KING SAUD UNIVERSITY
College of Dentistry
Department of Restorative Dental Sciences
DIVISION OF ENDODONTICS

322 RDS Pre-Clinical Endodontics

I. COURSE PROSPECTIVE

The scope of the course includes preparing the third year students to understand, recognize, diagnose and successfully treat pulpally involved or potentially involved
teeth. Important fundamentals are stressed with emphasis on the correlation between basic clinical and biological principles. The course will have two main components:

1. Classroom lecture series, which correlates clinical with biological principles of endodontics.

2. Laboratory exercises to perform endodontic treatment on mounted extracted human teeth.

II. COURSE OBJECTIVES

Based on the content of the lecture series, laboratory exercises, and recommended reading material, this course is expected to:

1. Prepare the student to demonstrate clear understanding of the morphology of the pulpal spaces.

2. Prepare the student to demonstrate the ability to state the theoretical and biological principles of every endodontic clinical procedure.

3. Prepare the student to demonstrate competency in performing fundamental operative procedures in the field of endodontics.

4. Prepare the student to demonstrate adequate knowledge of the dental materials and instruments used in endodontics.

5. Prepare the student to demonstrate the ability to recognize the different levels of sophistication and complexity of endodontic cases that his patients present.

6. Prepare the student to a level where he will be able to evaluate his own clinical competency and know the extent of his diagnosis, treatment planning and operative capabilities. Therefore, he will not be hesitant in seeking the counsel of a specialist or a colleague.

III. COURSE REQUIREMENTS

1. Students must attend all the lectures and lab sessions.

2. Freshly extracted teeth will be used in this course.

   a. The teeth must be clean, free of debris and preferably have sound crown or with minimum caries destruction.

   b. The pulp chamber and canals must be accessible as confirmed by radiographs (teeth with immature apices, calcified canals, severely curved canals, previous root canal treatment, external or internal root resorption, or with too short or too long root should not be used).

   c. The selected teeth should be stored in a jar containing 0.9% physiological
saline until mounted.

d. All the required teeth (4 anteriors, 2 premolars and 4 molars) must be mounted in acrylic using the rubber mould.

e. Additional teeth (3 anteriors, 2 premolars, 3 molars) with inappropriate root morphology (as confirmed by radiographs) should be mounted individually in plaster of paris blocks for the purpose of access opening and other practical exercises.

f. Between the practical sessions, the mounted teeth should be covered with gauze pads soaked with saline solution and kept in a sealed container to ensure 100% humidity and prevent tooth cracking during instrumentation and obturation.

3. At the end of the first half of the course, the student must have finished:

a. Root canal therapy on three anterior teeth.

b. Root canal therapy on two premolar (including one with two canals) teeth.

c. Access openings on one anterior tooth and one premolar tooth mounted individually in plaster.

d. The fourth anterior tooth mounted in acrylic should be saved for midterm practical exam.

e. Instrument spotting exam will be carried out as the first laboratory assessment.

4. At the end of the second half of the course, the student must have finished:

a. Root canal therapy on three molar (upper and lower) teeth.

b. Access openings on two molars (one maxillary and one mandibular) mounted individually in plaster.

c. Retreatment, and Ca(OH)2 application on a previously obturated single rooted tooth.

d. Post space preparation on a previously obturated canal.

e. Three teeth (an anterior, a premolar, and a molar) should be saved for the second laboratory assessment.

f. The fourth molar should be saved for final practical exam (upper or lower).

5. At the end of each laboratory session students must have their instructor sign their finished assignment before they leave.

6. Each finished case must be handed over to the course director in the endodontic form (envelope), within the same week. Delayed submissions will be
marked down.

a. The endodontic form must be completed (e.g. student’s name, serial number, university number, tooth number, working length, size of MAF – etc.)

b. The radiographs of the finished case must be mounted, dated and submitted in the endodontic form (preoperative, working length, master apical file, master gutta percha point, final ± intermediate).

IV. READING TEXTBOOK:


V. CONTENTS OF THE LECTURES:

1. **Introduction and Case Selection**
   - Introduction to the course and the requirements.
   - An overview of endodontic therapy
   - Endodontic case presentation
   - Indications for root canal therapy
   - Contraindications for root canal therapy

2. **Endodontic Instruments and Standard Isolation**
   - Hand instruments
   - Rotary instruments
   - Isolation (principles and rationale)
   - Rubber dam materials (armamentarium)

3. **Endodontic Access Opening**
   - Morphology of anterior, premolar and molar teeth
   - Principles of endodontic cavity preparation

4. **Root Canal Preparation**
   - Principles
   - Radicular cavity preparation
   - Instruments and methods for radicular cleaning and shaping
   - Determination of the tooth length
   - Step-back technique
5. **Root Canal Filling materials and Obturation**
   - Importance of obturation
   - Characteristics of an ideal root canal filling materials
   - Extension of root canal filling
   - Lateral Condensation technique

6. **Endodontic Radiography and Local Anesthesia**
   - Importance of radiographs
   - Vertical and horizontal angulation (buccal object rule)
   - Infiltration and block anesthesia
   - PDL injection
   - Intra pulpal anesthesia
   - Intra osseous anesthesia

7. **Histology and Physiology of the Pulp**
   - Function
   - Development and anatomy
   - Histology
   - Age changes
   - Pulp response to inflammation
   - Pulpodental physiology

8. **Pulpal Reaction to Caries and Dental Procedures**
   - Relationship between pulp and dentin
   - Pulpal reactions to dentinal caries
   - Effect of various restorative procedures on the pulp
   - Effect of local anesthesia on the pulp
   - Postoperative sensitivity and preventive measures

9. **Pulpal Diseases**
   - Hypremia
   - Reversible pulpitis
   - Irreversible pulpitis
   - Internal resorption
   - Chronic hyperplastic pulpitis
   - Necrotic pulp

10. **Periradicular Diseases**
    - Periradicular lesions of pulpal origin (endodontic origin)
- Non-endodontic periradicular lesions
- Differential diagnosis

11. **Endodontic Diagnostic procedure**

- Patient history (chief complaint, present dental illness and medical history)
- Clinical examination (vital signs, extra and intra-oral examination, clinical tests and periodontal evaluation)
- Radiographic examination (interpretation, root anatomy, conditions inside and outside the tooth, and importance of radiograph in diagnosis)

12. **Microbiology and Immunology**

- Role of bacteria in pulpal and periradicular diseases
- Pathways of pulpal and periradicular infections
- Flora of the root canal and periradicular lesions
- Methods of control of root canal infection
- Taking culture

13. **Intracanal Medication**

- Antibacterial agents
- Mode of action
- Irrigation and chelation
- Calcium hydroxide

14. **Endodontic Mishap**

- Access related mishaps
- Instrumentation related mishaps
- Obturation related mishaps
- Miscellaneous and irrigant-related mishaps