Articulate the fabricated rims in Class I relation on a semi-adjustable articulator	Demonstrations Practicals	OSPE
Artificial Teeth	*Appraise the differences in artificial devices used to replace the natural teeth	**Knowledge** *Describe the different types of artificial teeth based on the type of material and occlusal morphology *Describe the differences in occlusal morphology and their uses in different situations. *Describe the differences between acrylic and porcelain teeth and their uses.	LGIS SGDs	MCQs SAQs

Block 1 – 2nd Spiral

Module I: Foundation II

Theme: Basics of Medical Sciences II
Duration: 04 Week

Pharmacology

Oral & Maxillofacial Surgery

General Pathology

General Surgery

Integration of Disciplines in this Module

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Zuleikha Malik
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Maimoona Siddiq, HoD OMFS Dr. Afshan Haroon, General Surgery

Modular Learning Outcomes

By the end of the 1st module, the students of 2nd Year BDS should be able to:

1. Discuss the basic principles of inflammation and the basis of microbiology.
2. Describe the basic concepts of general pharmacology.

Pharmacology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
Pharmacology: Historical Overview	*Discuss the basics of pharmacology	**Knowledge** *Define Pharmacology and differentiate it from pharmacy *Identify the concept of Modern Pharmacology *Define drug *Trace the historical development of pharmacology *Analyse the contribution of Muslim scientists in the field of pharmacology *Outline the components of the rational drug therapy	LGIS SGDs	MCQs, SAQs, Structured Viva
Pharmacology: Branches/Division Of Pharmacology, Role In Medicine	*Discuss branches of pharmacology	**Knowledge** *Define: **Pharmacokinetics, **Pharmacodynamics, **Therapeutics, **Chemotherapy, **Toxicology, **Clinical pharmacology, **Pharmacy, **Pharmacognosy, **Pharmacogenomics, **Pharmacoepidemiology, **Comparative pharmacology, **Animal pharmacology,**Pharmacoeconomics and Posology *Describe the clinical importance of branches of pharmacology	LGIS SGDs	MCQs, SAQs, Structured Viva
Active Principles s Sources Of Drugs	*Discuss active principles and sources of drugs	**Knowledge** *Define active principles of drugs *Discuss characteristics of active principles with examples	LGIS SGDs	MCQs, SAQs, Structured Viva
Dosage Forms s Doses Of Drugs	*Describe doses and dosage forms	**Knowledge** *Define dosage forms *Describe various dosage forms with examples	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
Routes Of Drug Administration	*Discuss clinical applications of routes of administration	**Knowledge** *Classify routes of administration *Describe the advantages and disadvantages of different routes of drug administration *Identify different factors governing the choice of route	LGIS SGDs	MCQs, SAQs, Structured Viva
Absorption Of Drug Process **Factors Modifying Drug Absorption**	*Discuss the process of absorption of drugs	**Knowledge** *Recall the structure of the cell membrane *Define absorption of the drug *Enumerate transport mechanisms involved in drug absorption *Describe factors affecting the absorption of the drug	LGIS SGDs	MCQs, SAQs, Structured Viva
Bioavailability: Clinical Significance And Factors Affecting	*Describe the clinical significance of the bioavailability of drugs	**Knowledge** *Define Bioavailability *Express bioavailability with the help of the formula *State the importance of bioavailability *Tabulate and briefly describe factors affecting bioavailability of drugs *Differentiate between Bioequivalence, Therapeutic equivalence, Chemical equivalence	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
Distribution And Plasma Protein Binding Of Drugs	*Discuss the distribution of drugs	**Knowledge** *Define the distribution of drug *Recall the distribution of total body water *Define the volume of distribution *Express the formula of volume of distribution *Discuss the clinical application of Vd in dosing regimens (calculation of loading dose) *Discuss factors affecting drug distribution *Identify plasma proteins with affinity for drugs *Describe the effect of plasma protein binding on Vd	LGIS SGDs	MCQs, SAQs, Structured Viva
Biotransformation Of Drugs **Factors Modifying Biotransformation**	*Discuss biotransformation of drugs	**Knowledge** *Define biotransformation/metabolism of a drug *Enlist the sites of metabolism of drugs *State the outcomes/objectives of biotransformation *Identify types of biochemical reactions responsible for drug metabolism *Explain the determinants of biotransformation	LGIS SGDs	MCQs, SAQs, Structured Viva
Half-Life Of Drugs: Factors Affecting And Clinical Significance	*Discuss the clinical significance of plasma half-life	**Knowledge** *Define plasma half-life *Express half-life in the form of a formula *Identify pharmacokinetic parameters of drug predicted by half-life (time to reach steady state concentration, zero/first-order kinetics, time of elimination)	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
Excretion Of Drugs s Drug Clearance	*Discuss excretion and clearance of drugs	**Knowledge** *Define excretion of drug *Classify major and minor routes of excretion *Enumerate processes involved in renal excretion *Express the role of enterohepatic circulation in the excretion of a drug *Define drug clearance *Outline the significance of clearance	LGIS SGDs	MCQs, SAQs, Structured Viva
Mechanism Of Drug Actions I s II	*Discuss the mechanism of drug action	**Knowledge** *Enumerate ways of cellular- drug interaction *Define receptor and its types and distribution *Define ligands *Describe types of drug-receptor interaction *Describe the concept of a second messenger	LGIS SGDs	MCQs, SAQs, Structured Viva
Factors Modifying Actions s Doses Of Drugs	*Describe actions and doses of drugs	**Knowledge** *Classify the determinants affecting the action of a drug *Enumerate factors affecting the pharmacokinetics of drugs (age, body size, genetic and environmental factors, diseases and co-morbid states, concomitantly administered drugs) *Tabulate factors responsible for pharmacodynamics variability (tolerance, synergism, antagonism etc)	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
Antiseptics And Disinfectants Used In Dentistry	*Discuss the role of different antiseptics and disinfectants in dentistry	**Knowledge** *Define antiseptics and disinfectants *Differentiate between antiseptics and disinfectants *Classify antiseptics and disinfectants *Outline the antimicrobial activity of different classes of antiseptics and disinfectants	LGIS SGDs	MCQs, SAQs, Structured Viva
Chemotherapy Introduction	*Discuss the basics of chemotherapy	**Knowledge** *Define chemotherapy *Differentiate between antibiotics and antimicrobials *Contrast bactericidal and bacteriostatic agents *Differentiate between narrow and broad-spectrum antimicrobial agents *Trace the basis of the classification of antimicrobial agents *Outline the principles of antimicrobial therapy	LGIS SGDs	MCQs, SAQs, Structured Viva

General Pathology

Topic/Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
General Pathology sMicrobiology Introduction	*Describe the causes, mechanisms, triggers, and patterns of injury to cell Ctissue. *Correlate ischemic changes and its morphology.	**Knowledge** *Discuss the terminologies used in pathology and microbiology *Discuss the role of pathology in diagnostics *Enlist the components of the general pathology and microbiology	LGIS SGDs	MCQs, SAQs, Structured Viva
		Skill *Identify bacteria by use of microscopes	Practical Demonstration	OSPE
Cell Injury: Etiology s Types **Mechanism of Cell Injury** **Necrosis s Apoptosis**	*Explain the mechanism involved in the process of cell injury. *Analyse the pathological basis of apoptosis and necrosis.	**Knowledge** *Define cell injury *Enlist different causes of cell injury *Describe the sequence of events in cell injury *Differentiate between reversible C irreversible injury *Discuss general morphological features of necrosis *Enumerate the different types/ morphological patterns of	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
		necrosis with examples *Describe the mechanism of action C morphological features of each type of necrosis		
		Skill *Identify fatty changes and hydropic changes (Reversible cell injuries) by using histological slides	Practical Demonstration	OSPE
Cellular Adaptations Intracellular Pigmentation, Amyloidosis	*Discuss the pathological Cphysiological adaptation mechanism and morphology with examples. *Relate different types of cellular accumulations within the pathological/physiological basis of the disease	**Knowledge** *Enumerate different cellular adaptations *Discuss different types of cellular adaptations with example *Enumerate types of intracellular accumulation with the underlying mechanism of pathological factors, e.g., calcification	LGIS SGDs	MCQs, SAQs, Structured Viva
		Skill *Identify cases of Atrophy C Hyperplasia by using histological slides *Identify pigmented	Practical Demonstration	OSPE

Topic/Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
		lesions e.g., Melanin and Calcification, using histological slides *Identify the gross and microscopic features of amyloidosis		
General Bacteriology **Bacterial Anatomy and Physiology** **Bacterial Growth** **Bacterial Genetics**	*Describe bacterial cell structure and functions. *Discuss bacterial genetic system and process of bacterial growth and multiplication.	**<u>Knowledge</u>** *Describe the structure of bacteria *Differentiate between gram-positive and gram-negative bacteria *Describe the function of bacterial spores *Define plasmids and their types *Define different types of mutations *Describe the different mechanisms of transfer of genetic material between bacterial cells	LGIS SGDs	MCQs, SAQs, Structured Viva
		<u>Skill</u> *Explain the procedure of gram staining *Demonstrate performance of gram staining	Practical Demonstration	OSPE

Topic/Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 1st module, the students of the 2nd Year BDS will be able to:			
Sterilization s Disinfection **Physical And Chemical Methods of Sterilization and Disinfection**	*Explain the procedure and methods of sterilization and disinfection. *Discuss the importance of sterilization.	**<u>Knowledge</u>** *Discuss the importance of normal flora *Describe the anatomic sites of medically important members of normal flora *Explain in detail three methods of sterilization *Classify disinfectants with their basic mechanism of action with a few examples *Describe the uses of autoclave	LGIS SGDs	MCQs, SAQs, Structured Viva

Block I – 2nd Spiral

Module II: Infectious Diseases

Theme: Basics of Medical Sciences II

Duration: 06 Weeks


Pharmacology
General Medicine

Integration of Disciplines in this Module

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Zuleikha Malik
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Rehman Arshad, General Medicine

Modular Learning Outcomes

By the end of the 2nd module, the students of 2nd Year BDS should be able to:

1. Describe the aetiology, morphology, pathogenesis, and inflammation with treatment modalities for various microbes according to the mode of action and drug interaction.

Pharmacology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
Chemotherapy Resistance	*Discuss drug resistance and its outcomes	**Knowledge** *Define drug resistance *Enumerate types of resistance *Describe different mechanisms underlying the development of drug resistance *Identify the consequences of drug resistance *Outline ways to prevent resistance	LGIS SGDs	MCQs, SAQs, Structured Viva
Penicillin I, II	*Discuss the basic pharmacology of penicillin	**Knowledge** *Recall the structure of the bacterial cell wall *Differentiate between the cell wall of gram-positive and gram-negative microorganisms *State the similarities and differences in the chemical structure between the penicillin and cephalosporin *Classify penicillin *Differentiate between the spectrum of activity between the: **natural penicillin **the penicillinase-resistant penicillin **the aminopenicillins **the carboxypenicillins **the ureidopenicillins **the ß-lactamase inhibitor combinations *Describe the mechanism of action and resistance of penicillin *Explain the PK features of	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
		penicillin with emphasis on distribution to CSF, urinary tract, lungs, soft tissue and bone *Discuss the clinical uses and adverse effects of penicillin *Discuss hypersensitivity to penicillin *Discuss the prevention and management of penicillin hypersensitivity		
Cephalosporin	*Discuss the basic pharmacology of cephalosporins C their role in dentistry	**Knowledge** *Recall the similarities and differences in the chemical structure between the penicillin and cephalosporin *Classify cephalosporin *Describe the mechanism of action and resistance of cephalosporin *Explain the PK characteristics of different generations of cephalosporin *Discuss the clinical uses and adverse effects of cephalosporin	LGIS SGDs	MCQs, SAQs, Structured Viva
Tetracycline	*Discuss the basic pharmacology of tetracycline C their role in dentistry	**Knowledge** *Classify tetracycline *Discuss salient pharmacokinetic characteristics of different members of tetracycline *Describe the spectrum, mechanism of action and resistance of this drug group *Explain the clinical uses and adverse effects of tetracycline *Discuss the use of tetracycline in children and pregnant women	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
Macrolides	*Discuss the basic pharmacology of Macrolides	**Knowledge** *Enumerate macrolides *Discuss salient pharmacokinetic characteristics of different macrolides *Describe the spectrum, mechanism of action and resistance of macrolides *Enlist the clinical uses and adverse effects of macrolides *Compare and contrast between erythromycin, clarithromycin and azithromycin	LGIS SGDs	MCQs, SAQs, Structured Viva
Chloramphenicol	*Discuss the basic pharmacology of chloramphenicol	**Knowledge** *State the spectrum of activity of chloramphenicol *Discuss the mechanism of action of chloramphenicol *Outline the clinical applications *Identify the main adverse effects of chloramphenicol	LGIS SGDs	MCQs, SAQs, Structured Viva
Aminoglycosides	*Discuss the basic pharmacology of aminoglycosides (AMGs)	**Knowledge** *Name different AMGs *Enumerate the structural differences between different members of AMGs *State the main PK characteristics of AMGs *Enumerate the advantages of multiple dosing of AMGs over once-daily dosing *Describe the mechanism of action and resistance of AMGs *Trace the spectrum of activity of AMGs *Cite the interaction between cell wall inhibitors and AMGs	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
		*Discuss the therapeutic indications and untoward effects of AMGs		
Quinolones	*Discuss the basic pharmacology of quinolones	**Knowledge** *Classify quinolones *Differentiate between quinolones and fluoroquinolones *Describe the PK consideration of quinolones *Describe the mechanism of action, therapeutic uses and untoward effects of quinolones *Enumerate the contraindications of quinolones	LGIS SGDs	MCQs, SAQs, Structured Viva
Anti-Mycobacterial I, II	*Discuss first-line and second-line anti-mycobacterial drugs	**Knowledge** *Enumerate different species of Mycobacterium and the diseases associated with them *List 1st and 2nd line ATT *Describe briefly the mechanism of action, resistance and clinical uses of 1st-line ATT *Identify the major toxicities of 1st line ATT and outline ways to minimize them *Describe the rationale for multi-drug regimens *Enlist antimycobacterial drugs used for leprosy	LGIS SGDs	MCQs, SAQs, Structured Viva
Expectorants s Antitussives	*Discuss the basic pharmacology of drugs used in cough	**Knowledge** *Define cough *Classify the clinical presentations of cough *Outline the important components of the cough	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
		reflex *Define the terms antitussives, mucolytic and expectorants *Enumerate drugs used as antitussives, expectorants and mucolytic agents *Describe the mechanism of action of respective drug groups *Identify different respiratory conditions requiring the use of antitussives, mucolytic and expectorants *State adverse effects associated with these drugs		
Anti-Asthmatic drugs I, II	*Discuss the basic pharmacology of drugs used in asthma	**Knowledge** *Define asthma *Describe the types and pathological basis of asthma *Recall the distribution of autonomic receptors in the lungs and their role in the control of bronchial smooth muscle tone *Classify anti-asthma drugs into bronchodilators and anti-inflammatory drugs *State drugs used for prophylaxis and treatment of asthma *Discuss the mechanism of action of different anti-asthma drugs *Describe the adverse effects and special considerations associated with these drugs *Outline appropriate drugs used in the management of acute severe asthma	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
Anti-Histamines	*Discuss the basic pharmacology of anti-histamines	**Knowledge** *Recall the site of action and the physiological and pathophysiological role of histamine *Identify conditions causing the release of histamine *Describe the distribution of histamine receptors in the body and their associated actions *Classify antihistamine drugs *Describe the mechanism of action and pharmacological effects of antihistamines *Identify the various therapeutic uses of antihistamine therapy *Discuss the adverse effects of both generations of antihistamine	LGIS SGDs	MCQs, SAQs, Structured Viva
Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) I, II	*Discuss the basic pharmacology of analgesics	**Knowledge** *Define pain *Discuss the role of cyclo-oxygenase and prostaglandins in the pathology of pain, inflammation and fever *Identify the role of prostaglandins in the homeostatic regulation of: a) gastric function b) kidney function c) regulation of vasomotor tone and platelet functions *Define the term NSAIDs *Classify NSAIDs *Describe the general mechanism of action of NSAID and differentiating points of aspirin and paracetamol	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
		*Discuss the pharmacokinetics, therapeutic uses and adverse effects of aspirin and paracetamol *Describe the indications preferring use of COX-2 inhibitors		

General Pathology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
Inflammation Introduction sTypes **Acute inflammation (Vascular s Cellular Events)** **Chronic Inflammation** **Chemical Mediators of Inflammation**	*Explaininflammation, the steps and cells involved in acute Cchronic inflammation *Discuss the systemic effects of inflammation on the human body *Describe thepathogenesis of inflammation	**Knowledge** *Enlist cardinal signs of inflammation C its causes *Compare various types of Inflammation *Differentiate between Transudate and exudate *Enlist morphological patterns of acute Cchronic inflammation *Enlist the events involved in pathogenesis C cellular events *Describe processes of margination, rolling, adhesion, transmigration, chemotaxis Cphagocytosis	LGIS SGDs	MCQs, SAQs, Structured Viva
		Skill *Identify inflammatory cells by using slides	Practical Demonstration	OSPE
Healing and Repair	*Explain the process of wound healing and repair in the human body *Describe the factors affecting wound healing	**Knowledge** *Describe different types of tissue cells concerningproliferative activity *Describe steps involved in tissue healing *Define angiogenesis and the steps involved in it *Differentiate between primary and secondary intention healing	LGIS SGDs	MCQs, SAQs, Structured Viva
Special Bacteriology **Gram +ive Cocci**	*Classify gram-positive and gram-positive bacilli *Interpret the	**Knowledge** *Recall basic concepts of special bacteriology *Classify gram-positive and gram-positive bacilli	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 2nd module, the students of the 2nd Year BDS will be able to:			
Gram +ive Rods **Mycobacterium tuberculosis**	diseases produced by the cocci *Describe the characteristics of gram-positive rods along with their pathogenesis and lab diagnosis *Discuss the types of mycobacteria *Describe the differences between typical and atypical mycobacteria	*Tabulate the tests that differentiate different species of Staphylococci *Discuss the diseases, pathogenesis, virulence factors and clinical features of diseases caused by MRSA. *Enlist the diseases they produce *Explain the role of different virulence factors possessed by them *Explain the pathogenesis of the diseases produced *Enlist the clinical features *Discuss the pathogenesis of pulmonary TB in detail *Differentiate the primary and secondary TB *Differentiate between latent TB and secondary TB		
		Skill *Discuss the principle, performance, result Cinterpretation of the oxidase test *Discuss the principle, performance, result C interpretation of the Catalase test *Perform sugar test C motility test *Interpret TSI	Practical Demonstration	OSPE

Block 2 – 1st Spiral

Module III: Oral Disease Management I

Theme: Dental Rehabilitation I

Duration: 06 Weeks

Integration of Disciplines in this Module

Dental Materials	• V.I Operative Dentistry
Community Dentistry	• Periodontology
V.I Operative Dentistry	• Oral Biology
V.I Prosthodontics	• Dental Materials

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Shazana Rana
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Saman Malik, HoD Oral Biology Dr. Sohaib Siddique, Periodontology

Modular Learning Outcomes

By the end of the 3rd module, the students of 2nd Year BDS should be able to:

1. Incorporate the concepts of basic sciences in the management of oral diseases.

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 3rd module, the students of 2nd Year BDS should be able to:			
Composites	*Relate compositional characteristics and properties of resin-based materials to clinical applications.	**Knowledge** *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 advances in restorative composites	Interactive lectures SGDs CBLs	MCQs SAQs Viva voce
		Skill *Identify all the components in a dental	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 3rd module, the students of 2nd Year BDS should be able to:			
		composite kit *Demonstrate the steps of composite manipulation		
Adhesion s Bonding	*Recall the composition of Dental composites. *Classify dental composite based on: **Activation methods **filler particle sizes **newer generations (Flowable, Packable, Bulk-fill) *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 *Review in detail the enamel and dentine bonding systems *Discuss the evolution of Bonding systems *Classify adhesive systems	**<u>Knowledge</u>** *Infer the concept of bonding and adhesion in dentistry *Appraise the significance of enamel and dentinebonding *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 SAQs Viva voce
		<u>Skill</u> *Identify all the components in a dental composite kit *Demonstrate the steps of composite manipulation	Demonstrations Practicals	OSPE

Community Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1st module, the students of 2nd Year BDS should be able to:			
Epidemiology of Periodontal Disease	*Discuss the basic principles and epidemiology of Periodontal Diseases	**Knowledge** *Define periodontal disease *Describe the epidemiological triad of periodontal disease *Explain the prevalence of periodontal diseases in Pakistan and their associated factors	LGIS SGDs	MCQs SAQs
Indices Used for Periodontal Diseases	*Apply the knowledge and skill of Oral Indices	**Knowledge** *Identify the index teeth to be examined *Discuss the scoring criteria of oral indices *Describe the nominal scale for interpretation of oral indices	LGIS SGDs	MCQs SAQs
Plaque, OHI-S PHP Indices		**Knowledge** *Define the PI index, PHP index and OHI-S index *Describe the procedure to determine the score of PI, PHP and OHI-S indices		
GI and SBI Indices		**Knowledge** *Define gingival index *Explain gingival index CScoring criteria *Describe the nominal scale for interpretation of the gingival index score		
PI, PDI Indices		**Knowledge** *Define the Russell's PI index and PDI *Explain the procedure to measure Russell's periodontal index and		

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 1st module, the students of 2nd Year BDS should be able to:			
		PDI *Describe the scoring criteria of Russell's index and PDI *Explain the nominal scale for the interpretation of Russell's index and PDI		
CPITN		**Knowledge** *Define CPITN Index *Identify instruments used for its measurement *Explain the procedure to measure the score CPITN index *Discuss the scoring criteria of the CPITN index		
		Skill *Calculate PI on models *Identify different types of CPITN probes *Practice the measurement of CPITN score on models	Practicals Demonstrations	OSPE
Prevention of Periodontal Disease	*Apply the knowledge and skills related to oral hygiene instructions	**Knowledge** *Discuss the prevention of periodontal disease at different levels	LGIS SGDs	MCQs SAQs
		Skill *Counsel a high-risk patient for periodontal disease prevention *Guide expecting mothers regarding periodontal disease prevention *Practice oral hygiene aids	Practicals Demonstrations	OSPE

Vertically Integrated Operative Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 3rd module, the students of 2nd Year BDS should be able to:			
Cavity Preparation For Class II Amalgam Restoration	*Outline the steps involved in class II cavity preparation for Amalgam	**<u>Knowledge</u>** *Describe the tooth preparation method for a class II cavity preparation for an amalgam restoration *Outline the choice of a matrix system for class II cavity	LGIS SGDs	MCQs SAQs
		<u>Skill</u> *Demonstrate the proper handling of amalgam for aclass II cavity preparation *Perform class II cavity preparation *Demonstrate the placement of different matrix systems and wedges *Apply lining material in cavity preparations of carious teeth *Perform mixing of amalgam *Demonstrate the appropriate procedures of condensation, burnishing, carving, finishing, C polishing of an amalgam restoration	Demonstrations Practicals	OSPE
Matrix sRetainer Systems	*Appraise the importance of matrix systems in restorative dentistry	**<u>Knowledge</u>** *Define matrix and retainer *Classify matrix and retainer systems *Enumerate the different designsof matrix systems used *Enlist the indications for	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of 3rd module, the students of 2nd Year BDS should be able to:			
		the use of a matrix system *Enumerate the advantages of using matrix systems		
		Skill *Outline the choice of matrix system for class II cavity *Demonstrate the placement of different matrix systems and wedges	Demonstrations Practicals	OSPE

Vertically Integrated Prosthodontics

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 3rd module, the students of 2nd Year BDS should be able to:			
Basics Of Occlusion	*Appraise the basic occlusal concepts	**Knowledge** *Define dental occlusion *Differentiate between Overjet and Overbite *Differentiate between occlusion and articulation *Describe Class I canine relationship *Describe Class I molar relationship	LGIS SGDs	MCQs SAQs
Occlusion For Complete Denture	*Discuss the characteristics of occlusion for a complete denture	**Knowledge** *Enumerate the objectives of establishing occlusion *Differentiate betweennatural and artificialocclusion *Name the different types of complete denture occlusalschemes *Describe the factors affecting occlusion	LGIS SGDs	MCQs SAQs

Block 2 – 1st Spiral

Module IV: Oral Disease Management II

Theme: Dental Rehabilitation I

Duration: 06 Weeks

Integration of Disciplines in this Module

Dental Materials	• V.I Prosthodontics
Community Dentistry	• Oral Pathology
V.I Operative Dentistry	• Dental Materials
V.I Prosthodontics	• Dental Materials

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Shazana Rana
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Azka Haroon, HoD Oral Pathology

Modular Learning Outcomes

By the end of the 4th module, the students of 2nd Year BDS should be able to:

1. Incorporate the concepts of basic sciences in the management of oral diseases.

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
Synthetic Polymers	*Relate the properties of prosthetic polymers and associated materials to respective clinical applications.	**Knowledge** *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 SAQs Viva voce
		Skill *Manipulate acrylic (polymer and liquid) and identify the physical changes taking place during the mixing and setting of polymers	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
		*Demonstrate the mixing of heat cure acrylic resin *Demonstrate the steps of acrylic denture fabrication *Compare heat and self-cure acrylic resin		
Denture Base Polymers s 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 *Describe the defects during denture processing Enlist repair materials for dentures	**Knowledge** *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 SAQs Viva voce
		Skill *Manipulate acrylic (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	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
		*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.	**Knowledge** *Compare types of artificial teeth *Discuss their advantages and disadvantages	Interactive lectures SGDs	MCQs SAQs Viva voce
Impression Materials	*Identify ideal properties of impression materials *Classifyimpression 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 materials *Classify Non-elastic Impression Materials: **ImpressionCompound **Impression Plaster **Zinc-Oxide Eugenol Paste **Impression Waxes *Classify Elastic Impression Materials	**Knowledge** *Classify impression materials used in dentistry. *Describe the characteristics and properties of elastic andnon- 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 setting time *Infer the importance of correct manipulation of impression materials. *Outline various methods of disinfecting different impression	Interactive lectures SGDs	MCQs SAQs Viva voce

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
	**Reversible C Irreversible Hydrocolloids **Non-aqueous Elastomers	materials. *Identify different impression materials *Demonstrate the correct dispensing, manipulation and handling of Alginate, ZnO - Eugenol paste and Impression compound		
		Skill *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

Community Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
Periodontal Disease Prevention	*Discuss the methods of periodontal disease prevention	**Knowledge** *Define oral cancer *Identify the signs and symptoms of oral cancer *Enlist different types of carcinomas *Outline the epidemiology of oral cancer in Pakistan *Describe agent, host and environmental factors related to oral cancer *Outline the risk factors and contributory factors of oral cancer	LGIS SGDs	MCQs SAQs
Prevention Of Oral Cancer	*Interpret the prevention of oral diseases at different levels.	**Knowledge** *Discuss the prevention of oral cancer at different levels	LGIS SGDs	MCQs SAQs
Screening	*Outline basic concepts of screening	**Knowledge** *Define Screening *Identify aims and objectives *Enlist basic screening test *Describe types of screening *Discuss the criteria used for screening	LGIS SGDs	MCQs SAQs
Epidemiology Of Malocclusion	*Discuss the basic principles and epidemiology of Malocclusion	**Knowledge** *Classify malocclusion *Discuss causes of malocclusion *Describe the	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
		epidemiological triad of malocclusion and oro-facial defects *Explain the prevalence of malocclusion in Pakistan and its associated factors		
Epidemiology And Prevention Of Dental Trauma	*Describe the basic principles and epidemiology of tooth wear	**Knowledge** *Discuss the epidemiology of traumatic injuries *Describe the preventive measures for traumatic injuries.	LGIS SGDs	MCQs SAQs
Epidemiology And Prevention Of Wasting Disease Of Teeth	*Describe the basic principles and epidemiology of wasting disease of teeth.	**Knowledge** *Discuss the epidemiology of wasting disease of teeth *Describe the preventive measures	LGIS SGDs	MCQs SAQs
Health Education	*Outline basic Principles CObjectives of Health Education	**Knowledge** *Define health education *Outline the objectives and key messages in health education *Describe principles involved in health education *Enlist the different methods and materials used in health education *Describe the steps involved in planning oral health education	LGIS SGDs	MCQs SAQs
Health Promotion	*Outline the strategies for Health	**Knowledge** *Define health	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
	Promotion	promotion *Outline the principles of health promotion *Identify different approaches to health promotion *Discuss the declaration of the Ottawa charter and its components		

Vertically Integrated Operative Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
Clinical Application And Steps Of Composite Restoration (In integration with Dental Materials)	*Outline the steps involved in the application of a composite restoration	**Knowledge** *Integrated with Dental Materials	LGIS SGDs	MCQs SAQs
		Skill *Perform restorative techniques including etching, bonding agent application, matrix placement and curing of composite Cfinishing and polishing of an esthetic restoration	Demonstrations Practicals	OSPE

Vertically Integrated Prosthodontics

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
Laboratory Procedures Prior To Insertion	*Demonstrate the prosthodontic procedures of flasking, packing and curing a complete denture	**<u>Knowledge</u>** *Describe the different techniques used for flasking *Differentiate between 2-pour and 3-pour techniques of flasking *Enlist the dental materials that can be used as a separating media *Differentiate between the different stages of setting of acrylic *Describe curing cycles for heat-cured acrylic resin	LGIS SGDs	MCQs SAQs
		<u>Skill</u> *Demonstrate the investment of denture bases using dental plaster *Demonstrate the dewaxing of the invested denture bases using a hot bath *Manipulate heat-cured acrylic resin *Perform a trial packing of resin into the mould *Identify and remove flash *Perform the final packing of acrylic resin in the mould *Perform curing of acrylic resin *Divest the cured	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of 2nd Year BDS should be able to:			
		dentures without damage *Perform finishing and polishing procedures for the cured dentures		
Occlusal Equilibration	*Summarize the concept of occlusal equilibration	**<u>Knowledge</u>** *Define occlusal equilibration *Enlist the causes of occlusal disharmony *Outline the steps involved in the process of occlusal equilibration *Enumerate the necessary armamentarium for occlusal adjustments *Explain the BULL's Law	LGIS SGDs	MCQs SAQs
		<u>Skill</u> *Pour a remount cast *Demonstrate the occlusal adjustmentson an articulator	Demonstrations Practicals	OSPE

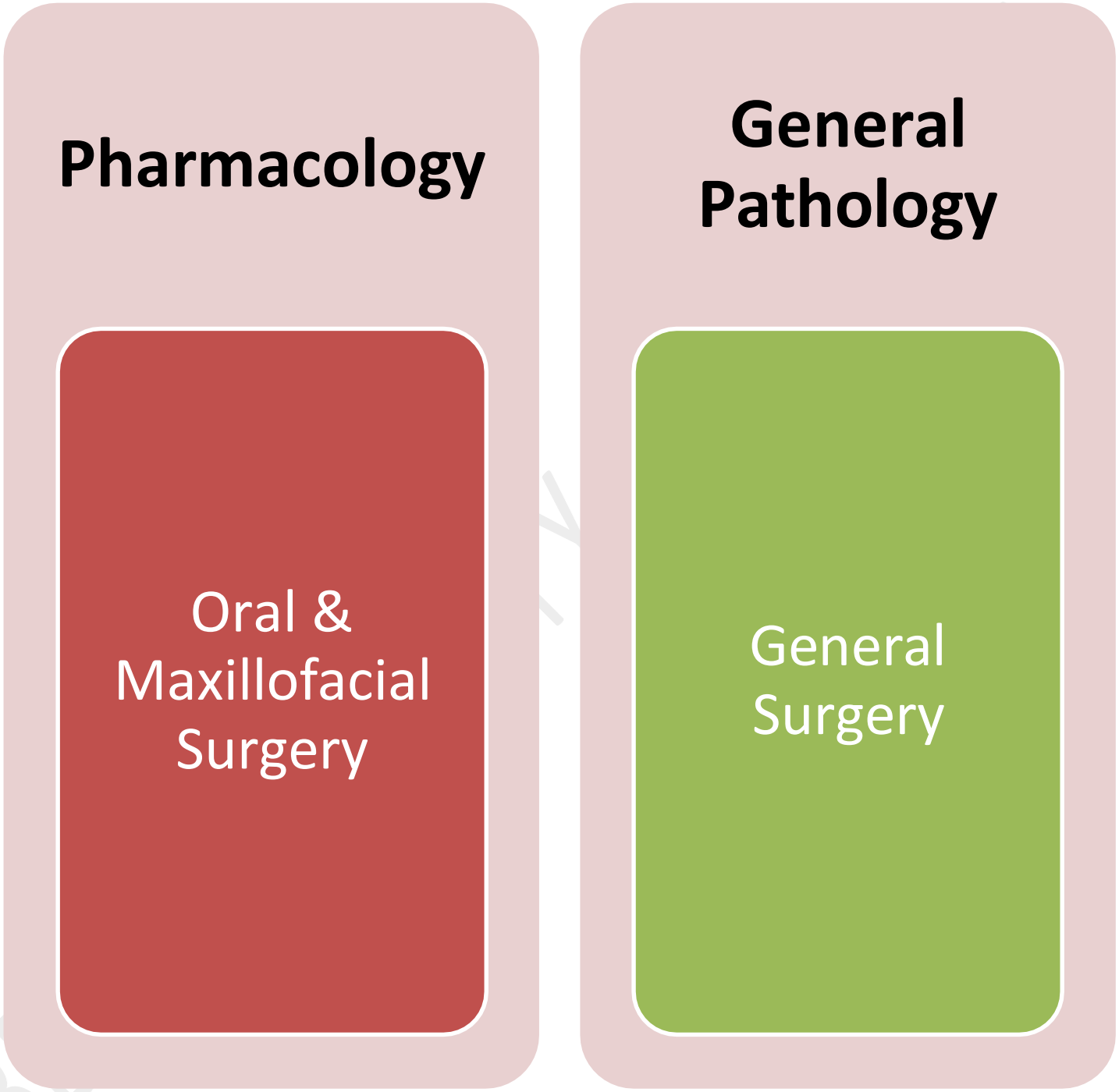
Block 2 – 2nd Spiral

Module III: Haemodynamics

Theme: Basics of Medical Sciences II

Duration: 04 Weeks

Integration of Disciplines in this Module



Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Zuleikha Malik
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Maimoona Siddiq, HoD OMFS Dr. Afshan Haroon, General Surgery

Modular Learning Outcomes

By the end of the 3rd module, the students of 2nd Year BDS should be able to:

1. Discuss the pathogenesis and drug treatment of cardiovascular diseases.

Pharmacology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 3rd module, the students of the 2nd Year BDS will be able to:			
ANS: Introduction – I s II	*Explain the basic principles of the autonomic nervous system	**Knowledge** *Recall the main divisions of the nervous system *Enumerate the distinctive anatomical and chemical characteristics of the sympathetic and parasympathetic nervous system *Enlist essential steps of neurotransmitter synthesis, storage and release *Identify the visceral organs innervated by sympathetic and parasympathetic systems and the functional responses of these organs to activation of either system *Outline the distribution of autonomic receptors and secondary messengers associated with them	LGIS SGDs	MCQs, SAQs, Structured Viva
Cholinergic drugs. Classification, Cholinesterase, Alkaloids	*Discuss the direct cholinergic drugs	**Knowledge** *Recall the structural and functional differences between nicotinic and muscarinic receptors, their distribution and effects produced by activation *Classify cholinergic	LGIS SGDs	MCQs, SAQs, Structured Viva

		drugs/ cholinomimetics *Differentiate between the mechanism of action of direct and indirectly acting cholinomimetics *Describe the clinical uses and adverse effects of directly acting cholinomimetics		
Anticholinesterase Organophosphate Poisoning s Oximes	*Discuss the basic pharmacology of indirect cholinergic drugs	**<u>Knowledge</u>** *Name the types of cholinesterase, their location in the body and function *Outline the steps of the breakdown of acetylcholine by cholinesterase *Categorize anti-cholinesterases *Identify the mechanism of reversible and irreversible inhibition of cholinesterase *Discuss the salient features of individual anti-cholinesterase *Explain the use of anti-cholinesterase in the diagnosis and treatment of myasthenia gravis *Discuss the toxic pharmacological features of organophosphate poisoning *Schematise the drugs used in the management of organophosphate poisoning *Discuss the rationale for utilising oximes as	LGIS SGDs	MCQs, SAQs, Structured Viva

		antidotes for organophosphate poisoning		
Cholinergic blockers; Natural alkaloids, Semisynthetic Anticholinergics I s II	*Discuss the basic pharmacology of anti-cholinergic drugs	**<u>Knowledge</u>** *Classify anticholinergic drugs (therapeutic and chemical) *Explain the pharmacokinetic, mechanism and pharmacological action of the prototype anticholinergic agent *Describe the major therapeutic uses and adverse effects of anti-cholinergics *Enumerate drug interactions and contraindications of cholinergic receptor blockers *Identify the features of atropine poisoning and give its treatment *Compare and contrast atropine and hyoscine	LGIS SGDs	MCQs, SAQs, Structured Viva
Skeletal Muscle Relaxants	*Discuss the basic pharmacology of skeletal muscle relaxants	**<u>Knowledge:</u>** *Classify skeletal muscle relaxants *Describe the pharmacokinetics and mechanism of action of prototype non-depolarizing and depolarizing muscle relaxants *Identify the mechanism employed for termination of effects of skeletal muscle relaxants *Describe the	LGIS SGDs	MCQs, SAQs, Structured Viva

		therapeutic clinical indications and adverse effects of each class of skeletal muscle relaxants *Enlist centrally acting muscle relaxants *Describe salient features of benzodiazepines, baclofen and tizanidine as spasmolytics *Explain the unique role of dantrolene in hyperthermia syndromes		
Catecholamines Adrenaline, Nor-Adrenaline, Dopamine s Dobutamine	*Discuss the basic pharmacology of catecholamines	**Knowledge** *Define catecholamines *Enumerate catecholamines *Describe the chemistry, mechanism of action, organ system effects, clinical uses and untoward effects of adrenaline *Compare and contrast the effects of adrenaline nor-adrenaline and isoprenaline *Differentiate between dopamine and dobutamine concerning source, pharmacokinetics, pharmacological effects, therapeutic indications and adverse effects	LGIS SGDs	MCQs, SAQs, Structured Viva
Non-Catecholamines: Ephedrine, Amphetamines α Receptor Agonists	*Discuss the basic pharmacology of non-catecholamines	**Knowledge** *Enumerate non-catecholamines *Tabulate differences between catecholamines and non-catecholamines *Describe the	LGIS SGDs	MCQs, SAQs, Structured Viva

		mechanism of action of indirectly acting sympathomimetics *Group indirectly acting sympathomimetics according to their therapeutic indications *Trace the untoward effects of non-catecholamines		
Adrenergic Blockers: Alpha - Receptor Blockers	*Discuss the basic pharmacology of Alpha- receptor blockers	**Knowledge** *Recall the distribution of alpha receptors and organ system effects produced by their activation *Classify alpha receptors *Discuss the principal clinical indications of alpha-blockers with their mechanism of action *Identify the untoward effects of alpha antagonists and *Describe the contraindications to their use of alpha-blockers	LGIS SGDs	MCQs, SAQs, Structured Viva
Adrenergic Blockers: Beta Receptor Blockers I s II	*Discuss the basic pharmacology of Beta receptor blockers	**Knowledge** *Recall the distribution of beta receptors and organ system effects produced by their activation *Classify beta receptors *Identify important pharmacokinetic properties of beta blockers *Explain the principal clinical indications of beta blockers with their mechanism of action *Describe the adverse effects of beta blockers *Indicate contraindications of beta	LGIS SGDs	MCQs, SAQs, Structured Viva

		blockers		
Drugs Used In Cardiac Failure, I, II	*Discuss the basic pharmacology of drugs used in cardiac failure	**Knowledge** *Define heart/cardiac failure *Outline the pathophysiological basis for the development of cardiac failure *Identify the receptors on cardiac myocytes and their role in myocardial contraction *Classify drugs used in cardiac failure *Describe the mechanism of action of cardiac glycosides *Explain the adverse effects and drug interactions of digoxin	LGIS SGDs	MCQs, SAQs, Structured Viva
Anti-Arrhythmic Drugs I, II	D*iscuss the basic pharmacology of Arrhythmia C its treatment	**Knowledge** *Recall the electrophysiology of cardiac action potential *Categorize the anti-arrhythmic drugs based on their mechanism of action *Identify ion channels which serve as targets for anti-arrhythmic drugs *Trace the general mechanism of action of anti-arrhythmic drugs *Cite major side effects of major antiarrhythmic drugs that limit their clinical usefulness	LGIS SGDs	MCQs, SAQs, Structured Viva
Anti-Hypertensive Drugs I, II	*Discuss the basic pharmacology of Anti-Hypertensive drugs	**Knowledge** *Revise the definition and determinants of blood pressure *Define hypertensive in terms of currently	LGIS SGDs	MCQs, SAQs, Structured Viva

		applied criteria *Classify antihypertensive drugs and sub-classify vasodilators *Discuss the mechanism employed by each class in lowering blood pressure *Identify the rationale for preferring one class over the other in different hypertensive patients *State the adverse effects associated with antihypertensive drug groups *Enumerate the drugs used in hypertensive emergencies		
Anti-Anginal Drugs I, II	*Discuss the basic pharmacology of anti-angina drugs	**<u>Knowledge</u>** *Define angina pectoris and give its *Classify the types of angina pectoris by their underlying pathology *Categorize drugs used in angina *Describe the mechanism of action of nitrates in different types of anginas *Discuss the important pharmacokinetic features of nitrates *Summarize the adverse effects of nitrates *Discuss the measures necessary to minimize tolerance of nitrates *Describe the role of beta blockers in angina *Explain why beta blockers are contraindicated in Prinz	LGIS SGDs	MCQs, SAQs, Structured Viva

		metal angina *Discuss the mechanism of action, clinical uses and adverse effects of calcium channel blockers *Tabulate newer anti-angina drugs		
Diuretics I, II	*Discuss the basic pharmacology of Diuretics	**<u>Knowledge</u>** *Outline the physiology of the nephron, including the transepithelial movement of bicarbonate, H2O, H+, sodium, chloride, potassium, calcium and magnesium in different segments of the nephron *Classify diuretics *Describe the site, mechanism of action and therapeutic indications of different classes of diuretics *Indicate the adverse effects and conditions that interact with various diuretic drugs	LGIS SGDs	MCQs, SAQs, Structured Viva

General Pathology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 3rd module, the students of the 2nd Year BDS will be able to:			
Introduction to Haemodynamics *Oedema *Congestion *Haemorrhage *Thrombosis and Embolism *Infarction *Shock	*Discuss the basic principles of hemodynamics. *Describe: **The process of thrombosis **The fate of thrombus **Infarction **Diagnosis of different types of shock	**Knowledge** *Define hemodynamics *Describe the basic pathologies in hemodynamics *Define oedema *Describe pathophysiology C morphological findings of oedema, thrombosis, infarction *Differentiate between hyperaemia and congestion *Describe the morphological changes and types in congestion	LGIS SGDs	MCQs, SAQs, Structured Viva
		Skill *Demonstrate practical skills regarding diagnosis of oedema lung (Chronic venous congestion, thrombus, congestion, infraction)	Practicals Demonstrations	OSPE
Gram Negative Rods	*Describe characteristics of gram-negative rods of the enteric tract. *Discuss: **Pathogenesis **Laboratory	**Knowledge** *Recall basic concepts of special bacteriology *Classify gram-positive and gram-negative cocci *Enlist the diseases they produce	LGIS SGDs	MCQs, SAQs, Structured Viva

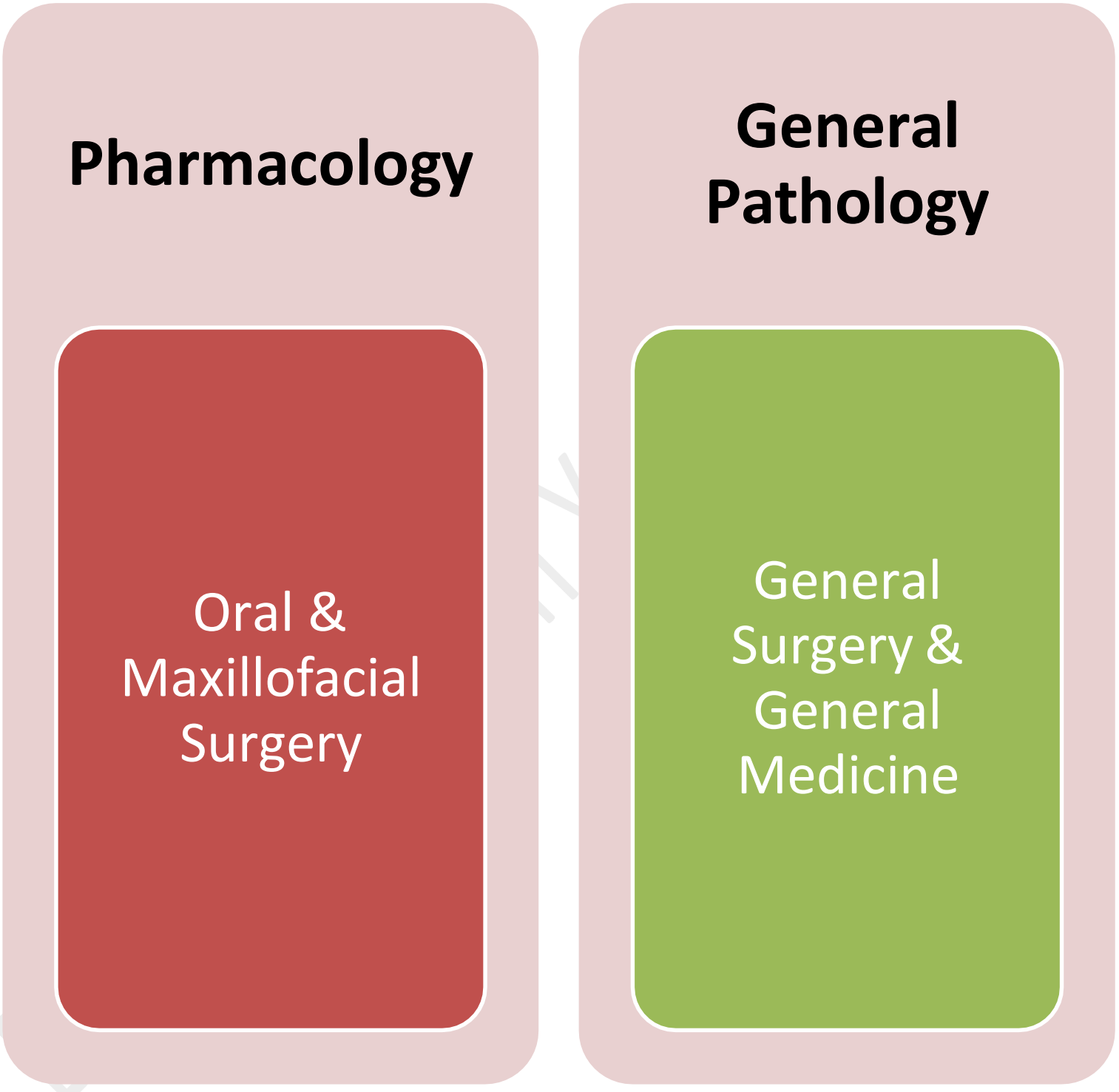
Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 3rd module, the students of the 2nd Year BDS will be able to:			
	diagnosis **Diseases outside the enteric tract	*Explain the role of different virulence factors possessed by them *Explain the pathogenesis of the diseases produced *Enlist the clinical features *Enlist the antigens C names of pathogenic strains of E.coli *Enlist the lab diagnosis of salmonella typhi		
		Skill *Compare different types of culture media *Interpret the knowledge of selective and non-selective culture media	Practicals Demonstrations	OSPE

Block 2 – 2nd Spiral

Module IV: Haematology

Theme: Basics of Medical Sciences II
Duration: 06 Weeks

Integration of Disciplines in this Module



Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Shazana Rana
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Maimoona Siddiq, HoD OMFS Dr. Afshan Haroon, General Surgery Dr. Abdul Rehman, General Medicine

Modular Learning Outcomes

By the end of the 4th module, the students of 2nd Year BDS should be able to:

1. Discuss multiple haematologic disorders and various parasites with their characteristics, pathogenesis, and treatment modalities.

Pharmacology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of the 2nd Year BDS will be able to:			
Haematinics	*Discuss the basic pharmacology of drugs used in anaemia	**Knowledge** *Recall the physiology of absorption and role of iron, vitamin B12 and folic acid in haematopoiesis *Define anaemia *Cite common nutritional causes of anaemia *Enlist various oral and parenteral preparations of iron, Vitamin B12 and folic acid *Identify the therapeutic role of iron, Vitamin B12 and folic acid in different types of anaemia *Describe the adverse effects and treatment of acute and chronic iron therapy	LGIS SGDs	MCQs, SAQs, Structured Viva
Anticoagulants I, II	*Discuss the basic and clinical pharmacology of drugs used in coagulation disorder	**Knowledge:** *Outline the mechanism of haemostasis and coagulation pathways and *Trace the role of coagulating factors and platelets in haemostasis *Classify anticoagulant drugs *Describe the mechanism of action of heparin *Tabulate the difference between un-fractioned heparin and low molecular weight heparin *Summarize the indications for, precautions related to and potential adverse effects of heparin *Discuss ways of management of heparin-induced thrombocytopenia	LGIS SGDs	MCQs, SAQs, Structured Viva

		*Enumerate the direct thrombin inhibitors *Describe the mechanism of action of warfarin *Outline the major drug interactions of warfarin *Explain the concept of INR (International Normalized Ratio) *Enlist the clinical uses of warfarin *Identify the adverse effects of warfarin *Design a management plan for warfarin toxicity *Cite alternative oral anticoagulants to warfarin *Enumerate thrombolytic drugs *Describe the mechanism of action, indications and adverse effects of thrombolytic agents *Name anti-fibrinolytic agents/agents used for neutralizing the action of thrombolytic drugs *Trace the possible interaction of fibrinolytic agents with anticoagulants (heparin) and antiplatelet drugs (aspirin) *Revise the role of platelets in the coagulation *Classify anti-platelets *Discuss the mechanism of action of various groups of antiplatelet drugs *Describe the clinical uses and adverse effects of different anti-platelet drugs		
Sulphonamides And Trimethoprim	*Discuss the basic pharmacology of sulphonamides C trimethoprim	**Knowledge** *Outline the steps of folic acid synthesis *Correlate the appropriate step of folic acid synthesis with the mechanism of sulphonamide and trimethoprim *Classify sulphonamides	LGIS SGDs	MCQs, SAQs, Structured Viva

		*Describe the clinically useful application of bacterial folic acid antagonists *Enumerate the major adverse effects of sulphonamides and trimethoprim *Enumerate the combinations of sulphonamides with other antimicrobial drugs *Name the combination of sulfamethoxazole and trimethoprim *Describe the ratio of sulfamethoxazole and trimethoprim in the combined form *List the advantages obtained by the combination of sulfamethoxazole and trimethoprim		
Anti-Malaria Drugs, I, II	*Discuss drug treatment and prophylaxis of malaria	**Knowledge** *Enumerate different species of Plasmodium *Outline the life cycle of Plasmodium *Identify the various phases of the life cycle of Plasmodium which act as targets of antimalarial drugs (Therapeutic classification of anti-malarial drugs) *Describe the mechanism of action, therapeutic uses and adverse effects of prototype drugs *Discuss the use of primaquine in the case of Plasmodium vivax and ovale *Enlist the commonly used combination of anti-malarial drugs	LGIS SGDs	MCQs, SAQs, Structured Viva
Anti-Amoebic Drugs	*Discuss the drug treatment of amoebiasis	**Knowledge** *Outline the life cycle of Entamoeba histolytica *Discuss the underlying	LGIS SGDs	MCQs, SAQs, Structured Viva

		pathogenesis of amoebiasis *Classify the drugs effective against amoebiasis (a targeted form of E. histolytica) *Describe the spectrum of activity, mechanism of action, clinical uses and adverse effects of metronidazole *Discuss the salient PK and PD features of the prototype drug of each class *Trace the rationale of combining a luminal agent with systemic amebicides		

General Pathology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of the 2nd Year BDS will be able to:			
Haematology *Anaemias *Anaemias typing *Acute leukaemia *Bleeding disorders *Coagulation disorders	*Describe the haematological disorders including anaemias, leukaemia and bleeding disorders *Describe the aetiology, pathology, types, and diagnosis *Interpret the complete blood count parameters	**Knowledge** *Define anaemias *Classify anaemias *Describe the clinical features Claboratory diagnostic criteria of anaemias *Define leukaemia *Classify leukaemia *Describe the laboratory diagnostic criteria of leukaemia *Define haemostasis *Define bleeding C platelet disorders *Describe clotting factors and defects	LGIS SGDs	MCQs, SAQs, Structured Viva
		Skill *Perform microscopic identification of normal and abnormal red cell morphology *Describe the procedure and interpretation of Erythrocyte Sedimentation Rate (ESR)	Practical Demonstration	OSPE
Diseases of the Immune System *Cells of the immune system *Types of immunity *Hypersensitivity Reaction I, II, III C IV *Immunodeficiency diseases	*Illustrate the immune system and process of immune response of our body *Describe the mechanisms and differences of hypersensitivity reactions	**Knowledge** *Define the types and functions of cells involved in the immune system *Define the types, structure, and functions of immunoglobulins *Define the different	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of the 2nd Year BDS will be able to:			
*AIDS	*Discuss the mechanisms and clinical features of acquired immunodeficiency syndromes	types of immunity, cells involved C mechanisms in adaptive and innate immunity *Describe in detail the mechanism, clinical features C clinical conditions of all types of hypersensitivity *Enlist the preventive measures *Describe the mechanism involved in acquired immunodeficiency disorders *Differentiate between HIV infection and AIDS with preventive measures		
		Skill *Illustrate the principal of Leishman stain *Demonstrate the use of Leishman staining *Perform clinical interpretation of Leishman staining results	Practicals Demonstrations	OSPE
Introduction to Parasitology *Amoeba *Giardia/ trichomonas *Malarial parasite *Toxoplasma *Leishmania	*Discuss the characteristics, life cycle, pathogenesis, lab diagnosis	**Knowledge** *Describe the pathogenesis, clinical features, and lab diagnosis of parasites *Describe the characteristics of amoebas *Describe important	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 4th module, the students of the 2nd Year BDS will be able to:			
*Cestodes *Ascaris lumbricoides *Ankylostoma duodenale *Enterobius vermicularis		properties, pathogenesis, and life cycles of other parasites in humans		
		Skill *Identify the steps of collection of samples for Stool RE *Identify the gross appearance of stool *Interpret microscopic examination of stool *Identify cysts and Ova in stool *Identify malarial parasite *Identify the life cycle of the malarial parasite *Identify different types of malarial parasites *Identify microscopic of Leishman Donovan (L.D Bodies)	Practicals Demonstrations	OSPE

Block 3 – 1st Spiral

Module V: Medical s Dental Healthcare

Theme: Dental Rehabilitation II
Duration: 06 Weeks

Dental Materials	• V.I Prosthodontics
Community Dentistry	• Oral Biology
V.I Operative Dentistry	• Oral Biology
V.I Prosthodontics	• Dental Materials

Integration of Disciplines in this Module

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Sadia Israr
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Saman Malik, HoD Oral Biology

Modular Learning Outcomes

By the end of the 5th module, the students of 2nd Year BDS should be able to:

1. Summarise the restorative management of oral diseases and the healthcare system in subsequent years of training and practice.

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
Metals	*Correlate basic concepts of metallurgy to prosthesis design and implantology.	**Knowledge** *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 SAQs Viva Voce
		Skill *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 wires	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
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 SAQs Viva Voce

Community Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
Healthcare Delivery System **National Health Policy of Pakistan** **Problems In Health Care System**	*Discuss the primary health care and health care delivery system of Pakistan	**Knowledge** *Describe components of Health care system *Discuss Health care delivery *Describe the National health policy of Pakistan *Outline the healthcare delivery system of Pakistan *Identify Problems in the health care system of Pakistan	LGIS SGDs	MCQs SAQs
Primary Health Care		**Knowledge** *Define primary health care *Discuss elements of primary health care *Discuss principles of primary health care *Describe WHO strategy for primary health care		
Need Assessment	*Discuss the assessment of the health needs of a community	**Knowledge** *Define the concept of need C demand *Outline types of needs *Describe health need assessment	LGIS SGDs	MCQs SAQs
Health Planning, Survey and Evaluation	*Outline the concepts of Health Planning, Survey and Evaluation	**Knowledge** *Define health planning *Describe the purpose of planning *Enumerate basic	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
		steps in the planning cycle *Define survey *Outline the advantages of surveys *Describe modes of data collection C types of investigations *Outline special characteristics of oral health surveys *Discuss Path finder surveys, Index age groups for the survey *Define evaluation *List the reasons for conduction of evaluation *Discuss the WHO criteria for evaluation of dental services *Describe the different types of evaluation *Enumerate the guidelines for evaluation		
Dental Auxiliaries	*Outline the role of dental auxiliaries in HCDS.	**Knowledge** *Define dental auxiliaries *Describe types of auxiliaries *Discuss WHO classification of dental auxiliaries *Discuss functions of dental auxiliaries.	LGIS SGDs	MCQs SAQs
Financing In Health Care	*Outline the basic concepts of dental office management	**Knowledge** *Classify payment plans	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
	and financing in healthcare	*Discuss the mechanism of payment for dental care *Outline reimbursement of dentist		
Dental Office Management		**Knowledge** *Discuss the dental office establishment, location selection *Discuss financial assistance *Describe the design of the dental office and personnel management *Discuss appropriate record management procedures *Describe the accounting and other financial aspects *Discuss the factors associated with successful dental practice *Identify factors that influence the dental practice	LGIS SGDs	MCQs SAQs
Comprehensive Health Care	*Outline the basic principles of comprehensive healthcare in dentistry	**Knowledge** *Define comprehensive health care *Describe levels and stages of comprehensive health care *Outline the challenges and	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
		limitations		

Vertically Integrated Operative Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
Cavity Preparation For Composite Restorations	*Differentiate between various restorative materials	**Knowledge** *Classify restorative materials *Describe the composition, structure C properties of restorative materials *Discuss the clinical considerations for the choice of restorative materials *Enlist the indications and contraindications of using the composite restorative material *Enumerate the advantages and disadvantages of composite restorative material	LGIS SGDs	MCQs SAQs
	*Outline the steps involved in a class III cavity preparation for a composite restoration	**Knowledge** *Differentiate between conventional class III tooth preparation C a bevelled class III tooth preparation *Outline the method of cavity preparation in the aesthetic zones of the oral cavity *Explain the restorative technique of a composite restoration including etching, bonding agent application, matrix application, placement and curing of composite C finishing and polishing of restoration *Appraise the importance of polishing of aesthetic restorations	LGIS SGDs	MCQs SAQs
		Skill *Demonstrate restorative	Practicals Demonstrations	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
		techniques including etching, bonding agent application, matrix placement and curing of composite Cfinishing and polishing of restoration *Perform a class III cavity preparation *Demonstrate the adequate placement of the matrix system *Apply lining material inthe cavity preparation of a carious tooth *Demonstrate the appropriate manipulation and placement of composite material *Demonstrate the use of bonding agent and its curing with anLED light *Perform composite finishing and polishing procedures		
	*Outline the steps involved in a class IV cavity preparation for a composite restoration	**<u>Knowledge</u>** *Differentiate between a conventional class IV tooth preparation C a bevelled class IV tooth preparation *Outline the method of cavity preparation in the aesthetic zones of the oral cavity *Explain the restorative techniques of a composite restoration including etching, bonding agent application, matrix application, placement and curing of composite C finishing and polishing of restoration *Appraise the importance of polishing of aesthetic	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
		restorations		
		Skill *Demonstrate the restorative techniques for a composite restoration including etching, bonding agent application, matrix placement and curing of composite C finishing and polishing of restoration *Perform class IV cavity preparation *Demonstrate the placement of matrix systems for a class IV preparation *Apply lining material on cavity preparation of carious teeth *Demonstrate the appropriate manipulation and placement of composite material *Demonstrate the use of bonding agent and its curing with an LED light *Perform composite finishing and polishing procedures	Practicals Demonstrations	OSPE

Vertically Integrated Prosthodontics

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
Introduction To Removable Partial Dentures	*Differentiate between the cast andacrylic partial dentures	**Knowledge** *Define a partial denture *Differentiate between the cast partial and acrylic partial dentures *Enumerate the components of a cast partial denture *Define retention, support and stability	LGIS SGDs	MCQs SAQs
Patterns Of Partial Edentulism	*Classify the partially dentate arches using Kennedy's classification	**Knowledge** *Enlist the requirements of an acceptable classification system *Describe Kennedy's classification of partially edentulous arches *Highlight the advantages and disadvantages of Kennedy's Classification *Outline Applegate's rules that govern the application of Kennedy's classification *Classify saddle areas according to Kennedy's Classification	LGIS SGDs	MCQs SAQs
Components Of Cast Partial Denture **Major Connectors**	*Identify the components that serve as major connectors in a cast partial denture	**Knowledge** *Enumerate the components of a cast partial denture *Define major connectors *Explain the characteristics of major connectors that	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of 2nd Year BDS should be able to:			
		contribute to the well-being of patients *Name the maxillary and mandibular major connectors		
		Skill *Identify major connectors on CPD models	Practicals Demonstrations	OSPE
Minor Connectors	*Identify the components that serve as minor connectors in a cast partial denture	**Knowledge** *Define minor connectors *Describe the functions of the various forms of minor connectors	LGIS SGDs	MCQs SAQs
		Skill *Identify minor connectors on CPD models	Practicals Demonstrations	OSPE
Rests	*Explain the role of rests in complete denture support	**Knowledge** *Define rests. *Enumerate the functions of rests *Illustrate the outline form of an occlusal rest	LGIS SGDs	MCQs SAQs
		Skill *Identify rests on CPD models	Practicals Demonstrations	OSPE

Block 3 – 1st Spiral

Module VI: Evidence-Based Rehabilitation

Theme: Dental Rehabilitation II
Duration: 06 Weeks

Dental Materials	• V.I Prosthodontics
Community Dentistry	• Oral Biology
V.I Operative Dentistry	• Oral Biology
V.I Prosthodontics	• Dental Materials

Integration of Disciplines in this Module

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Sadia Israr
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Saman Malik, HoD Oral Biology

Modular Learning Outcomes

By the end of the 6th module, the students of 2nd Year BDS should be able to:

1. Apply basic principles of patient care incorporating evidence-based guidelines.

Dental Materials

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of 2nd 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.	**Knowledge** *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 SAQs Viva Voce
		Skill *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.	**Knowledge** *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, their uses and properties. *Illustrate methods of	Interactive lectures SGDs CBLs	MCQs SAQs Viva Voce

Topic/ Theme	Learning Outcomes By the end of the 6th module, the students of 2nd Year BDS should be able to:	Learning Objectives	Instructional Strategies	Assessment Tools
		strengthening ceramics. *Describe CAD-CAM in the context of ceramics *Identify different ceramic restorations e.g. PFM crown and bridge		
		Skill *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	**Knowledge** *Classify investment materials used in dentistry. *Describe the composition, setting reaction andproperties of different types of investment materials used in dentistry. *Identify different types of investment materials	Interactive lectures SGDs CBLs	MCQs SAQs Viva Voce
		Skill *Identify casting defects	Demonstrations Practicals	OSPE

Community Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of 2nd Year BDS should be able to:			
Research Methodology	*Discuss the basic principles of Research Methodology	**Knowledge** *Define epidemiology *Outline the aims of epidemiology *Define incidence and prevalence *Discuss the types of studies *Describe the classification of epidemiological studies	LGIS SGDs	MCQs SAQs
Descriptive Epidemiology		**Knowledge** *Discuss the concept of descriptive studies Ctypes of studies *Outline procedures in descriptive epidemiology *Describe uses of descriptive epidemiology *Discuss the designs of descriptive Epidemiology		
Analytical Epidemiology		**Knowledge** *Discuss analytical studies *Describe case-control study *Outline the indications, advantages, and disadvantages of study designs *Define bias and list its different types *Discuss cohort study *Outline general considerations while selection of cohorts *Describe types of cohort studies C elements of cohort studies		

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of 2nd Year BDS should be able to:			
		*Outline Indications, advantages, and disadvantages of cohort studies and the estimation of risk		
Experimental Studies		**Knowledge** *Define experimental studies *Outline the types C aim of experimental research *Discuss the study design of randomized control trials *Define bias C types *Discuss non-randomized controlled trials		
Biostatistics	*Outline the basic concepts of Biostatistics	**Knowledge** *Define data *Outline the types and presentation of data *Define variables and theirtypes *Discuss the measure of central tendency *Calculate the measures of central tendency *Describe the measure of dispersion and its uses *Define sampling C its types *Describe sample size calculation, sampling frame C sampling error *Outline normal distribution C normal distribution curve *Outline statistical testing *Discuss types of parametric and non-parametric test	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of 2nd Year BDS should be able to:			
		*Outline the application of parametric and non-parametric tests		
Evidence-Based Dentistry	*Outline the importance of evidence- based dentistry	**Knowledge** *Discuss the significance of evidence-based dentistry *Describe the hierarchy of evidence. *Describe the concept and basics of systematic review	LGIS SGDs	MCQs SAQs
Research Proposal Writing **SPSS** **EndNote** **Plagiarism**	*Compose a research proposal	**Knowledge** *Define plagiarism *Outline the basic concepts of plagiarism *Outline the features and basic operations of SPSS *Define EndNote and the advantages ofits use *Discuss the application of EndNote.	LGIS SGDs	MCQs SAQs
Dental Instruments And Dental Materials	**Skill** *Demonstrate the use of dental instruments and materials		Practicals Demonstrations	OSPE
Cross Infection Control **Hand Washing And PPE** **Needle Stick Injury** **Waste Disposal** **Disinfection Of A Dental Unit**	**Skill** *Demonstrate the technique of hand washing *Demonstrate sequence of donning and donning off PPE *Demonstrate the management protocol for needle stick injury *Perform the activity of waste characterization *Practice the colour coding system *Perform the method of cleaning clinical surfaces		Practicals Demonstrations	OSPE

Vertically Integrated Operative Dentistry

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of 2nd Year BDS should be able to:			
Cavity Preparation For Composite Restorations	*Outline the steps involved in a class V C VI cavity preparation for tooth restoration with composites	**<u>Knowledge</u>** *Differentiate between a conventional class V tooth preparation C a bevelled class V tooth preparation *Explain the restorative techniques used for a class V and VI cavity restoration *Describe the use of the sandwich technique for restoring deep class V cavities *Explain the composite restorative techniques including the etching, bonding agent application, matrix application, placement and curing of composite C finishing and polishing of the restoration *Appraise the importance of polishing of aesthetic restorations	LGIS SGDs	MCQs SAQs
		<u>Skill</u> *Demonstrate the appropriate composite restorative techniques including the etching, bonding agent application, matrix placement and curing of composite Cfinishing and polishing of therestoration *Perform class V cavity preparation *Demonstrate the appropriate placement of matrix systems for a class V C VI cavity restorations	Demonstrations Practicals	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of 2nd Year BDS should be able to:			
		*Apply lining material in the cavity preparation of the carious teeth *Demonstrate the adequate manipulation and placement of the composite restorative material *Demonstrate use of the sandwich technique for a deep carious lesion *Demonstrate the use of bonding agent and its curing with anLED light *Perform composite finishing and polishing procedures		

Vertically Integrated Prosthodontics

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of 2nd Year BDS should be able to:			
Components of A Cast Partial Denture **Direct Retainers**	*Explain the role of retainers in complete denture retention	**Knowledge** *Define direct retainers *Classify direct retainers *Identify parts of a clasp *Enlist the functions of reciprocal clasp arm *Enumerate principles of clasp design *Name factors that affect the flexibility of clasps *Identify direct retainers on CPD models	LGIS SGDs	MCQs SAQs
		Skill *Fabricate C-clasp and looped clasps for the edentulous span using stainless steel wire of 0.7 mm	Demonstrations Practicals	OSPE
Indirect Retainers	*Identify the components that serve as indirect retainers in a cast partial denture	**Knowledge** *Define Indirect Retainers *Enumerate the functions of indirect retainers *Name different forms of indirect retainers	LGIS SGDs	MCQs SAQs
		Skill *Identify indirect retainers on CPD models	Demonstrations Practicals	OSPE
Denture Base	*Differentiate between denture bases used in varying clinical situations	**Knowledge** *Define a denture base *Enlist functions of a denture base *Differentiate between	LGIS SGDs	MCQs SAQs

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of 2nd Year BDS should be able to:			
		tooth- supported and distal extension denture base *Name the factors affecting the support of a distal extension base *Differentiate between the metal and acrylic denture bases *Enumerate the methods of attaching teeth to denture base		
		<u>Skill</u> *Perform wax up for an acrylic partial denture by using the modelling wax	Demonstrations Practicals	OSPE
Surveying	*Outline the role of surveying in partial denture fabrication	**<u>Knowledge</u>** *Define surveying *Identify parts of a surveyor apparatus *Differentiate between supra-bulge and infra-bulge areas *Enumerate the objectives of surveying *Enumerate factors that affect the path of insertion and removal of a prothesis *Define tripoding *Describe the different types of tripoding	LGIS SGDs	MCQs SAQs

Block 3 – 2nd Spiral

Module V: Neurology

Theme: Basics of Medical Sciences II
Duration: 04 Weeks

Pharmacology

Oral & Maxillofacial Surgery

General Pathology

General Surgery

Integration of Disciplines in this Module

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Sadia Israr
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Maimoona Siddiq, HoD OMFS Dr. Afshan Haroon, General Surgery

Modular Learning Outcomes

By the end of the 5th module, the students of 2nd Year BDS should be able to:

1. Appraise role of genetic and chromosomal mutations in various genetic disorders and treatment modalities used in neurological disorders.

Pharmacology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of the 2nd Year BDS will be able to:			
Opioids I, II	*Discuss the basic pharmacology and clinical application of opioid analgesics	**Knowledge** *Recall the definition of pain *Illustrate afferent and efferent pain pathways *Trace the distribution of opioid receptors and their naturally occurring ligands *Enumerate opioid analgesics *Describe the mechanism of the analgesic action of opioids *Differentiate the mechanism of action of opioids from that of NSAIDs *Enumerate therapeutic uses of different opioids *Enlist the major adverse effects of opioids (common, self-resolving and requiring treatment) *Enumerate the cardinal signs of opioid overdose *Plan the steps forthe management of opioid overdose *Enlist opioid antagonists *Contrast the pharmacological effects of opioid antagonists with their uses	LGIS SGDs	MCQs, SAQs, Structured Viva
An Introduction to CNS	*Discuss neurotransmitters and ion channels	**Knowledge** *Define neurotransmitters *Enlist different excitatory and inhibitory neurotransmitters *Describe the site and	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes By the end of the 5th module, the students of the 2nd Year BDS will be able to:	Learning Objectives	Instructional Strategies	Assessment Tools
		action of neurotransmitters in the CNS		
Sedative s Hypnotics I, II	*Discuss the basic pharmacology of drugs in anxiety and sleep disorders	**Knowledge** *Define sedation C hypnosis *Classify benzodiazepines and barbiturates *Draw the pentameric structure of a GABA receptor *Indicate the site of attachment of GABA, BDZ and barbiturates *Differentiate between the mechanism of action of BDZ and barbiturates *Describe the valid clinical uses of BDZ and barbiturates *Enumerate the side effects of BDZ and barbiturates *Identify the safer of the two agents and trace the reason for the better safety profile of BDZ	LGIS SGDs	MCQs, SAQs, Structured Viva
General Anaesthetics I, II	*Discuss the basic pharmacology of general anaesthetics	**Knowledge** *Define anaesthesia in terms of its components *Enumerate the stages of anaesthesia *Identify the stage required for surgery *Explain the role of pre-anaesthetic medications *Classify agents used for general anaesthesia *Define MAC *Explain the relationship of	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes By the end of the 5th module, the students of the 2nd Year BDS will be able to:	Learning Objectives	Instructional Strategies	Assessment Tools
		MAC with the potency of an anaesthetic *Enumerate the pharmacokinetic factors affecting action of general anaesthetics *Classify drugs used for induction and maintenance of anaesthesia depending on their properties *Tabulate the advantages and disadvantages ofclinically used inhaled and intravenously administered general anaesthetics		
Local Anaesthetics I, II	*Discuss the rational use of local anaesthetics	**Knowledge** *Define local anaesthesia *Classify local anaesthetic agents *Relate the structural activity of LA with their mechanism of action *Discuss the differential sensitivity of nerve fibres to LA *Cite the advantages of the addition of vasoconstrictor with LA *Describe uses of LA in different conditions *Discuss the factors affecting the action of LA *Trace the adverse effects of different LA	LGIS SGDs	MCQs, SAQs, Structured Viva
Anti-Epileptic Drugs I, II	*Discuss the basic pharmacology of drugs used in seizure disorders	**Knowledge** *Define seizure and epilepsy *Name different types of	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes By the end of the 5th module, the students of the 2nd Year BDS will be able to:	Learning Objectives	Instructional Strategies	Assessment Tools
		epilepsy *Classify anti-epilepsy drugs *Describe the general mechanism of action of anti-epileptic drugs *Explain therapeutic uses, adverse effects and drug interactions of anti-epileptic drugs *Discuss other uses of anti-epileptic drugs		
Anti-Depressants	Discuss the basic pharmacology of drugs used in depression	**Knowledge** *Define depression *Enlist the main neurotransmitters in the pathology of depression *Classify anti-depressant drugs *Describe the mechanism of action of different classes of anti –depressant drugs *Enlist the therapeutic uses and adverse effects of these drugs *Describe the important drug interactions of antidepressants and precautionary measures	LGIS SGDs	MCQs, SAQs, Structured Viva
Drug Treatment of Migraine	*Discuss the drug management of migraine	**Knowledge** *Define migraine *Enumerate the drugs used in the prophylaxis and treatment of migraine *Describe the mechanism of action of triptans and ergotamine *List the contraindications of triptans and ergotamine	LGIS SGDs	MCQs, SAQs, Structured Viva

General Pathology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of the 2nd Year BDS will be able to:			
Genetics *Terminologies *Autosomal disorders *Chromosomal disorders	*Describe the basic terms in genetic disorders, differentiate autosomal and chromosomal disorders. *Discuss the congenital anomalies, infections C syndromes	**Knowledge** *Define genetics *Define the terminologies used in genetic disorders *Describe the types C aetiology of autosomal disorders C sex chromosomes *Discuss the diseases and clinical features of autosomal disorders	LGIS SGDs	MCQs, SAQs, Structured Viva
		Skill *Demonstrate the procedure and interpretation of complete blood counts	Practicals Demonstrations	OSPE
Special Bacteriology *Classification of Cocci *Gram Negative Cocci: **Neisseria Meningitides **Neisseria Gonorrhoea	*Classify gram-negative cocci. *Interpret the diseases produced by the cocci	**Knowledge** *Classify gram-negative cocci *Enlist the diseases caused by the gram-negative cocci *Explain the role of different virulence factors possessed by the gram-negative cocci *Explain the pathogenesis of the diseases produced by the gram-negative cocci *Enlist the clinical features of diseases caused by gram-negative cocci	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 5th module, the students of the 2nd Year BDS will be able to:			
		Skill *Compare different types of culture media *Interpret the knowledge of selective and non-selective culture media *Discuss the principle, performance, result C interpretation of the oxidase test *Discuss the principle, performance, result C interpretation of the Catalase test	Practicals Demonstrations	OSPE

Block 3 – 2nd Spiral

Module VI: Multisystem

Theme: Basics of Medical Sciences II

Duration: 06 Weeks

Pharmacology

Oral & Maxillofacial Surgery

General Pathology

General Surgery

Integration of Disciplines in this Module

Block Planning Committee

(To be filled by each institution)

Year Coordinator	Dr. Shahreen Zahid Khan
Block Coordinator	Dr. Zuleikha Malik
Block Committee Members	Dr. Shahreen Zahid Khan, HoD Dental Materials Dr. Maria Rabbani, HoD Community Dentistry Dr. Sharaz Ahmad, HoD V.I Operative Dentistry Dr. Sameen Zahra, HoD V.I Prosthodontics Dr. Shazana Rana, HoD Pharmacology Dr. Sadia Israr, HoD General Pathology Dr. Faizan Munir Khan, HoD Dental Education
Integrated Disciplines Representatives	Dr. Maimoona Siddiq, HoD OMFS Dr. Afshan Haroon, General Surgery

Modular Learning Outcomes

By the end of the 6th module, the students of 2nd Year BDS should be able to:

1. Discuss various classes of viruses and fungi, their characteristics, associated diseases and their treatment modalities.
2. Discuss neoplastic conditions with their characteristics and pathogenesis.
3. Discuss lab diagnosis and pharmocolgical treatment regarding diseases of GIT C Endocrine systems.

Pharmacology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of the 2nd Year BDS will be able to:			
Anti-Diarrheal Drugs	*Discuss the basic pharmacology of drugs used in diarrhoea	**Knowledge** *Define diarrhoea *Recall the physiology of gastrointestinal motility *Categorise diarrhoea based on aetiology and onset of symptoms *Classify anti-diarrheal drugs *Describe the mechanism of various drug groups used for diarrheal episodes *Outline approaches for the management of diarrhoea *Explain the role and effectiveness of drugs in the treatment of various types of diarrhoea *Enumerate the adverse effects of anti-diarrheal drugs	LGIS SGDs	MCQs, SAQs, Structured Viva
Purgatives/ Laxatives	*Discuss the basic pharmacology of purgatives/ laxatives	**Knowledge** *Define constipation *Discuss the underlying pathophysiological mechanism of constipation *Recall the physiology of gastrointestinal motility *Define purgatives/ laxatives *Classify purgatives/ laxatives *Describe the site, onset and mechanism of action of various groups of purgatives *Tabulate the clinical	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of the 2nd Year BDS will be able to:			
		application of purgatives/ laxatives *Enumerate the adverse effects and contraindications of these drugs		
Drugs Used In Peptic Ulcer I, II	*Discuss the basic pharmacology of drugs used in peptic ulcer	**Knowledge** *Review the physiology of gastric acid secretion and natural protective mechanisms against it *Explain the location and role of different receptors on various gastric cells *Define peptic ulcer disease (PUD) *State etiological factors of PUD (H.pylori, stress and drug-induced) *Outline the non-pharmacological and pharmacological treatment options for PUD *Categorise the drugs used for PUD *Describe the mechanism of action, therapeutic uses, adverse effects and drug interactions of various drug groups used for PUD *Discuss the triple and quadruple drug regimens of H. pylori-induced ulcers	LGIS SGDs	MCQs, SAQs, Structured Viva
Anti-Emetics	*Discuss the basic pharmacology of drugs used in emesis	**Knowledge** *Define nausea and emesis *Enlist etiological factors associated with the occurrence of nausea and	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of the 2nd Year BDS will be able to:			
		vomiting *Summarize the stimuli, pathways and key events in vomiting *Discuss the role of CTZ, NTS and VC in vomiting *State therapeutic classes of anti-emetic drugs *Describe the mechanism of action of various groups of anti-emetic drugs *Enumerate the adverse effects of drugs used for nausea and vomiting		
Antidiabetic Drugs I, II	*Discuss the basic drug treatment of type 1 and type 2 diabetes mellitus	**Knowledge** *Recall the synthesis and physiological effects of insulin in the body *Differentiate between type 1 and 2 diabetes *Classify insulin based on source and onset of action *Recall the structure and distribution of insulin receptors in the body along with the signal transduction mechanism associated with it *Identify the sites for the administration of insulin *Describe the adverse effects and complications of insulin therapy *Classify non-insulin anti-diabetic agents *Enlist insulin secretagogues and euglycemic drugs *Discuss the action of various classes of non-	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of the 2nd Year BDS will be able to:			
		insulin antidiabetic drugs *Discuss the clinical benefits, untoward effects and drug interactions of non-insulin antidiabetic medicines		
Anti-Thyroid Drugs I, II	*Discuss the basic pharmacology of Anti-thyroid drugs	**Knowledge** *Recall the biosynthesis, feedback, regulation of release and role of thyroid hormone in the body *Classify antithyroid drugs *Illustrate the steps of thyroid hormone synthesis which are blocked by different classes of anti-thyroid drugs *Differentiate between methimazole and propylthiouracil *Discuss the adverse effects produced by various anti-thyroid drugs	LGIS SGDs	MCQs, SAQs, Structured Viva
Corticosteroids I, II	*Discuss the basic pharmacology of Corticosteroids	**Knowledge** *Recall the source, synthesis, regulation of release and role of steroids in the body *Classify corticosteroids (source and route of administration) *Outline the mechanism of action of corticosteroids via nuclear receptors *Describe the therapeutic indications and adverse effects of corticosteroids *List the effects produced by dose-dependent suppression of HPA	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of the 2nd Year BDS will be able to:			
		*Discuss the various ways to minimize dose-dependent suppression of HPA		
Hormonal Contraceptives	*Discuss the use of Contraceptives and their adverse effects	**Knowledge** *Define contraceptives *Enumerate hormonal contraceptives *Describe the mechanism of action of hormonal contraceptives *Enlist the non-contraceptive uses of hormonal contraceptives *Enumerate the untoward effects attributed toconstituent hormones of contraceptives	LGIS SGDs	MCQs, SAQs, Structured Viva
Anti-Fungal Drugs I, II	*Discuss the basic pharmacology of drug treatment of fungal diseases	**Knowledge** *Recall the structure of the fungal cell wall *Classify antifungal agents (Systemic/ topical) *Describe the spectrum, MOA, indications and adverse effects of different classes of antifungal drugs	LGIS SGDs	MCQs, SAQs, Structured Viva
Anti-Viral Drugs I, II	*Describe different anti-viral drugs and their role in dentistry	**Knowledge** *Enumerate the viruses targeted by a major group of antiviral drugs *Classify anti-viral drugs *Discuss the mechanism of action, therapeutic uses and adverse effects of different antiviral drugs *Describe the mode of action, clinical uses and toxicity profile of interferons and ribavirin	LGIS SGDs	MCQs, SAQs, Structured Viva

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of the 2nd Year BDS will be able to:			
Anti-Neoplastic Drugs	*Describe different anti-cancer drugs in different tumours	**Knowledge** *Discuss cell cycle *Define cancer *Classify anti-cancer drugs *Enumerate the various types of cancers *Outline a generalized mechanism and adverse effects of anti-neoplastic drugs *Discuss the specific clinical indications and toxicities of important anti-neoplastic agents	LGIS SGDs	MCQs, SAQs, Structured Viva

General Pathology

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of the 2nd Year BDS will be able to:			
Introduction to Neoplasia *Classification of tumours *Benign vs malignant tumours *Oncogenes and aetiology of tumours *Molecular basis of cancer - Oncogenes *Biology and mechanism of tumour spread *Carcinogenic agents and host defence against tumours *Grading and staging of tumours	*Describe the knowledge of neoplasia, types of tumours and their oncogenes. *Discuss the molecular basis of oncogenes and the mechanism of spread of tumours. *Describe the carcinogens, host defence mechanisms *Enlist the grade and stage of the tumours.	**Knowledge** *Define neoplasia *Classify neoplasia *Define the basic terminologies in neoplasia *Describe differences between benign and malignant tumours *Describe the aetiology of tumours *Describe the role of oncogenes in tumour formation *Enlist cellular Cmolecular hallmarks of carcinomas *Describe tumour suppressor genes C associated human tumours *Describe the role and mechanism of the spread of tumour	LGIS SGDs	MCQs, SAQs, Structured Viva
		Skill *Demonstrate practical skills related diagnosis of Lipoma C Leiomyoma *Demonstrate practical skills related to the diagnosis of squamous cell carcinoma *Identify the gross and microscopic features of basal cell carcinoma	Practical Demonstration	OSPE

Topic/ Theme	Learning Outcomes	Learning Objectives	Instructional Strategies	Assessment Tools
	By the end of the 6th module, the students of the 2nd Year BDS will be able to:			
Virology *Hepatitis viruses, *Rabies virus, *Herpes virus, *HIV **Fungi** *Cutaneous mycosis, *Deep mycosis, *Opportunistic infections	*Recall the basic concepts, clinical features, and laboratory diagnosis of virology. *Describe the major fungal infections, their laboratory diagnosis and prevention.	**Knowledge** *Define virology *Describe the types, laboratory diagnosis, immunization, and prevention of hepatitis viruses *Describe the laboratory diagnosis C prevention from HIV *Describe the clinical feature C prevention of rabies *Describe the types, clinical features C prevention of herpes viruses *Define mycology *Classify fungi *Describe the types, causative agents, and clinical features of mycosis	LGIS SGDs	MCQs, SAQs, Structured Viva

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