



# MASTER OF SCIENCE IN ENDODONTICS

STUDY PLAN

2019



## Introduction

This manual reviews the Hamdan Bin Mohammed College of Dental Medicine Master of Science in Endodontics and includes policies and procedures of the Endodontics program. The faculty and staff have prepared this manual as a guide for the students at the Hamdan Bin Mohammed College of Dental Medicine. It is supplemented by the Student Handbook distributed by the Office of the Dean at orientation.

The clinical program and requirements demand a high level of responsibility and self-discipline. Effective patient management will help you achieve your academic and clinical goals. Early familiarity with program requirements and clinical procedures will maximize your learning. Your patients rely on you for information, advice, and expert treatment. Your ability to respond to your patients' needs accurately and confidently will depend on your complete familiarity with clinical procedures, program requirements and the patient record systems. It is your responsibility to acquaint yourself thoroughly with the information in this Program Manual.

## Study plan

Year 1		
Semester 1	Credits	Course code
Examination and Diagnosis	1	EN841
Advanced Clinical Science 1	2	CC500
Specialty Clinical Training- Clinical Skill Facility	*10	EN842
Specialty Clinical Training- Clinic	2	EN831
Treatment Strategies and Plans in Endodontics and Pulp Therapy	1	EN843
Scientific Literature	1	EN821
Research Methodology and Biostatistics	2	CC502
Clinical Governance: Legislation and Ethics	1	CC503
Semester 2		
Advanced Clinical Science II	1	CC501
Health Education and Promotion & Epidemiology	1	CC505
Non-Surgical Root Canal Treatment	1	EN844
Periodontology for Endodontic Specialists	1	EN845
Non-Surgical Root Canal Retreatment	1	EN846
Specialty Clinical Training	*12	EN832
Research Dissertation	3	EN812
Scientific Literature	1	EN822

Year 2		
Semester 1	Credits	Course code
Research Dissertation	4	EN813
Prosthodontics for Endodontic Specialists	1	EN847
Clinical Imaging	1	CC506
Scientific Literature	2	EN823
Specialty Clinical Training	*12	EN833
Semester 2		
Surgical Root Canal Treatment	1	EN849
Dental Traumatology	1	EN850
Research Dissertation	4	EN814
Scientific Literature	2	EN824
Molecular Biology	1	CC504
Specialty Clinical Training	*12	EN834

Year 3		
Semester 1	Credits	Course code
Research Dissertation	5	EN815
Scientific Literature	2	EN825
Specialty Clinical Training	*12	EN835
Semester 2		
Research Dissertation	5	EN816
Scientific Literature	1	EN826
Examination Preparation	1	EN851
Specialty Clinical Training	*12	EN836

## **Endodontics Course Descriptions**

### **Examination and Diagnosis**

A series of lectures intended to expose the student to the core concepts and current information necessary for a thorough and appropriate assessment and examination of the patient, their dental, pulpal, periradicular, periodontal, oral and peri-oral tissues in relation to the presenting complaints of the patient, arriving at an appropriate diagnosis of the condition from the information provided and examination and investigations undertaken. Topics include: physiology and pathology of the pulp and periradicular tissues; odontogenic pain; local and systemic spread of infection; endodontic emergencies; traumatic injuries to the dentition; and the relationship between oral and systemic disease.

### **Advanced Clinical Science 1**

This is a general basic science course intended to provide the student with the appropriate level of knowledge in core basic sciences required for the study of the specialty of Endodontics. The topics include anatomy, growth and development, physiology, control of pain and anxiety, radiation protection, human diseases, medical emergency management, cross infection control, use of antibiotics in dentistry, medical photography, presentation skills, consent and confidentiality, clinical governance, communication skills.

This course is comprised of lectures designed to aid the student to expand their knowledge in oral physiology, anatomy, pharmacology with areas of clinical importance. Knowledge gained by the student will contribute to achieving competency in rendering treatment.

### **Health Education and Promotion & Epidemiology**

This course will expose the student to the concepts and information necessary for an endodontic specialist to understand the importance of health promotion and prevention of diseases, and Infection Control. Topics include: Relevant biology, anatomy, physiology, pathology and microbiology; Occurrence and recurrence of dental diseases; Oral hygiene; Smoking cessation; Infection control; appropriate vaccinations; and Dental materials, equipment and techniques for relevant preventive care.

## **Treatment Strategies and Plans in Endodontics and Pulp Therapy**

This course will expose the student to the core concepts and current information pertaining to such topics as: treatment planning based on patient needs; patient communication and management; vital therapy and outcomes; Instruments, devices and materials in endodontics and embracing the best evidence based approach.

## **Non-Surgical Root Canal Treatment**

This course will introduce the students to the core concepts and current information necessary for a thorough knowledge of non-surgical root canal treatment. This course will describe the treatment procedures and options in non-surgical root canal treatment; Procedures to optimize the working field; benefits of enhanced lighting and magnification in endodontic practice; anatomy of the pulp space; nature of endodontic infections and strategies for their removal/ disruption; Physical, chemical and biological properties of endodontic instruments and materials; Methods of working length determination and their limitations; Conventional and contemporary techniques for endodontic imaging; Current and historic methods for on-surgical root canal treatment; Controversies in endodontic practice; and the need for further intervention in the case of failure or uncertainty.

## **Periodontology for Endodontic Specialists**

This course will expose the student to the concepts and information necessary for an endodontic specialist to understand the importance and implications of the inter-relationship between endodontics and other clinical disciplines, particularly periodontics. This course would enable the endodontic student to assess the periodontics status of teeth relevant to the endodontic status and carry out periodontics at the level of a skilled general dental practitioner. Topics include: relevant biology, anatomy, physiology, pathology and microbiology; mechanisms by which oral microorganisms may be dispersed and cause disease in distant sites; factors which make a tooth unrestorable; pathogenesis, diagnosis and management of periodontal diseases; diagnosis and management of perio-endo lesions; biological rationale and indications for dental implants; procedures for placement, restoration and maintenance of dental implants; and dental materials.

### **Non-Surgical Root Canal Retreatment**

This course will provide the core concepts and current information necessary for a thorough knowledge of non-surgical root canal retreatment. This course will describe the different outcome measures in endodontics and their assessment; procedures and materials used in the root canal treatment and restoration of teeth; Materials and procedures for coronal disassembly, removal of materials and objects from root canals, identifying previously untreated anatomy, re-negotiation, management of procedural accidents; risks and limitations associated with non-surgical and surgical re-treatment procedures; Factors which may be associated with the success and failure of non-surgical retreatment procedures; features of an appropriate recall strategy; and the need for further intervention in the case of failure or uncertainty.

### **Prosthodontics for Endodontic Specialists**

This course will expose the student to the concepts and information necessary for an endodontic specialist to understand the importance and implications of the inter-relationship between endodontics and other clinical disciplines, particularly prosthodontics. This course would enable the endodontic student to assess the restorative status of teeth relevant to the endodontic status and carry out restorative dentistry at the level of a skilled general dental practitioner. Topics include: relevant biology, anatomy, physiology, pathology and microbiology; factors which make a tooth un-restorable; Occlusion; biological rationale and indications for direct and indirect restorations, fixed and removable prostheses and dental implants; procedures for placement, restoration and maintenance of a restoration prosthesis and dental implants; and dental materials.

### **Clinical Imaging**

This is an in-depth course providing a thorough knowledge of clinical imaging. This course will describe the relevant biology and anatomy of the oro-facial region necessary for the interpretation of radiographic images; The principles of radiographic quality assurance and the practice of applied quality control; Interpretation radiographic images with an accurate radiographic report; The relevance of clinical photographs in treatment planning; The medico-legal importance of photographic records; and the relevance of minimizing the radiation dose for each patient when undertaking a radiological examination.

### **Surgical Root Canal Treatment**

This is an in-depth course regarding the core concepts and current information necessary for a thorough knowledge of surgical root canal treatment. This course will describe surgical anatomy: gross and fine dental relevant to investigative and reparative procedures; Principles of surgical soft and hard-tissue management; root-end management; Guided tissue regeneration; Support of the surgical patient before, during and after the procedure; Dental materials, equipment and procedures to provide surgical treatment; and the features of an appropriate recall program

### **Dental Traumatology**

This is an in-depth course providing knowledge in the etiology, presentation, investigation and management of dentoalveolar, intraoral and perioral soft tissue injuries in children and adolescents. The course will also discuss maxillofacial injuries in the same age group. Emphasis will be placed on the multidisciplinary approach to the management of these conditions.

### **Specialty Clinical Training- Clinical Skill Facility**

This course constitutes the foundation to preparing the student to enter the dental treatment center and perform endodontic procedures on a patient. The student will participate in endodontic procedures performed on extracted teeth. Lectures and clinical demonstrations by the endodontic faculty cover the range of clinical procedures to be perfected by students during the clinical phases of training.

Root canal anatomy for each tooth is reviewed in detail including the incidence of anatomical variations. Materials and equipment used in Endodontics are reviewed, and their use and maintenance are demonstrated. A variety of non surgical procedures are thoroughly reviewed, demonstrated and practiced. This course will be conducted parallel to the Specialty Clinical Course in the clinic.

### **Specialty Clinical Training- Clinic**

This course is an ongoing course throughout the 3-year program. The course is the clinical course that encompasses the scope of clinical Endodontics. During the first year of the program, students are closely supervised while developing skills in diagnosis, radiographic

technique, treatment planning, uncomplicated non-surgical endodontic therapy and restorative dentistry, trauma management and emergency management. During the second and third year as individual clinical skills develop, students' progress to more complex endodontic therapy including surgical retreatment and endodontic therapy for operating room patients and patients undergoing conscious sedation procedures. Students gain extensive experience in the team management approach to patient care while interacting and coordinating with other medical departments within the hospitals and with outside clinics and practitioners. In addition, there is opportunity to attend hospital general anesthesia rotations. The clinical course will take part in the clinics of the Hamdan Bin Mohammed College of Dental Medicine and the Community Health Centers of the Dubai Health Authority.

During the clinical course, students will be expected to participate in the teaching of endodontic procedures to junior postgraduates and develop their teaching skills through this module.

The students will also be required to complete a Clinical Anesthesia rotation in one of the DHA hospitals. This is a 2-week experience that provides the advanced specialty education student in endodontics with knowledge and experience in the management of patients undergoing general anesthesia. During the rotation, anesthesia is the principal activity of the student. The goal of the rotation is for the student to gain an understanding of all aspects of the delivery of general anesthesia in the operating room.

At the conclusion of the 3-year clinical training, each student might be expected to undertake a minimum number of the Endodontics procedures as follows:

<b>Posterior NSRCT</b>	<b>75</b>
<b>Anterior NSRCT</b>	25
<b>NS Retreatment (at least 10 with post removal)</b>	50
<b>Surgical Retreatment (at least 7 on posterior roots)</b>	10 performed and 5 observed
<b><i>Adjunctive procedures including</i></b> <b>Perforation repair, broken instrument removal, apexification, and apexogenesis.</b>	25
<b><i>Multidisciplinary cases including</i></b>	25

<b>Perio-endo lesions, tooth extrusions, trauma and therapy for the pediatric patient</b>	
<b>Anterior restorations</b>	20
<b>Posterior restorations</b>	20
<b>Restoration of endodontically treated teeth</b>	20
<b>Endodontic Treatment under inhalation sedation, I.V. or G.A.</b>	5 performed and 3 observed

### **Clinical Governance and Legislation and Ethics**

This course will provide the student with the required knowledge and understanding of Clinical Governance, general approach to ethical conduct and reasoning in the delivery of dental treatment. The course will discuss local and international ethic laws in healthcare delivery. Personal and professional development as part of the delivery of proper dental services will be emphasized.

### **Clinical Governance and Legislation and Ethics**

This course will provide the student with the required knowledge and understanding of Clinical Governance, general approach to ethical conduct and reasoning in the delivery of dental treatment. The course will discuss local and international ethic laws in healthcare delivery. Personal and professional development as part of the delivery of proper dental services will be emphasized.

### **Examination Preparation**

This course is intended to present a final revision for the students to prepare them to sit for the UK Membership Examination in Endodontics. The examination of the Diploma of Membership in Endodontics includes Applied Sciences relevant to Endodontics and the Principles and Practice of Endodontics. The aims of the examination are to test the range of knowledge of Endodontics at a level expected of a specialist practitioner and to test the attainment of competence in the planning and execution of Endodontics requisite for specialist

### **Research Methodology & Biostatistics**

This course is intended to give the students an in-depth knowledge about the research methodology that will afford a good basis for the conduction of a successful Masters project. The course will also provide the student with a clear basic knowledge in biostatistics. Evidence based practice will be introduced as a basic concept for decision making in clinical practice.

### **Scientific Literature**

The Scientific Literature in Endodontics is a three year literature review course that meets on a weekly basis. Students are assigned journals/articles/chapters to abstract and present to the group. These presentations are followed by an in-depth group discussion on that particular topic in Endodontics.

During the literature review series, students read and discuss classic and current literature that is recommended for appropriate preparation for the Membership Examination of the Royal Colleges.

### **Research Dissertation**

This course involves an approved investigative effort to satisfy requirements for the MSc degree. Research may involve preclinical and clinical subjects related to Endodontics or epidemiology. Students must complete a research project, thesis and thesis defence to fulfill the requirements of this course by the end of the second semester of the third year.

### **Research Format**

The MSc programs are combined clinical and research programs. The MSc degree entails a research project and thesis and is an integral component of the 36-month program. The topics for a thesis will be chosen by the candidate in conjunction with the faculty advisor. Students must initiate and complete a research project using the elements of scientific method, including research design, accurate reporting, critical thinking and the formulation of conclusions based on scientific data rather than opinion. Collaboration with other hospitals, medical institutions and other health-orientated organizations is encouraged to foster collaborative research.

Research formats for thesis may include:

- Clinical study
- Systematic review or meta analysis
- Epidemiological studies
- Laboratory-based studies
- Case series

The research protocol will be developed within the first year of the program. Implementation and data collection will commence after Institutional Review Board approval (where appropriate) and other regulatory approvals. It is anticipated that data collection will be completed by the end of the second year to allow for data analysis, thesis preparation and defense of the thesis.

Guidelines for Thesis Submission are provided in the Student Handbook