



# **Quetta College of Dentistry (QCD)**

## **STUDY GUIDE 2028**

### **Department of Operative Dentistry**

YEAR	BDS YEAR IV
BLOCK	I, II & III
SUBJECT	OPERATIVE DENTISTRY

## **BDS PROGRAMME AT QCD**

### **Vision:**

To emerge as a distinguished center of excellence in dental care and dental education, encouraging and disseminating research and patient care, recognized for empowering its students and faculty and producing dentists of excellence engaged in providing outstanding dental care and services in Balochistan.

### **Mission:**

To lead Balochistan towards international quality of healthcare standards by educating and inspiring individuals to be exemplary dentists and researchers in dental health, scholars in discovery and adopters of innovative technology to improve the health and well-being of all.

### **Objectives:**

These objectives will allow the students to grasp the essential knowledge, skill and attitude and Will enable them to become a good professional.

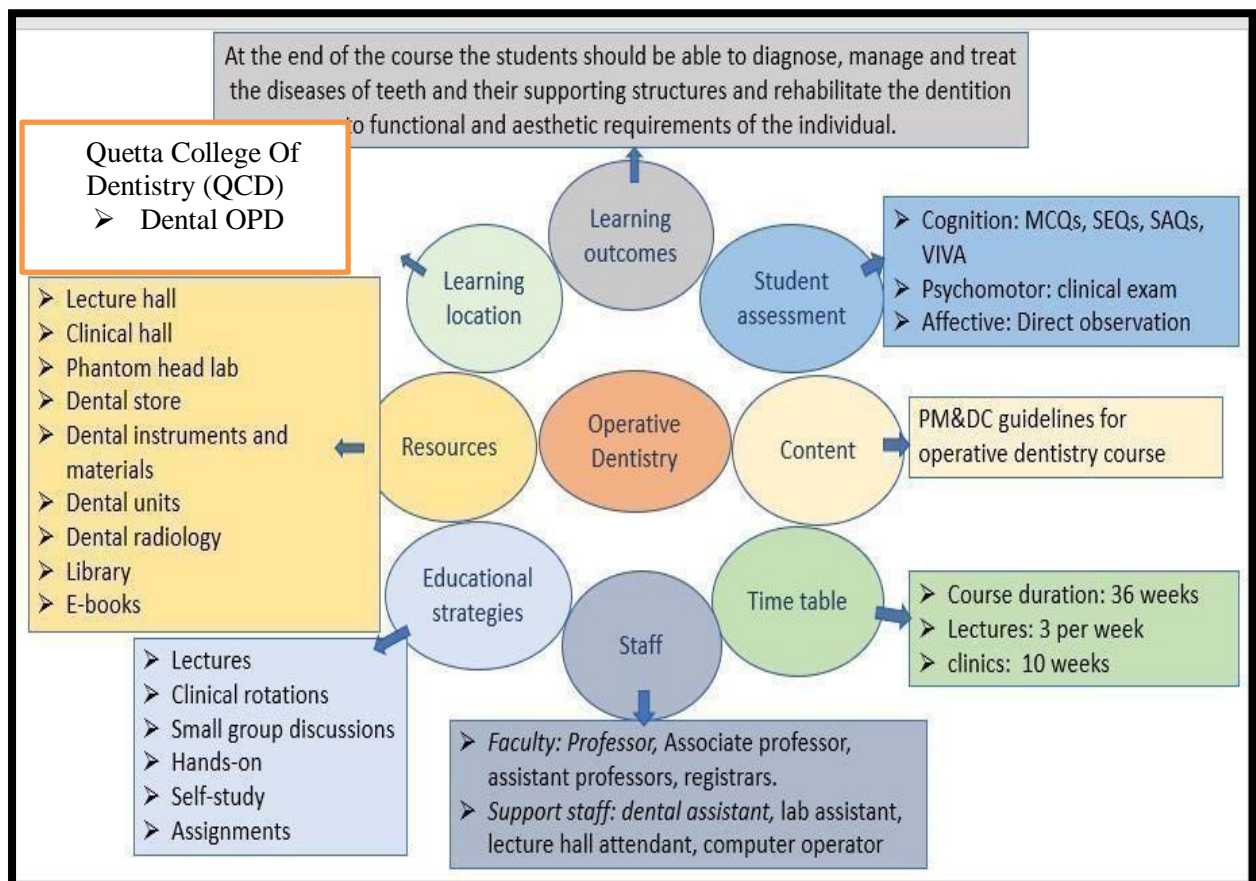
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## INTRODUCTION TO OPERATIVE DENTISTRY

This is a subject which includes diagnosis, prevention and treatment of the problems and conditions of natural teeth vital or non-vital so as to preserve natural dentition and restore it to the best state of health, function and aesthetics. It has been recognized as the foundation of dentistry and base from which most other aspects of dentistry evolved.

## CURRICULAR MAP OF OPERATIVE DENTISTRY



## **RESOURCES**

- Teaching resources
- Supporting staff
- Infrastructure resources

### **Teaching Resources**

<b><u>OPERATIVE DENTISTRY</u></b>			
Sr. #.	Faculty Name	Designation as per PM & DC certificate	Qualification
1	Brig. Dr Muzamil Rana	Professor	BDS, FCPS
2	Dr. Iqra Kamal	Assistant professor	BDS, MDS, PhD Scholar
3	Dr. Saman	Senior Registrar	BDS, FCPS
4	Maj. Ahmed Abdullah	Demonstrator	BDS
5	Dr. Habiba	Demonstrator	BDS
6	Dr. Arifa Tabassum	Demonstrator	BDS
7	Dr. Zala Khan	Demonstrator	BDS

### **Supporting Staff**

<b>Operative Dentistry</b>		
1	Muhammad Shareef	Dental Surgery Assistant
2	Maqsood Ahmed	Dental Surgery Assistant
3	Qudrat Ullah	Dental Surgery Assistant
4	Mehran Khan	Dental Surgery Assistant
5	Saniya	Dental Surgery Assistant
6	Maria Azmat	Dental Surgery Assistant
7	Hafiza Kinza Arshad	Dental Surgery Assistant
8	Jamila Rehman	Dental Surgery Assistant

Sr No.	Infrastructure Resources	Quantity
1	Operating Hall <ul style="list-style-type: none"> <li>● Operative Dentistry</li> </ul>	<ul style="list-style-type: none"> <li>● 01</li> <li>● 01 Dental OPD</li> </ul>
2	Dental Units <ul style="list-style-type: none"> <li>● Operative Dentistry</li> </ul>	<ul style="list-style-type: none"> <li>● 20</li> </ul>
3	Dental Stools <ul style="list-style-type: none"> <li>● Operative Dentistry</li> </ul>	<ul style="list-style-type: none"> <li>● 20</li> </ul>
4	Phantom head lab	
5	Reception	<ul style="list-style-type: none"> <li>● 01</li> </ul>
6	Instrument Delivery Room	<ul style="list-style-type: none"> <li>● 01</li> </ul>
7	Locker Room	<ul style="list-style-type: none"> <li>● 01</li> </ul>
8	Conference Room	<ul style="list-style-type: none"> <li>● 01</li> </ul>
9	Faculty Offices	<ul style="list-style-type: none"> <li>●</li> </ul>

## Time Table:

Tentative Weekly Time Table for QUETTA COLLEGE OF DENTISTRY Final Year BDS (2028)						
Total weeks=12 weeks week 1						
Day/Time	8:30-9:30	9:30: - 10:30	10:30-11:00	11:00 - 3:30		
	LGIS			Clinical Rotations		
Monday	Operative	Prosthodontics	<b>BREAK</b>	Group A: Operative Group B: Prosthodontics Group C: Orthodontics Group D: OMFS Group E: Pedodontics <b>2:00 – 3:30</b> peds group (HEC Courses)		
Tuesday	Orthodontics	OMFS				
Wednesday	OMFS	Pedodontics				
Thursday	Orthodontics	Oral biology				
Friday	Prosthodontics	Research/behavioral sciences/HEC general				
				11:00-1:15	1:15-1:45	1:45-3:30
			Group A: Operative Group B: Prosthodontics Group C: Orthodontics Group D: OMFS Group E: Pedodontics	<b>JUMMA NAMAZ</b>	Group A: Operative Group B: Prosthodontics Group C: Orthodontics Group D: OMFS Group E: Pedodontics <b>2:00 – 3:30</b> peds group (HEC Courses)	

## **Resources & Facilities:**

<u>Hands- on Activities / Practical Skill lab</u>	Students will be involved in Practical sessions and hands- on activities that link with the blood module to enhance the learning
<u>Clinical department</u>	Utilize the clinical department to practice on patients under direct supervision.
<u>Videos</u>	Video familiarize the student with the procedures and protocols to assist patients
<u>Computer Lab/CSs/DVDs/ Internet Resources:</u>	To increase the knowledge, students should utilize the available internet resources and CDs/ DVDs. This will be an additional advantage to increase learning.
<u>Self-Learning</u>	Self-Learning is scheduled to search for information to solve cases, read through different resources and discuss among the peers and with the faculty to clarify the concepts.

# **TEACHING AND LEARNING STRATEGIES**

Multiple educational methods are used consisting of interactive lectures, group discussions, clinical training/practical, manual dexterity sessions and self-study.

## **(i) Methods for Achieving Cognitive Objectives**

- Diagnosis and treatment planning
- Interactive lectures using audio visual aids through power point presentation
- Group discussions both large groups and small groups
- Tutorials
- Collaborative learning
- Self-study and reading from reference resources recommended.

## **(ii) Methods for Achieving Psychomotor Objectives**

- Clinical Demonstrations
- Hands-on Clinical Training
- Individual Clinical Supervision

## **(iii) Methods for Achieving Effective Objectives**

- Interaction with peers, group members, teachers, support staff etc.
- Group discussions (small and large)
- Oral presentations by the student

# **LEARNING METHODOLOGIES**

The following teaching /learning methods are used to promote better learning:

- Interactive Lectures
- Clinical Demonstrations
- Small Group Discussions
- Case- Based Learning
- Clinical Rotations
- Individual Skills Sessions
- E- Learning
- Self- Directed Study

## **INTERACTIVE LECTURES**

In a large group, the lecturer introduces a topic or common clinical conditions and explains the underlying phenomena through questions, pictures, videos of patients, interviews, exercise etc. students are actively involved in the learning process.

## **CLINICAL DEMONSTRATIONS:**

In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical science of the relevant module.

## **SMALL GROUP DISCUSSIONS (SGD)**

This format helps students to clarify concepts and acquire skills or attitudes. Sessions are structured with the help of specific exercises such as patient cases, interviews or discussion topics. Students exchange opinions and apply knowledge gained from lectures, tutorials and self-study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

## **CASE- BASED LEARNING**

A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students discuss and answer the questions applying relevant knowledge gained in clinical and basic health sciences during the module.

## **CLINICAL ROTATIONS (CR)**

Clinical rotations for clinical subjects like Operative Dentistry, Orthodontics, Prosthodontics and Oral Surgery are scheduled for student learning.

## **INDIVIDUAL SKILLS SESSION**

Skills relevant to each module are observed and practiced where applicable in the skills laboratory.

## **SELF DIRECTED STUDY**

Students assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from the Learning Resource center, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

## **E- LEARNING**

E-Learning is a strategy by which learning occurs through the utilization of electronic media, typically the Internet. The basic aspects of medical professionalism and ethics will be addressed through and E-Learning course.

# **CURRICULUM IMPLEMENTATION**

Curriculum implementation refers to putting into practice the official document including course content, objectives, learning and teaching strategies. Implementation process helps the learner to achieve knowledge, skills and attitudes required of the learning tasks. Learners are a pertinent component of the implementation process. Implementation occurs when the learner achieves the intended learning experiences, knowledge, ideas, skills and attitudes which are aimed to make the learner an effective part of the society. Curriculum implementation also refers to the stage at which curriculum is put into effect. There has to be an implementing agent as well. Teacher is an important part of this process and implementation of the curriculum is the way the teacher selects and utilizes various components of the curriculum. Implementation occurs when the teacher's formulated course content, teacher's personality and teaching and learning environment interact with the learners.

Therefore, curriculum implementation is how the officially planned course of study is translated and reflected by the teacher into schemes of work, lesson plans, syllabus and resources are effectively transferred to the learners. Curriculum implementation can be affected by certain factors such as teachers, learners, learning environment, resource materials and facilities, culture and ideology, instructional supervision and assessments.

## **Personnel involved in teaching and facilitation:**

- I. Lectures delivery by: **Operative Dentistry**
  - a. Brig. Dr Muzamil Rana
  - b. Dr. Iqra Kamal
  - c. Dr. Saman Mehmood
- II. Registrars for clinics/practical and small group discussion sessions:  
**Operative Dentistry**
  - Maj. Ahmed Abdullah
  - Dr. Habiba
  - Dr. Arifa Tabassum
  - Dr. Zala Khan
- III. Support staff: **Operative Dentistry**
  - Dental assistants:08**Computer assistant:**  
01 (Operative Dentistry)

# Time Frame

**Course duration: 40 weeks**

**Operative:** as per PMDC 250 hours

2 hours/week LGIS= $2 \times 40 = 80$

8 weeks **clinical rotation** each group

4.5 hours/day, for 5 days/week= $22 \text{ hours} = 180 \text{ hours} / 8 \text{ weeks}$

Total hours= $180 + 80 = 260$

## **Course outline**

### **Section I: Operative Dentistry**

This subject introduces the students to diagnosis and formulating treatment planning with integrated management of diseases of teeth and the rehabilitation of the dentition to functional and aesthetic requirements of the individual. This section familiarizes students with a number of key themes and subjects regarding different types of direct restorative materials and techniques used in dentistry. It is designed to provide detailed information regarding historical background, types, properties, biological consideration, clinical applications, limitations and selection criteria of direct restorative materials. The aim of this section is to allow students to gain didactic knowledge and develop psychomotor skills.

This subject deals with the diseases of the dental pulp and tissues surrounding the roots of the teeth. Endodontic treatment or root canal treatment, treats the soft pulp tissues inside the tooth. It introduces students to different types of endodontic materials classified according to their intended clinical uses. It involves the study of composition, properties and mode of application of various disinfectants, lubricants, sealers and obturating materials used in endodontics.



**Table of Specification for Teaching, Learning Objectives and Assessments**  
**By the end of year students will be able to:**

<b><u>S. No.</u></b>	<b><u>LECTURE TOPIC</u></b>	<b><u>Learning outcomes</u></b>  <b><u>At the end of term, the student will be able to:</u></b>	<b><u>TOPIC OBJECTIVE</u></b>	<b><u>Mode of Teaching</u></b> Lecture, CBL, PBL, Practical lab work, clinical teaching	<b><u>Mode of Assessment</u></b> MCQs, SAQs, OSCE, OSPE, classroom quiz, lab demonstration, project
1.	Biologic Considerations in Operative Dentistry, Restorative Gingival Interface	<b>Knowledge :</b> Demonstrate basic knowledge of morphology, histology and physiology of tooth and supporting structure and effect of dental materials on these structure  <b>Skill:</b> Diagnose restorations with biologic width violation and steps to correct	<ul style="list-style-type: none"> <li>• State the chemical composition, structure and properties of dentin-pulp complex</li> <li>• Relates the morphologic and histologic structure of tooth tissues with their clinical relevance on restorations.</li> <li>• Recognize the importance of</li> </ul>	Lecture	BCQs

		Describe various uses of restorative materials in different clinical scenario  <b>Attitude:</b> Avoid wastage of material	dentogingival complex and biologic width when planning restorations.		
2.	Patient Evaluation and Problem Oriented Treatment Planning	<b>Knowledge:</b> Apply knowledge to state the importance of patient oriented treatment plan <b>Skill:</b> <ul style="list-style-type: none"> <li>Formulate patient-oriented treatment planning and Discuss merits and drawbacks of treatment offered to the patient</li> <li>Arrange and practice a thorough medical and dental history, clinical examination, investigations to diagnose a patient with restorative needs</li> </ul> <b>Attitude</b> Carefully evaluate the esthetic needs of the patients and take step to accomplish them.	<ul style="list-style-type: none"> <li>Define treatment and patient-oriented planning.</li> <li>Discuss merits and drawbacks of treatment offered to the patient.</li> <li>Arrange and practice a thorough medical and dental history.</li> <li>Perform the key elements of a clinical examination. Perform extra oral and intraoral examination on a patient presenting to the dental clinic.</li> <li>Identify esthetic parameters to be considered when restoring the dentition.</li> <li>Formulate a logical treatment plan</li> <li>Recognize the importance of dental record keeping.</li> </ul>	Lecture, Demonstration, hands on.	BCQ, OSCE
3.	Preliminary Considerations in Operative Dentistry	<b>Knowledge:</b> Enumerate importance of isolation, its armamentarium, technique while carrying out a restorative procedure <b>Skill:</b> Apply and remove rubber dam during a restorative procedure <b>Attitude:</b> Explain the importance and application of rubber dam to the patient	<ul style="list-style-type: none"> <li>Demonstrate correct patient and operator positions when carrying out restorative procedures.</li> <li>State the importance of isolation in operative dentistry. Describe different methods used for isolation. Enlist the armamentarium required for rubber dam isolation.</li> </ul>	Lecture, Demonstration, hands on.	BCQ, OSCE

			<ul style="list-style-type: none"> <li>Perform application and removal of rubber dam on patients when carrying out a restorative procedure.</li> </ul>		
4.	Sterilization And Disinfection	<p><b>Knowledge</b> Follow infection control protocol while working in the clinical areas</p> <p><b>Skill:</b> Apply techniques of sterilization and cross infection control within clinical departments</p> <p><b>Attitude:</b> Show empathy with patients</p>	<ul style="list-style-type: none"> <li>Differentiate among the following: Sterilization, Disinfection, Asepsis.</li> <li>Discuss the importance of sterilization and disinfection</li> <li>Discuss elements of a sterilization plan</li> <li>Explain various methods used for sterilization and methods to monitor effectiveness of sterilization.</li> <li>Enlist chemicals that are used for disinfection. Define cross infection.</li> <li>Explain the exposure risks in dentistry.</li> <li>Describe the different methods of cross infection control in the dental office.</li> <li>CDC guidelines</li> </ul>	Lecture, Demonstration	BCQs, OSCE
5.	Dental Radiology	<p><b>Knowledge:</b> Apply the knowledge to interpret periapical &amp; OPG radiographs &amp; rectify the errors in radiographs</p> <p><b>Skill:</b> Demonstrate the interpretation and rectify the errors in periapical radiographs Demonstrate the interpretation of OPG radiographs for diagnosis</p> <p><b>Attitude</b> Show empathy with patients</p>	<ul style="list-style-type: none"> <li>Summarize the basics of Dental Radiology.</li> <li>Describe importance of radiographs in operative dentistry.</li> <li>Identify normal anatomic structures of maxilla and mandible on a: - Periapical x-ray, - Bitewing x-ray, - Occlusal x-ray, - Orthopantomogram (OPG).</li> </ul> <p>Discuss the indications and</p>	Lecture, Case based discussions, demonstrations	BCQs, OSCE, VIVA

			<p>limitations of the following Radiological views for diagnostic purposes:</p> <ul style="list-style-type: none"> <li>- Periapical x-ray,</li> <li>- Bitewing x-ray,</li> <li>- Occlusal x-ray,</li> <li>- Orthopantomogram (OPG).</li> <li>- Digital radiography</li> <li>- CBCT</li> </ul> <p>Interpret pathological findings seen on these radiographs.</p> <ul style="list-style-type: none"> <li>• Discuss the biological effects and risks associated with radiations.</li> </ul>		
6.	<u>Dental Caries-</u> <u>(Etiology and</u> <u>Clinical</u> <u>Characteristics</u>	<p><b>Knowledge</b> Apply knowledge of dental caries &amp; its types and causes</p> <p><b>Skill</b> history taking and develop clinical diagnosis for dental carious lesions</p> <p><b>Attitude</b> Greet the patient, take consent before taking a history.</p>	<ul style="list-style-type: none"> <li>• Define dental caries.</li> <li>• Explain the etiology and pathogenesis of dental caries. Enumerate the factors influencing dental caries process.</li> <li>• Explain the role of plaque biofilm in progression of dental caries. Identify the microorganisms responsible for dental caries.</li> <li>• Describe and interpret the Stephan's curve.</li> <li>• Compare the clinical characteristics and progression of carious lesions as seen on: <ul style="list-style-type: none"> <li>- Pit and fissures,</li> <li>- Smooth surfaces,</li> <li>- Root surfaces. Distinguish the progression of carious lesions in: <ul style="list-style-type: none"> <li>- Enamel,</li> <li>- Dentin.</li> </ul> </li> </ul> </li> <li>• Label different zones of enamel and dentin caries.</li> </ul>	Lecture, case based discussions	

7.	Dental Caries- (Diagnosis and Management)	<p><b>Knowledge</b> Apply knowledge of dental caries &amp; its types and causes</p> <p><b>Skill</b> Develop clinical diagnosis for dental carious lesion and its types Detect clinically active carious lesions by Performing different diagnostic tests</p> <p><b>Attitude:</b> Behave respectfully with all patients Discuss the diet management of high caries risk patient with respect</p>	<ul style="list-style-type: none"> <li>• Name methods of detection and diagnosis of dental caries.</li> <li>• Diagnose dental caries in patients based on clinical and radiographic examination.</li> <li>• Describe and apply International Caries Detection and Assessment System (ICDAS II).</li> <li>• Evaluate and compute the dental caries risk for a patient. Grade dental caries risk for a patient.</li> <li>• Discuss Caries Management by Risk Assessment (CAMBRA). Explain protocols and strategies for prevention of dental caries. Define caries control restorations.</li> <li>• Describe the clinical protocol for caries control restorations. Counsel patients regarding measures to prevent dental disease. schedule a maintenance care and recall visit interval plan for</li> <li>• patients based on risk assessment.</li> </ul>	Lecture, Case based discussion, Demonstration, Hands on Practice	BCQs, OSCE, VIVA
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8.	Dental Caries- (Management of Deep Carious Lesion)	<p><b>Knowledge:</b> Apply knowledge for treatment of dental caries &amp; preventive protocols for dental caries Apply knowledge about caries risk assessment, Mechanism of action of fluoride for caries prevention Apply knowledge of pits &amp; fissure sealants &amp; preventive resin restorations in clinical settings</p> <p><b>Skill:</b> Demonstrate Caries treatment by medical model and Apply clinical considerations in treatment &amp; prevention of caries</p> <p><b>Attitude:</b> Behave respectfully with all patients Discuss the diet management of high caries risk patient with respect</p>	<p>Define:</p> <ul style="list-style-type: none"> <li>- Stepwise excavation,</li> <li>- Indirect pulp cap,</li> <li>- Direct pulp cap (cariou and iatrogenic).</li> </ul> <ul style="list-style-type: none"> <li>• Identify the various possible reactions of the pulp-dentin complex to a deep carious lesion.</li> <li>• State the rationale of stepwise excavation.</li> <li>• Enlist materials that can be used for direct and indirect pulp cap. Explain the clinical protocol for direct and indirect pulp cap procedures</li> <li>• Perform indirect and direct pulp cap restorations on permanent teeth.</li> </ul>	Lecture, Case based discussions, Demonstrations	BCQs. OSCE, VIVA
9.	Nomenclature, Principles of Cavity Design and Preparation. Class I- Class VI	<p><b>Knowledge:</b> Enumerate different systems for naming and numbering teeth. Explain the nomenclature of tooth surfaces and cavity preparation techniques</p> <p><b>Skill:</b> To follow steps during cavity preparation, different instruments required</p> <p><b>Attitude:</b> Treat patients with empathy</p>	<ul style="list-style-type: none"> <li>• Enlist various methods to Classify carious lesions.</li> <li>• Enumerate different systems for naming and numbering teeth. Explain the nomenclature of tooth surfaces and cavity preparation.</li> <li>• Enlist factors that need to be considered before tooth preparation. Explain the steps in the initial and final stages of tooth preparation.</li> <li>• Discuss the advances in material sciences that have made cavity preparation minimally invasive.</li> </ul>	Lectures, Demonstrations	BCQs, OSCE
10.	Instruments and Equipment for Tooth Preparation	<p><b>Knowledge:</b> Enlist various cutting and non-cutting hand instruments and use of different restorative instrument</p>	<ul style="list-style-type: none"> <li>• Enlist various cutting and non-cutting hand instruments. State the use of each of these instrument</li> </ul>	Lecture, Demonstration, Hands on practice	OSCE, VIVA

		<p><b>Skill:</b> How to gasp different instruments to achieve maximum cutting efficiency.</p> <p><b>Attitude:</b> Treat patients with empathy</p>	<ul style="list-style-type: none"> <li>• Identify the design features for hand cutting instruments. Interpret the nomenclature for hand cutting instruments. Demonstrate various instrument grasp techniques that can be employed.</li> <li>• Summarize rotary cutting equipment and instruments. Identify the common design characteristics of rotary cutting instruments (dental burs)</li> <li>• Enumerate recent advances of tooth preparation and caries removal including: <ul style="list-style-type: none"> <li>- Lasers,</li> <li>- Ozone,</li> <li>- Air abrasion.</li> </ul> <ul style="list-style-type: none"> <li>• Discuss hazards with cutting instruments on dental tissues and their prevention</li> </ul> </li> </ul>		
11.	Occlusion	<p><b>Knowledge:</b> Apply basic principles of normal &amp; abnormal occlusion for restorative procedures</p> <p><b>Skill:</b> Application of basic principles of occlusion for restorative procedures</p> <p><b>Attitude:</b> Show respect to patients</p>	<ul style="list-style-type: none"> <li>• Define the terms: <ul style="list-style-type: none"> <li>- Occlusion,</li> <li>- Static occlusion,</li> <li>- Dynamic occlusion,</li> <li>- Centric relation,</li> <li>- Maximum intercuspation,</li> </ul> </li> </ul> <p>Supporting cusps, - Non supporting cusps.</p> <ul style="list-style-type: none"> <li>• Explain the types and directions of mandibular movements. Discuss the importance of restoring occlusion in restorative dentistry.</li> </ul>	Lecture	BCQS, VIVA
12.	Amalgam Restorations	<p><b>Knowledge:</b> Describe the composition, properties and indications / contraindications of Amalgam material according to different clinical</p>	<ul style="list-style-type: none"> <li>• Describe the composition, properties and indications / contraindications of Amalgam material.</li> </ul>	Lecture, Demonstration, Hands on practice	BCQS, VIVA

		<p>scenario</p> <p><b>Skill:</b> Design class I, class II and class VI cavity preparation on phantom teeth and patients by using sequential instrument.</p> <p><b>Attitude:</b> Explain procedure to the patient and treat patients with empathy</p>	<ul style="list-style-type: none"> <li>• Enlist advantages and disadvantages of amalgam restorations. Perform class I, class II and class VI cavity preparation on phantom teeth and patients.</li> <li>• Enlist ways of improving resistance and retention form of a simple class I and II restoration.</li> <li>• Explain ways of improving resistance and retention form of complex restorations. Illustrate the need for cuspal coverage with special reference to rule of thirds.</li> <li>• Distinguish among: <ul style="list-style-type: none"> <li>- Box only preparation,</li> <li>- Tunnel preparation,</li> <li>- Slot preparation.</li> </ul> </li> </ul>		
13.	Complex Amalgam restoration	<p><b>Knowledge:</b> Apply the knowledge of pins in restoring complex cavities Explain factors affecting retention of pins and problems associated with pins placement</p> <p><b>Skill:</b> Discuss the techniques for the placement of pins and clinical considerations before placement of pins</p> <p><b>Attitude:</b> Explain procedure and its complication to the patient and treat patients with empathy</p>	<ul style="list-style-type: none"> <li>• Describe bonded amalgam restorations and the mechanism of amalgam bonding.</li> <li>• Perform placement of amalgam in simple and complex cavities. Identify types of dentin pins and summarize their method of placement. Explain secondary mechanical features to improve resistance and retention.</li> <li>• Discuss importance of matricing and wedging.</li> <li>• Select various types of matrix band systems and wedges. Label the various parts of a tofflemire matrix band retainer.</li> <li>• Demonstrate placement of tofflemire matrix band and</li> </ul>	Lecture, Demonstration, Hands on practice	BCQS, OSCE, VIVA

			<p>wedge on patients when restoring multi-surface cavities.</p> <ul style="list-style-type: none"> <li>Summarize mercury hazards and hygiene.</li> </ul>		
14.	Bonding to Enamel and Dentin	<p><b>Knowledge:</b> Demonstrate knowledge about composites applied chemistry and structure of tooth Describe important properties of composites the steps for composite restorations</p> <p><b>Skill:</b> Enumerate steps that need to be followed during composite restoration</p> <p><b>Attitude:</b> treat patients with empathy</p>	<ul style="list-style-type: none"> <li>Classify modern adhesives.</li> <li>List advantages of adhesive techniques over non-adhesive methods.</li> <li>Explain why enamel is a favorable substrate for bonding. Differentiate structure of dentin from enamel.</li> <li>Discuss the effect of smear layer on dentin bonding.</li> <li>Explain the effect of Configuration Factor (C-factor) on bonding. Explain enamel bonding.</li> <li>Enumerate the challenges in dentine conditioning.</li> <li>Relate the chemistry of primers and adhesive resin (bonding agent).</li> <li>Describe 1<sup>st</sup>- 7<sup>th</sup> generation adhesives.</li> <li>Explain steps involved in enamel and dentin bonding.</li> </ul>	Lecture, Demonstration	BCQS, OSCE, VIVA

15.	Direct Anterior Composite Restorations	<p><b>Knowledge:</b>          Demonstrate knowledge about composites applied chemistry, its various uses in restoration of teeth          Indications and contraindication of composites          And clinical technique</p> <p><b>Skill:</b>          Perform and plan preoperative evaluation before placing an anterior composite restoration.          Enumerate factors influencing shade selection.          Explain guidelines for shade matching and various methods of shade selection.</p> <p><b>Attitude:</b>          Avoid wastage of material</p>	<ul style="list-style-type: none"> <li>• Describe the composition, properties and indications /contraindications of anterior composites.</li> <li>• Perform and plan preoperative evaluation before placing an anterior composite restoration.</li> <li>• Enumerate factors influencing shade selection.</li> <li>• Explain guidelines for shade matching and various methods of shade selection.</li> <li>• Perform cavity preparation for class III and class IV restorations. Demonstrate composite placement technique for class III and IV restorations.</li> <li>• Identify different instruments used for finishing and polishing of composite restorations and their state their use.</li> <li>• Perform placement of appropriate matrix and wedges on patients when restoring teeth with composite.</li> <li>• Practice Finishing and polishing of composite restorations.</li> <li>• List indications, contraindications, advantages and disadvantages of direct composite veneers. Enlist clinical steps for placing direct resin composites veneer.</li> <li>• Explain the technique for diastema closure with direct composite.</li> </ul>	Lecture, Demonstration, Hands on practice	BCQS, OSCE, VIVA
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16.	Direct Posterior Composite Restorations	<p><b>Knowledge:</b>          Demonstrate knowledge about composites applied chemistry, its various uses in restoration of teeth          Indications and contraindication of composites          And clinical technique</p> <p><b>Skill:</b>          Perform and plan preoperative evaluation before placing an anterior composite restoration.          Enumerate factors influencing shade selection.          Explain guidelines for shade matching and various methods of shade selection.</p> <p><b>Attitude:</b>          Avoid wastage of material</p>	<ul style="list-style-type: none"> <li>• Describe/ list indications, contraindications, advantages and disadvantages for composite resin as a posterior restorative material.</li> <li>• Demonstrate/ explain preoperative evaluation for a posterior composite restoration.</li> <li>• Discuss sealant and preventive resin restoration Describe indications and contraindications of sealant and preventive resin restoration</li> <li>• List factors affecting retention of fissure sealants.</li> <li>• Describe placement technique for fissure sealants and preventive resin restorations.</li> <li>• Outline features of a class I and class II cavity for composite restoration.</li> <li>• Justify the need of pre-wedging in class II composite restorations. Explain bonded base technique.</li> <li>• Describe/ distinguish/ define/ demonstrate/ illustrate for composite restorations:             <ul style="list-style-type: none"> <li>- Box only preparation,</li> <li>- Tunnel preparation,</li> <li>- Slot preparation.</li> </ul> </li> <li>• Classify matrix systems available for composite restorations. Compare/ discuss circumferential and sectional matrix systems. Justify different methods and techniques used to minimize polymerization shrinkage.</li> </ul>	Lecture, practical lab work, clinical teaching	MCQS, OSCE, Lab demonstration
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			<ul style="list-style-type: none"> <li>• Discuss different methods to create a tight contact for class II composite restorations.</li> <li>• Describe various resin polymerization equipment.</li> <li>• Discuss cavity preparation and restoration of a class VI lesion. / Describe successive cusp build-up technique.</li> <li>• Demonstrate placement of appropriate matrix and wedges on patients when restoring teeth with composite.</li> <li>• Perform on patients: Pit and fissure sealants and preventive resin restorations, Class I cavity preparation and composite restorations, Class II cavity preparation and composite restorations, Class VI cavity preparation and composite restorations.</li> </ul>		
17.	Class 5 Restorations	<p><b>Knowledge:</b> Apply knowledge to correlate etiology and risk factors of carious and non-carious class V defect, its preventive strategies</p> <p><b>Skill:</b> Enlist cavity preparation for class V restorations and describe non-surgical and surgical techniques for isolating class V restorations and Classify options of restorative materials available for restoring class V lesions</p> <p><b>Attitude:</b> Avoid wastage of material</p>	<ul style="list-style-type: none"> <li>• Describe and discuss carious and non-carious defects. Discuss etiology and predisposing/ risk factors of non-carious defects</li> <li>• Discuss preventive and definitive treatment of non-carious defects Describe cavity preparation for class V restorations.</li> <li>• Describe non-surgical and surgical techniques for isolating class V restorations.</li> <li>• Classify and discuss restorative materials available for restoring class V lesions.</li> <li>• List ways of improving</li> </ul>	Lecture, practical lab work, clinical teaching	MCQS, OSCE, Lab demonstration

			retention of class V composite restorations. Perform Class V cavity preparation on patients and restore it with appropriate restorative Material		
18.	Diagnosis and Treatment of Root Caries	<p><b>Knowledge:</b> Apply knowledge to enlist etiology and risk factors associated with root caries and correlated appearance and location with caries activity. Apply knowledge to discuss preventive and chemotherapeutic strategies to manage root caries and available restorative materials for treating root caries</p> <p><b>Skill:</b> Diagnose root caries based on clinical and radiographic examination Plan to perform cavity preparation and restoration of root caries with appropriate restorative material on patients</p> <p><b>Attitude:</b> treat patients with empathy</p>	<ul style="list-style-type: none"> <li>• Define root caries.</li> <li>• Describe appearance and location of root caries.</li> <li>• List etiology and risk factors associated with root caries. Diagnose root caries based on clinical and radiographic examination.</li> <li>• Discuss preventive and chemotherapeutic strategies to manage root caries.</li> <li>• Discuss available restorative materials for treating root caries. Perform cavity preparation and restoration of root caries with appropriate restorative material on patients.</li> </ul>	Lecture, practical lab work, clinical teaching	MCQS, OSCE, Lab demonstration

19.	Tooth Surface Loss	<p><b>Knowledge:</b> Apply knowledge to differentiate between types of tooth surface loss, their etiology, pathogenesis, prevention and management.</p> <p><b>Skill:</b> Correlate history of patient of TSL with clinical sign and symptoms. Formulate treatment plan after proper investigation and take steps for effective sequential execution to treatment plan and follow ups.</p> <p><b>Attitude:</b> treat patients with empathy</p>	<ul style="list-style-type: none"> <li>• Define the following types of tooth surface loss: <ul style="list-style-type: none"> <li>- Abrasion,</li> <li>- Attrition,</li> <li>- Erosion,</li> <li>- Abfraction</li> <li>- Dentine hypersensitivity</li> </ul> </li> <li>• Discuss the etiology, pathogenesis, prevention and management of tooth surface loss and dentine hypersensitivity</li> </ul>	Lecture, practical lab work, clinical teaching	MCQS, OSCE, Lab demonstration
20.	<u>Discoloration of Teeth</u>	<p><b>Knowledge:</b> Demonstrate the knowledge and skills related to tooth discoloration Apply the knowledge to treat patients with discoloration</p> <p><b>Skill:</b> Discuss treatment planning and patient education regarding bleaching procedure Describe shade selection and record collection before bleaching procedure and compare its with after treatment to produce treatment outcomes.</p> <p><b>Attitude:</b> treat patients with empathy</p>	<ul style="list-style-type: none"> <li>• Describe causes of tooth discoloration. Describe nature of stains.</li> <li>• Discuss mode of action of bleaching agent on stains. Indication and contraindication for bleaching</li> <li>• List commonly used bleaching agents and their strengths.</li> <li>• Describe vital and non-vital tooth bleaching</li> <li>• Discuss indications and contraindications of various types of bleaching techniques.</li> </ul> <p>Explain technique for:</p> <ul style="list-style-type: none"> <li>- In-office vital bleaching,</li> <li>- At-home vital bleaching,</li> <li>- Non-vital bleaching.</li> <li>- Discuss the factors affecting in-house and at home bleaching process</li> </ul> <ul style="list-style-type: none"> <li>• Describe indications, contraindications for micro</li> </ul>	Lecture, practical lab work, clinical teaching	MCQS, OSCE, Lab Demonstration

			abrasion and macro abrasion <ul style="list-style-type: none"> <li>Describe the procedure for micro abrasion and macro abrasion.</li> </ul>		
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## ENDODONTICS

### COURSE TOPICS

<u>S. No.</u>	<u>LECTURE TOPIC</u>	<u>Learning outcomes</u>	<u>TOPIC OBJECTIVE</u>	<u>Mode of Teaching</u>	<u>Mode of Assessment</u>
		<u>At the end of term, the student will be able to:</u>		Lecture, CBL, PBL, Practical lab work, clinical teaching	<u>MCQs, SAQs, OSCE, OSPE, classroom quiz, lab demonstration, project</u>
<u>1.</u>	Biology of Dental Pulp And Peri-radicular Tissue	<b>Knowledge:</b> Apply knowledge to describe pulp and per apical anatomy	<ul style="list-style-type: none"> <li>Describe the anatomic regions of the pulp and their clinical importance</li> </ul>	Lecture	MCQS

		Correlate changes in pulp morphology with age and its clinical significance.	<ul style="list-style-type: none"> <li>• Describe the functions of the pulp-dentin complex. Describe the blood vessels, lymphatics and neural components of pulp.</li> <li>• Discuss the distribution and function of the neural components of pulp.</li> <li>• Discuss theories of dentin sensitivity.</li> <li>• Explain the pathway of efferent nerves from the pulp to central nervous system.</li> <li>• Discuss changes in pulp morphology with age.</li> <li>• Describe the structure and function of peri-radicular tissues.</li> </ul>		
<u>2.</u>	Preserving pulp vitality/ pulp consideration	<b>Knowledge:</b> Apply knowledge to describe physiologic and structural characteristics of pulp and how it affects pulp response to injury. Discuss iatrogenic effects on the dental materials on pulp and supporting structures	<ul style="list-style-type: none"> <li>• Describe physiologic and structural characteristics of pulp and how it affects pulp response to injury.</li> <li>• Discuss iatrogenic effects on the dental pulp by: <ul style="list-style-type: none"> <li>- Local anesthetics with vasoconstrictor,</li> <li>- Cavity/ crown preparation (thermal shock),</li> <li>- Depth of cavity preparation,</li> <li>- Various restorative materials,</li> <li>- Placement of pins,</li> <li>- Polishing restorations,</li> <li>- Post-restoration hypersensitivity,</li> <li>- Orthodontic tooth movement,</li> <li>- Vital bleaching.</li> </ul> </li> <li>• Discuss the formation and role of tertiary dentin in pulp protection.</li> <li>• Explain preventive measures adopted during dental restorative procedures to preserve pulp vitality.</li> </ul>	Lecture	BCQ, Viva
<u>3.</u>	Endodontic microbiology	<b>Knowledge:</b> Apply knowledge to correlate different types of endodontic infections with various microbial	<ul style="list-style-type: none"> <li>• Describe the routes of entry of microorganisms to the pulp and peri-radicular tissues.</li> </ul>	Lecture	MCQ

		species involved in these infections and clinical sign and symptoms.	<ul style="list-style-type: none"> <li>• Discuss the different types of endodontic infections. Describe the various microbial species involved in various endodontic infections.</li> <li>• Illustrate ecology of endodontic microbiota and features of endodontic ecosystem.</li> </ul>		
<u>4.</u>	Pulp and periradicular pathosis / diagnosis in endodontics	<p><b>Knowledge:</b> Demonstrate knowledge about causes of pulpal &amp; peri-radicular diseases</p> <p><b>Skill:</b> Diagnose pulpal &amp; peri-radicular diseases Plan treatment for pulpal and peri-radicular diseases</p> <p><b>Attitude:</b> Explain procedure to the patient Avoid iatrogenic damage during endodontic procedures</p>	<ul style="list-style-type: none"> <li>• Classify pulpal diseases.</li> <li>• Classify periradicular lesions of pulpal origin. Describe etiological factors of pulp inflammation.</li> <li>• Explain mechanism of spread of inflammation in the pulp. Explain why the pulp has difficulty in recovering from severe injury.</li> <li>• List specific and non-specific indicators of pulpal inflammation. Describe the clinical and histological features of pulp diseases. Explain the mechanism and consequences of spread of pulpal inflammation into peri-radicular tissues.</li> <li>• Describe clinical and histological features of peri-radicular lesions of pulpal origin.</li> <li>• Describe steps involved in repair of periapical pathosis. Describe non-endodontic lesions that may simulate endodontic peri-radicular pathosis.</li> </ul>	Lecture, clinical teaching	MCQ, OSCE
<u>5.</u>	Endodontic diagnosis and treatment plan	<p><b>Knowledge:</b> Demonstrate the scope &amp; rationale of endodontic treatment and treatment outcomes</p> <p><b>Skill:</b> Correlate dental history and examination with radiographic</p>	<ul style="list-style-type: none"> <li>• Discuss the importance of a thorough medical and dental history. Take medical and dental history of patient presenting to dental clinic.</li> <li>• Discuss elements of a clinical examination.</li> <li>• Perform extra oral and intraoral examination on patients to ascertain pulpal and periapical health.</li> </ul>	Lecture, practical lab work, clinical teaching	MCQ, OSCE, lab demonstration

		<p>interpretation to formulate endodontic diagnosis and treatment plan</p> <p><b>Attitude:</b> Explain procedure to the patient Avoid iatrogenic damage during endodontic procedures</p>	<ul style="list-style-type: none"> <li>• Describe various vitality tests/ sensibility tests, their advantages and limitations.</li> <li>• Perform vitality tests /sensibility tests on patients.</li> <li>• Interpret findings of various vitality tests/sensibility tests in clinical settings.</li> <li>• Correlate radiographic findings to the history and clinical examination.</li> <li>• Discuss the common medical diseases that may influence endodontic treatment planning.</li> <li>• Discuss special considerations when formulating treatment plans for geriatric patients.</li> <li>• Diagnose pulpal and periapical pathosis in patients based on history, clinical and radiographic examination.</li> <li>• Develop/ formulate/prepare a treatment plan. Take an informed consent before any treatment.</li> <li>• Formulate a referral letter to an endodontist when required.</li> </ul>		
<b>6.</b>	Endodontic radiology / dental radiology	<p><b>Knowledge</b> Apply knowledge to enumerate importance of radiographs in endodontics. And its interpretation during health &amp; disease</p> <p><b>Skill:</b> Correlation of radiographs with clinical sign and symptoms to formulate diagnosis and treatment plan.</p> <p><b>Attitude:</b></p>	<ul style="list-style-type: none"> <li>• Describe importance of radiographs in endodontics.</li> <li>• Identify normal anatomic structures of maxilla and mandible on periapical radiographs.</li> <li>• Differentiate between endodontic and non-endodontic radiolucencies and radioopacities.</li> <li>• Describe radiographic characteristics of periapical lesion of endodontic origin.</li> <li>• Justify varying horizontal and vertical cone angulations to create image shift.</li> </ul>	Lecture, practical lab work, clinical teaching	MCQ, OSCE, lab demonstration

		Explain procedure to the patient and counselling to capture different radiographs for treatment purpose	<ul style="list-style-type: none"> <li>Describe the cone image shift/ same lingual opposite buccal ruleslob rule.</li> <li>Describe new technologies for radiographic imaging.</li> </ul>		
<u>7.</u>	Pulp anatomy / endodontic treatment procedure/ tooth morphology and access cavity	<p><b>Knowledge:</b> Apply knowledge to Correlate the shape of pulp system to root anatomy. List laws of canal orifice location. Outline pathologic factors that may cause alterations in pulp anatomy Implement suitable recall schedules and plan further therapy when required</p> <p><b>Skill:</b> Execute all the stages of endodontic treatment using conventional and contemporary techniques Appropriately seal and protect root canal treated teeth before discharge of the patient</p> <p><b>Attitude:</b> Explain procedure to the patient Avoid iatrogenic damage during endodontic procedures</p>	<ul style="list-style-type: none"> <li>Correlate the shape of pulp system to root anatomy. List laws of canal orifice location.</li> <li>Outline pathologic factors that may cause alterations in pulp anatomy. Describe major components of the pulp space and variations in the pulp system in apical third.</li> <li>Determine radiographically the distance from occlusal/ incisal surface to the roof of chamber.</li> <li>Define accessory canals.</li> <li>Explain relationship of anatomic, radiographic and actual location of apical foramen.</li> <li>Describe variations in pulp anatomy resulting due to: <ul style="list-style-type: none"> <li>Developmental defects,</li> <li>With age.</li> </ul> </li> <li>Identify the internal and external anatomy of teeth in sagittal and crosssection.</li> <li>Describe changes in pulp morphology with age. Discuss special considerations when planning treatment for geriatric patients.</li> <li>Knows about management of the difficulties that can be encountered during root canal treatment of older patients.</li> </ul>	Lecture, clinical based scenarios	BCQ, OSCE, Viva

<p><b>8.</b></p>	<p>Instruments, materials and devices in endodontics / endodontic treatment procedure/ tooth morphology and access cavity</p>	<p><b>Knowledge:</b> Apply knowledge to enlist basic set of instruments appropriate for various endodontic procedures. State the general physical properties and uses.</p> <p><b>Attitude:</b> Avoid wastage of material</p>	<ul style="list-style-type: none"> <li>• Identify basic set of instruments appropriate for various endodontic procedures.</li> <li>• State the general physical properties of instruments.</li> <li>• Recognize the design of common canal preparation instruments and their proper use of to prevent breakage within canal.</li> <li>• Tell the basis for sizing and taper of hand operated instruments. Identify visible changes in instruments that will predispose them to breakage.</li> <li>• Describe techniques for sterilization and disinfection of endodontic instruments.</li> <li>• Describe nickel titanium rotary instruments.</li> </ul>	<p>Lecture, demonstration, handson</p>	<p>OSCE</p>
<p><b>9.</b></p>	<p>Local anesthesia in endodontics / endodontic treatment procedure/ tooth morphology and access cavity</p>	<p><b>Knowledge:</b> Apply knowledge to recognize various anatomic structures located before application of anesthesia. Enlist Indication, contraindication and complication of local anesthesia. Enlist Classification and Chemical composition of local anesthetics and their clinical use.</p> <p><b>Skill:</b> Demonstrate proper techniques to use local anesthesia</p> <p><b>Attitude:</b> Explain procedure to the patient Avoid iatrogenic damage during endodontic access</p>	<ul style="list-style-type: none"> <li>• Define pain threshold and the factors affecting it.</li> <li>• List techniques that are helpful in giving "painless" injections. Describe the "routine" approach to conventional local anesthesia. Perform administration of topical and local (infiltration and block) anesthesia before starting root canal treatment on patients.</li> <li>• Describe circumstances that create difficulties in obtaining profound anesthesia.</li> <li>• Justify use supplemental methods of obtaining pulpal anesthesia. Discuss techniques of intraosseous, periodontal ligament, and Intra-pulpal injections.</li> </ul>	<p>Lecture, demonstration, handson experience</p>	<p>BCQs, OSCE</p>

<p><b><u>10.</u></b></p>	<p>Isolation, endodontic access, and length determination / endodontic treatment procedure</p>	<p><b>Knowledge:</b> Apply knowledge to describe importance of pre-operative assessment as pre-requisite for treatment success.</p> <p><b>Skill:</b> Demonstrate technique of rubber dam isolation Demonstrate steps of Endodontic access preparation and length determination on extracted teeth and on patients</p> <p><b>Attitude:</b> Explain procedure to the patient Avoid iatrogenic damage during endodontic access</p>	<ul style="list-style-type: none"> <li>• Explain methods of isolation in endodontics with emphasis on rubber dam isolation.</li> <li>• Describe importance of pre-operative assessment as pre-requisite for treatment success.</li> <li>• Knows the importance of pre-endodontic buildup.</li> <li>• Describe the objectives, general principles, procedure, armamentarium and sequence of endodontic access cavity preparation.</li> <li>• Draw outline of access cavity of each tooth. Write average length and canal configuration of various teeth. Describe technique for locating canal orifices.</li> <li>• Identify errors during access cavity preparation and know how to correct them.</li> <li>• Describe various methods of working length determination.</li> <li>• Perform rubber dam isolation before starting endodontic treatment. Prepare access cavity on single rooted teeth (extracted teeth/patients). Determine working length of single rooted teeth (extracted Teeth/patients)</li> </ul>	<p>Lecture, case based scenarios, demonstrations</p>	<p>BCQs, viva, OSCE</p>
<p><b><u>11.</u></b></p>	<p>Cleaning and shaping/ endodontic treatment procedure</p>	<p><b>Knowledge:</b> Apply knowledge to describe the role, properties and techniques for irrigation. Describe the rationale for chemo-mechanical preparation of canals</p> <p><b>Skill:</b> Use different temporary restorations Perform cleaning and shaping of extracted teeth and then on patients</p>	<ul style="list-style-type: none"> <li>• Differentiate pulp space infection from infection in other tissues of body. Restate purpose of cleaning and shaping the pulp space.</li> <li>• Explain the concept of apical patency.</li> <li>• Demonstrate basic and combined instruments movements. Describe different techniques of canal preparation.</li> <li>• Recall how to minimize preparation errors in curved canal. Explain management of calcified canals.</li> <li>• Justify use of niti rotary instruments and its efficacy over ss files.</li> </ul>	<p>Lecture, demonstration, hand on experience</p>	<p>BCQs, viva, OSCE</p>

		<p><b>Attitude:</b> Follow a careful approach to avoid procedural accidents</p>	<p>Explain the importance, properties and irrigation techniques of irrigants. Name various agents used for irrigation. Perform:</p> <ul style="list-style-type: none"> <li>- Pulpectomy of single rooted teeth (extracted teeth/patients).</li> <li>- Cleaning and shaping of root canal (extracted teeth/patients).</li> </ul> <p>Root canal irrigation (extracted teeth/patients).</p>		
<u>12.</u>	Intra canal medicaments and temporary filling materials / endodontic treatment procedure	<p><b>Knowledge:</b> Apply knowledge to correlated different microorganisms involved in endodontic pathosis and effect of intra canal medicament on them.</p> <p><b>Skill:</b> Use different temporary restorations Perform cleaning and shaping of extracted teeth and then on patients</p> <p><b>Attitude:</b> Follow a careful approach to avoid procedural accidents</p>	<ul style="list-style-type: none"> <li>• Name different microorganisms involved in endodontic pathosis.</li> <li>• Define intra canal medicament.</li> <li>• Discuss the properties, role, method of application and instruments used in intra-canal, inter-appointment medicaments.</li> <li>• Categorize various agents used as intra-canal medicament. List temporary filling materials used in endodontics.</li> <li>• Describe techniques for placement and removal of temporary filling materials.</li> <li>• Demonstrate the selection of placement of intracanal medicament in a root canal.</li> </ul>	Lecture, practical lab work, clinical teaching	BCQ, OSCE, classroom quiz, lab demonstration
<u>13.</u>	Flare up	<p><b>Knowledge:</b> Apply knowledge to Identify inter-appointment and post-obturation flare-up and their correlation to pre-operative symptoms and treatment procedure</p> <p><b>Skill:</b> Develop a treatment plan consisting of appropriate</p>	<ul style="list-style-type: none"> <li>• Identify inter-appointment and post-obturation flareup. Discuss management of inter-appointment and post-obturation flareup.</li> <li>• Discuss pharmacological therapy used in emergency and its role in controlling pain and infection.</li> <li>• List indications and contraindications for prescribing analgesics, antibiotics, anti-inflammatory agents and anxiolytics.</li> </ul>	Lecture, practical lab work, clinical teaching	BCQs, OSCE, classroom Quiz, Lab demonstration

		<p>endodontic and pharmacologic strategies for managing pain, anxiety, and infection</p> <p><b>Attitude:</b> Treat patient with empathy</p>	<ul style="list-style-type: none"> <li>• Develop a treatment plan consisting of appropriate endodontic and pharmacologic strategies for managing pain, anxiety, and infection.</li> <li>• Write down a prescription for pain and infection control inpatients presenting with endodontic pain.</li> </ul>		
<b><u>14.</u></b>	Root canal obturation / endodontic treatment procedure	<p><b>Knowledge:</b> Discuss the objectives and techniques of obturation</p> <p><b>Skill:</b> Perform obturation on patient/ extracted tooth</p> <p><b>Attitude:</b> Follow a careful approach to avoid procedural accidents</p>	<ul style="list-style-type: none"> <li>• Describe the rationale of obturation.</li> <li>• Describe the clinical criteria that determine time of obturation.</li> <li>• List the properties of ideal core obturation material and sealer.</li> <li>• Name core obturation materials, sealers and obturation techniques.</li> <li>• Describe the composition and properties of gutta percha. Describe advantages and disadvantages of each core material.</li> <li>• Describe the need for using a sealer during obturation. Describe lateral compaction technique.</li> <li>• Describe briefly other techniques used for obturation. Discuss the radiographic criteria for evaluating the quality of obturation.</li> <li>• Perform obturation of single rooted teeth (extracted teeth/patients).</li> </ul>	Lecture, practical lab work, clinical teaching	BCQs, OSCE, classroom Quiz, Lab demonstration
<b><u>15.</u></b>	Endodontic mishaps.	<p><b>Knowledge:</b> Apply knowledge to describe causes, prevention and treatment of procedural accidents</p> <p><b>Skill:</b> Enumerate steps to diagnosis, manage and prevent endodontic mishap.</p> <p><b>Attitude:</b> Follow a careful approach to avoid procedural accidents</p>	<ul style="list-style-type: none"> <li>• Describe causes, prevention and treatment of procedural accidents during: <ul style="list-style-type: none"> <li>- Access cavity preparation,</li> <li>- Cleaning and shaping,</li> <li>- Obturation.</li> </ul> </li> <li>• Describe the endodontic mishap including their management:</li> </ul>	Lecture, practical lab work, clinical teaching	BCQs, OSCE, classroom Quiz, Lab demonstration

<b>16.</b>	Nonsurgical endodontic retreatment	<p><b>Knowledge:</b> Apply knowledge to describe rationale, indications and alternates to endodontic retreatment</p> <p><b>Skill:</b> Perform stepwise technique to deobturate tooth with post treatment disease including all technical complication from crown till root apex on extracted tooth/patient</p> <p><b>Attitude:</b> Counselling of patient for prognosis of teeth with post treatment disease.</p>	<ul style="list-style-type: none"> <li>• Explain rationale and indications of endodontic retreatment.</li> <li>• Describe the alternates to endodontic retreatment. <b>Perform</b> technique of accessing through extra coronal restorations.</li> <li>• Describe technique of removing crowns and posts. Discuss various types of canal obstructions and their management.</li> <li>• <b>Perform</b> the techniques for gutta percha removal.</li> <li>• Explain the role of intra-canal medicament in retreatment. Justify prognosis of retreatment.</li> <li>• Identify on clinical and/or radiographic slides various procedural errors.</li> <li>• Discuss how procedural errors can affect the prognosis of treatment</li> </ul>	Lecture, practical lab work, clinical teaching	BCQs, OSCE
<b>17.</b>	Endodontic emergencies	<p><b>Knowledge:</b> Enumerate causes of endodontic emergencies. Identify the problem, etiology and related factors and discuss the management and prognosis</p> <p><b>Skill:</b> Correlate dental history and clinical symptoms and Plan treatment for endodontic emergencies</p> <p><b>Attitude:</b> treat patient with empathy</p>	<ul style="list-style-type: none"> <li>• Identify causes of endodontic emergencies: pre- treatment, inter-appointment and post-obturation. Discuss the difficulties in diagnosing and treating a patient presenting with an endodontic emergency.</li> <li>• Explain the importance of sequential approach to endodontic emergencies.</li> <li>• Describe how to manage various endodontic emergencies including: <ul style="list-style-type: none"> <li>- Painful irreversible pulpitis,</li> <li>- Necrotic pulp with acute apical periodontitis,</li> <li>- Acute apical abscess,</li> <li>- Acute apical periodontitis.</li> </ul> </li> </ul>	Lecture, practical lab work, clinical teaching	BCQs, OSCE, classroom Quiz, Lab demonstration
<b>18.</b>	Restoration of endodontically treated	<p><b>Knowledge:</b></p>	<ul style="list-style-type: none"> <li>• Differentiate endodontically treated teeth from vital teeth.</li> </ul>	Lecture, practical lab	BCQs, OSCE,

	Tooth	<p>Apply knowledge of post application to restore endodontically treated teeth and structural, esthetic considerations for root filled teeth</p> <p><b>Skill:</b> Plan and Perform restoration of endodontically treated</p> <p><b>Attitude:</b> Treat patients with empathy</p>	<ul style="list-style-type: none"> <li>• Explain the importance of coronal seal.</li> <li>• Discuss options available for restoring endodontically treated teeth.</li> <li>• Explain ferrule effect.</li> <li>• Describe indications of post placement in anterior and posterior teeth.</li> <li>• Describe nayyar core.</li> <li>• Describe ideal dimensions of a post.</li> <li>• Describe common post systems, their advantages and disadvantages.</li> <li>• Describe method of placement of prefabricated and cast post.</li> <li>• Describe core materials and their placement.</li> <li>• Discuss complications that can occur during placement of post</li> </ul>	work, clinical teaching	classroom Quiz, Lab demonstration
<u>19.</u>	Surgical endodontics	<p><b>Knowledge:</b> Apply knowledge to discuss indications and treatment modalities for surgical endodontics.</p> <p><b>Skill:</b> Treatment planning and execution of endodontic surgery</p> <p><b>Attitude:</b> Treat patients with empathy</p>	<p>Root-end preparation Root-end filling, Root amputation, Hemisection, Bicuspidization.</p> <ul style="list-style-type: none"> <li>• Discuss indications and the steps involved for the above mentioned procedures.</li> <li>• Explain principles of flap design. Illustrate various flap designs.</li> <li>• Describe in brief, step by step procedures involved in peri-radicular surgery.</li> <li>• Discuss prognosis of endodontic surgical cases.</li> </ul>	Lecture, practical lab work, clinical teaching	BCQs, OSCE
<u>20.</u>	Endodontic treatment outcomes	<p><b>Knowledge:</b> Apply knowledge to assess the treatment outcome and prognosis of teeth with endodontic treatment or retreatment</p>	<ul style="list-style-type: none"> <li>• By the end of the session the student will be able to explain factors that affect treatment outcomes and prognosis</li> </ul>	Lecture, practical lab work, clinical teaching	BCQs, OSCE

		<b>Skill:</b> Correlate evidence based endodontics and clinical practice to enhance treatment outcomes			
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Topics & Objectives	Faculty	Learning Dom	Learning Strategy	Assessment					
				Clinical	Viva	OSPE	MCQs	SEQs	%
<b>SECTION 1: CONSERVATIVE DENTISTRY</b>									
<b>INTRODUCTION</b> Biologic Considerations in Operative Dentistry, Restorative Gingival Interface	Dr Muzamil Jamil	<b>C</b>	Lecture/ Small Group Discussion		√		<b>1</b>	<b>1</b>	
Patient Evaluation and Problem Oriented Treatment Planning	Dr. Iqra Kamal		Lecture/ Small Group Discussion	√	√		<b>1</b>		
Preliminary considerations in Operative Dentistry	Dr Saman		Lecture/ Demonstration, hands on	√	√		<b>1</b>		
Sterilization and disinfection	Dr Iqra Kamal		Lecture/ Demonstration	√		√	<b>1</b>		

Dental radiology Study Guide	Brig. Dr Muzamil Rana		Lecture, case based discussion, demonstrati on	√	√	√	1		
Dental caries - Etiology and Clinical Characteristics)		CPA	Lecture/ Small Group Discussion				1		
				√	√	√			

Topics & Objectives	Faculty	Learning Domain	Learning Strategy	Assessment					
				Clinical	Viva	OSPE	MCQs	SEQs	%
Study Guide SECTION I: CONSERVATIVE DENTISTRY									
Dental Caries Diagnosis and management	Dr Saman	C	Lecture/ Small Group Discussion		√	√	1	1	
Dental Caries Management of Deep carious lesions	Dr. Iqra Kamal		Lecture/ CBL, Discussion/ Demonstration	√	√	√	1		
Nomenclature, principles of cavity design and preparation, Class I – Class VI	Brig. Dr Muzamil Rana		Lecture/ Demonstration	√	√	√	1		
Instruments and Equipment for Tooth Preparation	Dr Iqra		Lecture/ Demonstration, Hands on practice	√		√	1		
Occlusion	Dr. Saman		Lecture		√		1		
Amalgam Restorations -	Dr Iqra Kamal		Lecture/ Demonstration, Hands on practice				1		
		CPA		√	√	√			

Topics & Objectives	Faculty	Learning Domain	Learning Strategy	Assessment					
				Clinical	Viva	OSPE	MCQs	SEQs	%
<b>SECTION 1: CONSERVATIVE DENTISTRY</b>									
<b>Bonding to Enamel and Dentine</b>	Dr Muzamil Jamil	C	Lecture/ Demonstration	√	√	√	1		
Direct Anterior Composite restorations	Dr. Saman		Lecture/ Demonstration, hands on practical	√	√	√	1		

Direct posterior composite Restorations	<b>Dr Saman</b>		Lecture/ Demonstration, hands on practical	√	√	√	<b>1</b>	<b>1</b>	
Class 5 restorations	<b>Dr Iqra Kamal</b>		Lecture/ Demonstration, hands on practical, clinical teaching	√		√	<b>1</b>		
Diagnosis and Treatment of Root Caries	<b>Brig Dr Muzamil Jamil</b>		Lecture, practical lab, clinical teaching	√	√	√	<b>1</b>		
- <b>Tooth Surface Loss</b>	<b>Dr Saman</b>	<b>CPA</b>	Lecture/ Practical lab work, clinical teaching				1		
<b>Discoloration of Teeth</b>	<b>Dr Iqra Kamal</b>		Lecture/ Practical lab work, clinical teaching	√	√	√	1		

Topics & Objectives	Faculty	Learning Domain	Learning Strategy	Assessment					
				Clinical	Viva	OSPE	MCQs	SEQs	%
<b>SECTION 2: ENDODONTICS</b>									
Biology of Dental Pulp and Peri-radicular Tissue	<b>Dr Saman</b>	<b>C</b>	Lecture/ Practical lab work, clinical teaching	√	√	√	<b>1</b>	<b>1</b>	
Preserving pulp vitality/ pulp consideration			Lecture/ Small Group Discussion	√	√		<b>1</b>		
Endodontic microbiology		<b>Brig Dr Muzamil Jamil</b>		Lecture/ Demonstration, hands on	√	√			<b>1</b>

Study Guide

Pulp and periradicular pathosis / diagnosis in endodontics	<b>Dr Saman</b>		Lecture/ Demonstration	√		√	<b>1</b>		
Endodontic diagnosis and treatment plan	<b>Brig Dr Muzamil Jamil</b>		Lecture, case based discussion, demonstration	√	√	√	<b>1</b>		
Endodontic radiology / dental radiology And endodontic treatment outcome	<b>Dr Iqra Kamal</b>		Lecture/ Small Group Discussion				1		
		<b>CPA</b>		√	√	√			

Topics & Objectives	Faculty	Learning Objectives	Learning Strategy	Assessment					
				Clinical	Viva	OSPE	MCQs	SEQs	%
<b>SECTION II: Endodontics</b>									
Pulp anatomy / endodontic treatment procedure/ tooth morphology and access cavity	<b>Dr Saman</b>	<b>C</b>	Lecture/ Practical lab work, clinical teaching	√	√	√	<b>1</b>		
Instruments, materials and devices in endodontics / endodontic treatment procedure/ tooth			Lecture/ Small Group Discussion	√	√		<b>1</b>		

Local anesthesia in endodontics / <b>Study Guide</b> endodontic treatment procedure/ tooth morphology and access	<b>Brig Dr Muzamil Jamil</b>		Lecture/ Demonstration, hands on	√	√		<b>1</b>	<b>1</b>	
Isolation, endodontic access, and length determination / endodontic treatment procedure			Lecture/ Demonstration	√		√	<b>1</b>		
Cleaning and shaping/ endodontic treatment procedure			Lecture, case based discussion, demonstration	√	√	√	<b>1</b>		
Intra canal medicaments and Temporary filling materials / endodontic treatment procedure		<b>Dr Iqra Kamal</b>		Lecture/ Small Group Discussion					<b>1</b>
	<b>CPA</b>		√		√	√			
<b>Topics &amp; Objectives</b>	<b>Faculty</b>	<b>Learning Strategy</b>	<b>Assessment</b>						
<b>SECTION II: Endodontics</b>				<b>Clinical</b>	<b>Viva</b>	<b>OSPE</b>	<b>MCQs</b>	<b>SEQs</b>	<b>%</b>
Root canal obturation / endodontic treatment procedure	<b>Dr Saman</b>	<b>C</b>	Lecture/ Practical lab work, clinical teaching	√	√	√	<b>1</b>		

Endodontic mishaps & Nonsurgical endodontic retreatment <b>Study Guide</b>	<b>Dr Iqra Kamal</b>		Lecture/ Small Group Discussion	√	√		<b>1</b>	<b>1</b>	
Endodontic emergencies /diagnosis in endodontics	<b>Brig Dr Muzamil Jamil</b>		Lecture/ Demonstration, hands on	√	√		<b>1</b>		
Restoration of endodontically treated Tooth & Surgical endodontics	<b>Dr Iqra Kamal</b>		Lecture/ Demonstration	√		√	<b>1</b>		

VIVA (70 marks)		Practical/Clinical ( 90 marks )			Total
Examiner 1	Examiner 2	History Taking	Operative Schedule	OSCE	160 marks
35 marks	35 marks	20	50	20	

## Summative assessment methods and policies

### Internal Assessment

INTERNAL ASSESSMENT - THEORY	
INTERNAL ASSESSMENT WEIGHTING: 20%	
Exams	Weightings
Attendance in Lectures:	10%
a. $\geq 90\%$ = 10%	
b. 80-89% = 7%	
c. 75-79% = 5%	
End of Block/ clinical rotation (theory) Examination	45%
Continuous assessment (average score of all tests attempted after every learning session during the academic year)	20%
Pre-Annual Exam	25%
<b>Total</b>	<b>100%</b>

Study

INTERNAL ASSESSMENT STRUCTURE - PRACTICAL	
INTERNAL ASSESSMENT WEIGHTING: 20%	
Exams	Weightings
Attendance in Practicals:	10%
a. $\geq 90\%$ = 10%	
b. 80-89% = 7%	
c. 75-79% = 5%	
*End of Block/ clinical rotation (OSCE) Examination	45%
*Continuous assessment of practical/ clinical skills and attitude	20%
Pre-Annual Exam	25%
<b>Total</b>	<b>100%</b>

VIVA (70 marks)		Practical/Clinical (90 marks)			Total
Examiner 1	Examiner 2	History Taking	Operative Schedule	OSCE	<b>160 marks</b>
<b>35 marks</b>	<b>35 marks</b>	<b>20</b>	<b>50</b>	<b>20</b>	

### Internal Examiner

He/she shall be Professor and Head of Department who has been involved in teaching of the class being examined. Second preference shall be Associate/Assistant Professor who is involved in teaching of the class and posted there for one year. Third preference shall be a recognized Professor of the subject.

### External Examiner

He/she shall be a Professor/Associate Professor of a recognized Medical/Dental College or at least an Assistant Professor with three years teaching experience in the relevant subject.

### **Conflict of Interest**

No person shall serve as an examiner whose close relative (wife, husband, son, daughter, adopted son, adopted daughter, grand-son, grand-daughter, brother, sister, niece /nephew, son and daughter- in-law

brother and sister- in-law, parental and maternal uncle and aunt etc.) is appearing in the examination. All examiners likely to serve as an examiner shall render a certificate in compliance to this para.

### **Paper Setting**

- a. Each College / Institute shall forward a set of two question papers as per TOS along with the key for each subject to the Controller of Examinations, at least three months in advance of the annual examination. The question paper as a whole / a question without a comprehensive key shall not be considered towards final paper setting.
- b. The set of question papers shall be prepared by the respective Head of Department (HoD) and furnished to Controller of Examinations through Head of Institution (HoI)
- c. The Controller of Examinations shall approve the faculty for the final paper setting having fair representation of each college / institute.

### **Paper Assessment**

- a. The Controller of Examinations shall approve the faculty for the theory paper marking, to be undertaken in the manner as deemed appropriate.
- b. The Examination Directorate shall coordinate directly with the faculty, earmarked for the paper marking
- c. A student who scores 85% and above marks in any subject shall qualify for distinction in that particular subject.
- d. A fraction in aggregate marks of a subject shall be rounded off to whole number. If it is less than 0.5 then it will be rounded off to the previous whole number while 0.5 or more will be rounded off to the next whole number.

**Practical / Clinical Examinations**

- a. The Controller of Examiners shall approve the faculty to serve as the internal & external examiners.
- b. The number of external and internal examiners shall be equal.
- c. One external & internal examiner each shall be marked for a group of 100 students.
- d. Candidates may be divided into groups in the clinical and practical examinations and be standardized by incorporating clinical exam
- e. Practical/clinical examination shall be held after the theory examination of the subject but in special cases, it may be held before the theory examination with the approval of the Controller of Examinations.  
For the purpose of practical/clinical examination, the candidates may be divided into sub groups by the examiners.
- f. The assessment of the practical / clinical examination duly signed by internal & external examiner shall be furnished to the Controller of Examinations within one week of the conclusion of examination

**Pass Marks**

- a. Pass marks for all subjects less Islamic / Pakistan Studies, shall be 50 % in theory and practical, separately.
- b. Pass marks for Islamic / Pakistan Studies shall be 33 % which, however shall not be counted towards final scoring of the professional examination.
- c. No grace marks shall be allowed to any student in any examination.

## Study Guide

### **Declaration of Result.**

Every effort shall be made to declare the result of each examination within one month of the last practical examination or earlier.

### **Promotion.**

No student shall be promoted to the higher classes unless he/she passes all the subjects of the previous class

### **Re-Totaling.**

Any student may apply to the Controller of Examinations on a prescribed form along with the specified fee.

### **Supplementary Examination.**

The interval between a supplementary examination and the previous professional examination shall not be more than two months.

There shall be no special supplementary examination.

**Operative Dentistry Department Final Year BDS (2028)**  
**Small Group Discussion**

**Discussion Topics**

1. Caries Risk Assessment & Formulation of Treatment Plan
2. Diagnosis & Treatment Planning
3. Prescription writing
4. Access opening, Principles of access opening, different methods to locate the canals.  
Methods of working length determination.
5. Cleaning & shaping, obturation
6. Irrigants & Intra canal Medicaments
7. Restoration of Endodontically Treated Teeth
8. Additional Aesthetic procedures bleaching / macro and micro abrasion

**Operative Dentistry Department**  
**Final Year BDS (2028)**  
**Small Group Discussion & Clinical Rotation (Group A)**

		<b>Orientation Day</b>	
	<b>Day/ Date/ Time</b>	<b>Topics</b>	<b>Instructor</b>
<b>Week 1</b>	Friday	<b>SGD-</b> Caries Risk Assessment & Formulation of Treatment Plan	Brig. Dr Muzamil Rana /Maj.Ahmed
<b>Week 2</b>	Friday	<b>SGD-</b> Diagnosis & Treatment Planning	Dr. Iqra Kamal / Dr. Zala
<b>Week 3</b>	Friday	<b>SGD-</b> Prescription writing	Dr. Saman
<b>Week 4</b>	Friday	Access opening, Principles of access opening, different methods to locate the canals. Methods of working length determination.	Dr Iqra /Maj.Ahmed
<b>Week 5</b>	Friday	Cleaning & shaping, obturation	Dr Saman / Dr Habiba
<b>Week 6</b>	Friday	<b>SGD-</b> Irrigants & Intra canal Medicaments	Dr. Habiba/ Dr Arifa
<b>Week 7</b>	Friday	<b>SGD-</b> Restoration of Endodontically Treated Teeth	Dr Zala/ Maj. Ahmed
<b>Week 8</b>	Friday	<b>SGD-</b> Additional Aesthetic procedures bleaching / macro and micro abrasion	Dr. Arifa/ Dr. habiba

**Operative Dentistry Department**  
**Final Year BDS (2028)**  
**Small Group Discussion & Clinical Rotation (Group B)**

		<b>Orientation Day</b>	
	<b>Day/ Date/ Time</b>	<b>Topics</b>	<b>Instructor</b>
<b>Week 1</b>	Friday	<b>SGD-</b> Caries Risk Assessment & Formulation of Treatment Plan	Brig. Dr Muzamil Rana /Maj.Ahmed
<b>Week 2</b>	Friday	<b>SGD-</b> Diagnosis & Treatment Planning	Dr. Iqra Kamal / Dr. Zala
<b>Week 3</b>	Friday	<b>SGD-</b> Prescription writing	Dr. Saman
<b>Week 4</b>	Friday	Access opening, Principles of access opening, different methods to locate the canals. Methods of working length determination.	Dr Iqra /Maj.Ahmed
<b>Week 5</b>			
<b>Week 6</b>	Friday	Cleaning & shaping, obturation	Dr Saman / Dr Habiba
<b>Week 7</b>	Friday	<b>SGD-</b> Irrigants & Intra canal Medicaments	Dr. Habiba/ Dr Arifa
	Friday	<b>SGD-</b> Restoration of Endodontically Treated Teeth	Dr Zala/ Maj. Ahmed
<b>Week 8</b>	Friday	<b>SGD-</b> Additional Aesthetic procedures bleaching / macro and micro abrasion	Dr. Arifa/ Dr. habiba

**Operative Dentistry Department**  
**Final Year BDS (2028)**  
**Small Group Discussion & Clinical Rotation (Group C)**

		<b>Orientation Day</b>	
	<b>Day/ Date/ Time</b>	<b>Topics</b>	<b>Instructor</b>
<b>Week 1</b>	Friday	<b>SGD-</b> Caries Risk Assessment & Formulation of Treatment Plan	Brig. Dr Muzamil Rana /Maj.Ahmed
<b>Week 2</b>	Friday	<b>SGD-</b> Diagnosis & Treatment Planning	Dr. Iqra Kamal / Dr. Zala
<b>Week 3</b>	Friday	<b>SGD-</b> Prescription writing	Dr. Saman
<b>Week 4</b>	Friday	Access opening, Principles of access opening, different methods to locate the canals. Methods of working length determination.	Dr Iqra /Maj.Ahmed
<b>Week 5</b>			
<b>Week 6</b>	Friday	Cleaning & shaping, obturation	Dr Saman / Dr Habiba
<b>Week 7</b>	Friday	<b>SGD-</b> Irrigants & Intra canal Medicaments	Dr. Habiba/ Dr Arifa
	Friday	<b>SGD-</b> Restoration of Endodontically Treated Teeth	Dr Zala/ Maj. Ahmed
<b>Week 8</b>	Friday	<b>SGD-</b> Additional Aesthetic procedures bleaching / macro and micro abrasion	Dr. Arifa/ Dr. habiba

**Operative Dentistry Department**  
**Final Year BDS (2028)**  
**Small Group Discussion & Clinical Rotation (Group D)**

		<b>Orientation Day</b>	
	<b>Day/ Date/ Time</b>	<b>Topics</b>	<b>Instructor</b>
<b>Week 1</b>	Friday	<b>SGD-</b> Caries Risk Assessment & Formulation of Treatment Plan	Brig. Dr Muzamil Rana /Maj.Ahmed
<b>Week 2</b>	Friday	<b>SGD-</b> Diagnosis & Treatment Planning	Dr. Iqra Kamal / Dr. Zala
<b>Week 3</b>	Friday	<b>SGD-</b> Prescription writing	Dr. Saman
<b>Week 4</b>	Friday	Access opening, Principles of access opening, different methods to locate the canals. Methods of working length determination.	Dr Iqra /Maj.Ahmed
<b>Week 5</b>			
<b>Week 6</b>	Friday	Cleaning & shaping, obturation	Dr Saman / Dr Habiba
<b>Week 7</b>	Friday	<b>SGD-</b> Irrigants & Intra canal Medicaments	Dr. Habiba/ Dr Arifa
	Friday	<b>SGD-</b> Restoration of Endodontically Treated Teeth	Dr Zala/ Maj. Ahmed
<b>Week 8</b>	Friday	<b>SGD-</b> Additional Aesthetic procedures bleaching / macro and micro abrasion	Dr. Arifa/ Dr. habiba

**Operative Dentistry Department**  
**Final Year BDS (2028)**  
**Small Group Discussion & Clinical Rotation (Group E)**

14 Feb 2028		Orientation Day	
	Day/ Date/ Time	Topics	Instructor
<b>Week 1</b>	Friday	<b>SGD-</b> Caries Risk Assessment & Formulation of Treatment Plan	Brig. Dr Muzamil Rana /Maj.Ahmed
<b>Week 2</b>	Friday	<b>SGD-</b> Diagnosis & Treatment Planning	Dr. Iqra Kamal / Dr. Zala
<b>Week 3</b>	Friday	<b>SGD-</b> Prescription writing	Dr. Saman
<b>Week 4</b>	Friday	Access opening. Cleaning & shaping, obturation	Brig. Dr Muzamil Rana /Maj.Ahmed
<b>Week 5</b>	Friday	<b>SGD-</b> Irrigants & Intra canal Medicaments	Dr. Habiba/ Dr Arifa
<b>Week 6</b>	Friday	<b>SGD-</b> Restoration of Endodontically Treated Teeth	Dr Zala/ Maj. Ahmed
<b>Week 7</b>	Friday	<b>SGD-</b> Additional Aesthetic procedures bleaching / macro and micro abrasion	Dr. Arifa/ Dr. habiba

### Sample MCQs and SEQs

#### Multiple Choice Question (MCQs)

- A multiple-choice question (MCQ) consists of a stem that states the question or problem followed by a set of possible answers that contain an option that is best answer to the question.
- After reading the questions students should select the appropriate option from the given possible answers.
- The correct answer carries one mark and incorrect carries zero. There is no negative marking.

#### Sample MCQ

A 30 years old patient presents with a large carious lesion in tooth #15. The tooth is non tender to percussion and palpation. Vitality tests yield a negative response. Radiograph reveals radiolucency around root of #15. There is a draining sinus tract in the attached gingiva close to #15. The sinus tract is traced to apex of #15. Most probable diagnosis in this case is

- a. Acute apical abscess
- b. Asymptomatic irreversible pulpitis
- c. Chronic apical abscess
- d. Reversible pulpitis
- e. Symptomatic irreversible pulpitis

**KEY: C**

#### Short essay question (SEQs)

- Short essay questions require students to present written answers that are used to assess basic knowledge and clinical application of key facts and provide students with an opportunity to demonstrate reasoning and explain their understanding of the subject.

#### Sample SEQ

A 45 years old patient presents with failed Root Canal Treatment in tooth no 11. The tooth has a recently placed porcelain crown with excellent margins. The patient takes 75mg aspirin daily prophylactically. After initial assessment a decision to perform root end resection is made for this tooth.

- a) What additional investigations may be required for this patient?
- b) Which type of flap would you prefer for this patient? Give rationale for your selection.
- c) How much and at what angle would you perform the root end resection? Give rationale for your selection.

**KEY:**

- a) ADDITIONAL INVESTIGATIONS needed will be the
  - i. INR value
  - ii. Complete Blood Count(CBC)

**B) OCHSENBEIN LEUBKE FLAP. OR SEMILUNAR FLAP**

**RATIONALE FOR OCHSENBEIN LEUBKE FLAP.**

- **Maintains integrity of gingival attachment**

This is required in this clinical scenario to maintain the aesthetics of gingiva around the crown with excellent margins.

It also provides

- Ease in incision & reflection
- Enhanced visibility & access
- Ease in repositioning

**RATIONALE FOR SEMILUNAR FLAP**

- **Maintains integrity of gingival attachment**

This is required in this clinical scenario to maintain the aesthetics of gingiva around the crown with excellent margins.

It also provides

- Small incision and easy reflection
- No intervention at the periodontium
- Easier oral hygiene compared to other types of flaps.

**C) ROOT END RESECTION WILL BE DONE PERPENDICULAR TO LONG AXIS OF THE TOOTH.**

Rationale

- It will include most of the deltas and ramifications.
- It will help in distributing forces equally.
- Increase of angle leads to an increase in the communication of the dentinal tubules with the apical region, which isn't desirable.
- Extending the root-end cavity preparation beyond the coronal extent of the root surface is simpler if the root-end resection is perpendicular to the long axis of the tooth

## Study Guide

### **Department of Operative Dentistry**

#### **Final Year BDS 2023**

#### **Sample Class Activity**

A small group-based activity has been planned for you and your class has been divided into 7 groups. Each group is required to make a 5-minute presentation and any of the group members can be asked to present it.

## Study Guide

### GROUP A

A 35 year old male, in good general medical condition, reported to the OPD, with complaint of poor esthetics and increasing sensitivity in teeth. On intraoral examination, teeth #16 to #13 and #23 and #24 showed non-carious cervical lesions along with gingival recession in the upper arch, with a rather asymmetric pattern of severity for any tooth.



- What are the possible contributing factors responsible for this presentation?
- Enlist factors considered that will help the clinician to decide when to restore NCCLs.
- Outline the management for this particular case.

## Study Guide

### GROUP B

A 30 year old female reported to the Department of Operative and Conservative Dentistry with the complaint of a fractured tooth in the lower left region since the last two days . The patient's medical history was non- significant. On clinical examination, a previously restored (mesio-occluso-distal) , defective #36 was seen.



- a) What type of restoration can be planned in this case? Give the steps of preparation for it.
- b) Briefly describe the bonding protocol for such a case.
- c) How will you manage the subgingival margin if the restoration is extending subgingivally?

## Study Guide

### GROUP C

An 18 year old student came to the Operative Dentistry department with the complaint of unaesthetic appearance of front teeth. Upon examination the maxillary lateral incisors were under contoured with open incisal embrasures; a diagnosis of peg laterals was made.



- a) What pre-op evaluations would you like to carry out in this case?
- b) Which teeth will be included in veneers design?

**GROUP D**

A 25 year-old-male patient reported to the OPD with the chief complaint of staining of teeth. His main concern was to remove and/or minimize the noticeable brown/yellow staining of his teeth, wanting the least invasive and most cost-effective treatment to change his smile. Previous medical and dental history was non- significant.



- a) Keeping into consideration the patient's concern , what treatment options can be given in this case?
- b) Outline the steps of procedure most likely to be used in the above case.

## Study Guide

### GROUP E

A 30 year old female newscaster reported to your clinic with the complaint of unaesthetic appearance of her front teeth, and she is not happy with her smile.

You decided to give this patient indirect veneers but the patient has to go on air for her show and she can't wait for 2 weeks for indirect veneers after her 1<sup>st</sup> visit for teeth preparation.



- a) How will you manage the patient in this case by temporization?
- b) What are the materials for provisional restoration?

## Study Guide

### GROUP F

A 40 years old female reported to your clinic with a complaint of grayish discoloration of her front teeth. Upon investigation, she had taken antibiotic minocycline for her acne treatment for a longer duration.



- a) Enlist other intrinsic and extrinsic causes of discolouration
- b) How will you manage the above given case? Discuss in detail.
- c) What features will you incorporate in veneer design?

## Study Guide

### GROUP G

A 63 year old healthy male presented in the dental office with a dislodged crown of left maxillary canine (# 23). The crown was placed about a year ago. Patient also reported that this was the second dislodgement of the crown. The first time this crown was dislodged, the tooth received a tooth colored post. Patient reported no other associated symptoms. On a close intraoral radiographic inspection, it was found that the tooth was previously restored with a custom metallic post and core retained crown.



- a) What treatment options can be given to this patient?
- b) If the patient opts to retain the tooth, what factors need to be considered?  
What protocol needs to be followed in treating such a case?

**SAMPLE  
OSCE**

Study Guide



**A.** Name the type of discoloration shown in the above figure.

**B.** List the treatment options that can be considered in this case?

## Study Guide



**A.** Identify the problem in wedge/band placement on the mesial side of tooth no 14 in this picture. (mesial side is marked with an arrow)

**B.** How can we overcome this problem?

Study Guide



- A.** Identify the type of radiograph shown in the above given picture.
- B.** Given that this is a view of left side, identify the extent and type of pathologies associated with distal of tooth no 24 and mesial of tooth no. 26.

## Study Guide



- A.** According to ICDAS Classification what is the score of the tooth # 16.
- B.** Give the resistance form and secondary retention form features that you will incorporate for amalgam cavity preparation for this tooth.

Study Guide



**A.** Identify the complication in tooth # 16.

**B.** What can be done to avoid this complication?





## STUDY GUIDE

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## STUDY GUIDE