MASTER OF SCIENCE IN ORTHODONTICS

STUDY PLAN

2019

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MBRU

جامعة محمد بن راشد للطب و العلوم الصحية

MOHAMMED BIN RASHID UNIVERSITY OF MEDICINE AND HEALTH SCIENCES

Introduction

This manual reviews the Hamdan Bin Mohammed College of Dental Medicine Master of Science in Orthodontics and includes policies and procedures of the 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**
Advanced Clinical Science I	2	CC500
Research Methodology and Biostatistics	2	CC502
Clinical Governance, Legislation & Ethics	1	CC503
Research Dissertation	1	OR611
Scientific Literature	1	OR621
Specialty Clinical Training	7*	OR631
Clinical Skills	5	OR641
Basic Science Relevant to Orthodontics	1	OR642
Orthodontic Diagnosis and Treatment Planning	1	OR643
Semester 2		
Advanced Clinical Science II	1	CC501
Health Education and Promotion and Epidemiology	1	CC505
Clinical Imaging	1	CC506
Research Dissertation	1	OR612
Scientific Literature	1	OR622
Specialty Clinical Training	12*	OR632
Growth Assessment – Cephalometric Methods for Assessment of Dentofacial Changes	1	OR644
Dentofacial Orthopedics and Temporomandibular Dysfunction	1	OR655
Orthodontic Materials and Appliances	1	OR656

* includes clinical term

Year 2		
Semester 1	**Credits**	**Course code**
Temporomandibular Disorders	1	CC507
Research Dissertation	3	OR613
Scientific Literature	1	OR623
Specialty Clinical Training	12*	OR633
Craniofacial Development and Cephalometric Assessment	1	OR647
Long-term Effects of Orthodontic Treatment - Iatrogenic Effects of Orthodontic Treatment	1	OR648
Orthodontic Tooth Movement and Biomechanics	1	OR657
Semester 2		
Molecular Biology	1	CC504
Research Dissertation	2	OR614
Scientific Literature	1	OR624
Specialty Clinical Training	12*	OR634
Adult Orthodontics	1	OR650
Orthodontic Techniques	1	OR658
Guiding the Development of the Occlusion	1	OR652
Multidisciplinary Treatment Modalities	1	OR653

* includes clinical term

Year 3		
Semester 1	**Credits**	**Course code**
Research Dissertation	7	OR615
Scientific Literature	1	OR625
Specialty Clinical Training	12*	OR635
Semester 2		
Research Dissertation	6	OR616
Scientific Literature	1	OR626
Specialty Clinical Training	12*	OR636
Examination Preparation	1	OR654

* includes clinical term

Orthodontic Program Course Descriptions

Advanced Clinical Science I

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

Basic Science Relevant to Orthodontics

This course will provide the Student with the required knowledge in normal development and potential abnormalities in growth of the craniofacial and dentoalveolar complex in specific and somatic growth in general. The course will also provide relevant information about the principles of genetically determined conditions especially these with significant orofacial and dental features. The role of cell biology in health and disease will also be presented in this course.

Orthodontic Diagnosis and Treatment PlanningThis course will provide the Student with the required knowledge about need and demand for orthodontic treatment. It would also provide basics on psychological assessment for understanding patient's motivation, cooperation and expectations from orthodontic treatment. The course will also discuss conventional radiographic techniques including an introduction to the principles of cephalometric radiography. The health and safety issues around specialist orthodontic practice are described including those relating to radiography in the young patient. Current technology available to assist with image analysis is described.

Growth Assessment – Cephalometric Methods for Assessment of Dentofacial Changes

This course will provide the Student with the required knowledge in eliciting a history and undertaking an examination and in particular to determine patient motivation for and expectations of orthodontic treatment. The course also includes assessment of growth and introduces to radiographic cephalometric assessment and analysis.

Dentofacial Orthopedics and Temporomandibular Dysfunction

This course will provide introduction to the concepts of dentofacial orthopedics and the required knowledge about the structure, function, and abnormalities of the temporomandibular joints and its relevance to orthodontic treatment.

Orthodontic Tooth Movement and Biomechanics

This course discusses the biological aspects of orthodontic tooth movement and the various effects of the biomechanical systems. It will also familiarize residents to the principle ideas of advanced wire bending in relation to clinical patient care and orthodontic treatment techniques.

Craniofacial Development and Cephalometric Radiography

This course will provide the Student with the required knowledge about craniofacial development and growth as well as its analysis. The consequences of abnormal development of the face, jaws and dentition will be presented. Treatment analysis and cephalometric radiographic analysis feature in this course in relation to growth analysis.

Long-term Effects of Orthodontic Treatment - Iatrogenic Effects of Orthodontic Treatment

This course will provide the Student with the required knowledge in the long-term effects of orthodontic treatment as well as the risk assessment and potential harmful consequences of orthodontic therapy.

Orthodontic Materials and Appliances

This course will provide the students with the required knowledge of the uses of orthodontic appliances. The students will also learn about the design and fabrication of these appliances as well as their fitting and activation. The scientific and clinical aspects of orthodontic materials will be discussed.

Orthodontic Techniques

This course will provide the students with the required knowledge for the identification of indicating factors for the use of fixed appliances. The students will also learn about the historical and advanced orthodontic techniques (Edgewise, Tweed-Merrifield, Rickett's utility arch, segmented arch mechanics, and Straight-wire appliance).

Guiding the Development of the Occlusion

This course will provide the Student with the required knowledge in guiding the development of the occlusion with consideration of interceptive orthodontics, elimination of local factors, treatment of cross bites and early correction of skeletal discrepancies.

Adult Orthodontics

The special issues relating to adult orthodontic treatment and with regard to diagnosis, aetiology and mechanotherapy, will be covered in this course.

Multidisciplinary Treatment Modalities This course will provide the Student with the required knowledge about the interface of orthodontic management with surgical care. The course covers the management of unerupted teeth, soft tissue surgery, temporary anchorage devices' placement, management of dentofacial deformities by means of orthognathic surgery, multidisciplinary management of cleft lip and/or palate patients and obstructive sleep apnoea.

Specialty Clinical Training

This clinical course encompasses the scope of clinical orthodontics. During the first year of the program, students are closely supervised while developing skills in history taking,

examination, diagnosis, radiographic analysis and treatment planning. During the second and third year as individual clinical skills develop students' progress to manage appropriate cases. Students gain extensive experience in the team management approach to patient care while interacting with restorative dentistry and oral surgery departments within the hospitals and with outside clinics and practitioners. In addition, there is opportunity to attend hospital grand rounds and physician conferences. The clinical course will take part in the clinics of the Hamdan Bin Mohammed College of Dental Medicine. The Students will be required to complete a clinical rotation at Community Health Centers of the Dubai Health Authority or the Ministry of Health {a 2-week rotation] that permits observation of the care involved in providing orthognathic surgery and cleft lip and palate surgery. The primary goal is to acquire the knowledge, skills and attitudes to function as health care providers within a team.

At the conclusion of the 3-year clinical training, each Student might be expected to undertake a minimum number of orthodontic cases as follows:

Initial Exam, Records and Diagnosis	50
Phase I (mixed dentition) treatment	5
Class I malocclusion (non extraction) treatment	10
Class II malocclusion (non extraction) treatment	10
Class I or II malocclusions (extraction) treatment	10
Class III malocclusion treatment	5
Orthognatic Surgery	3-5
Clear Aligners	3-5
Adult Patients treatment (of the total number of patients regardless of type of malocclusion)	15

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 Orthodontics. The examination of the Specialty Diploma of Membership in Orthodontics includes Applied Science in Relation to Orthodontic Practice and assessment of knowledge, clinical skills and presentation of clinical cases. The aims of the examination are to test the range of knowledge of Orthodontics at a level expected of a specialist practitioner and to test the attainment of competence in the planning and execution of orthodontic care requisite for specialist practice.

Research Methodology and 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 Orthodontics 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 Orthodontics.

During the scientific 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.

Molecular Biology

This course introduces the residents to the basic fundamentals of modern molecular biology as it relate to dentistry. Special emphasis will be placed on molecular mechanisms that relate to DNA replication and repair, transposition, microRNAs, molecular mechanisms for regulating processes in a cell, the application of molecular biology as a tool to understand embryonic development, reprogramming, cancer, stem cells, germ cells and using molecular biology as a laboratory tool will be presented. Common

chromosomal disorders, such as Down syndrome is also highlighted. At the end of this course, students should have an understanding of DNA, RNA and protein and be capable of interpreting experimental data and highly controversial issues of stem cells research and genetically modified.

Health Education and Promotion and Epidemiology

This course will emphasize on key health education and promotion policies and expert guidance and will identify the role of the oral surgeon in establishing and maintaining these policies. The course will also introduce the design and conduction of oral epidemiological surveys and studies especially those performed in relation to UAE patients.

Clinical Imaging

A series of lectures intended to expose the student to the core concepts and current information necessary for 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.

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.

Temporomandibular Disorders

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 to be able to diagnose oral parafunction and other factors in the development of dysfunction of mandibular movements and the TMJs.

Topics include: Anatomy, physiology and pathology of the Temporomandibular Joint and associated musculature, Radiographic imaging techniques, intraoral and extra-oral, their interpretation and assessment and occlusal splint designs, repositioning appliances and provisionalisation.

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 Orthodontics or epidemiology. Students must complete a research project, thesis and thesis defense 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.