

University of Benghazi

**Faculty of Dentistry
Department of Operative and Endodontic
OPERATIVE Dentistry Programs**

طب أسنان مبنى على البراهين

Master of Science Program

برنامج ماجستير في علاج تحفظي

Operative Program

Evidence-Based Dentistry

طب الأسنان المبنى على البراهين

Master of Science Program

Vision and Mission of *Postgraduate program*:

The department offers postgraduate study by course work and upon successful completion of 2 years of study the student will be awarded Masters of Sciences in Conservative Dentistry (MSc. Operative Dentistry).

Graduate students will be exposed to the scientific basis of diagnosis and treatment planning for patients with advanced operative dentistry and esthetic problems; and integrated treatment involving other dental disciplines. Additional goals are to instill in each graduate student an interest in exploring new frontiers in oral rehabilitation using contemporary materials and to recognize the need for life long learning.

Vision

To be excellent in education and research in restorative dentistry in the fields of operative dentistry and related dental materials and its application in the conservation and treatment of the human dentition.

Mission

Advanced Education Program in Operative Dentistry by establish an evidence-based integrated curriculum comprised of biomedical, professional, and clinical sciences. This will develop outstanding dental specialists through the use of advanced technology, an integrated curriculum of biomedical and professional sciences; research, community services, and excellence in the delivery of patient care.

Goal

- Scientifically knowledgeable;
- Technically competent;
- Biologically oriented;
- Respect for human dignity;
- Socially sensitive;
- Ethically responsible;
- Professionally accountable;
- Effective team member;
- Life-long learner; and always
- Uphold principles of oneness of God

DEFINITION

Evidence-based dentistry program is the integration of best research evidence with clinical expertise and patient values.'

The American Dental Association (ADA) has defined “evidence-based dentistry” as an approach to oral health care that requires the judicious integration of:systematic assessments of clinically relevant scientific evidence, relating to the patients oral and medical condition

and history, together with the dentists clinical expertise and the patients treatment needs and preferences

OBJECTIVES

The objectives of this program are to prepare the student for teaching, for research, and for the practice of advanced clinical restorative dentistry. The program is designed to enhance both the breadth and depth of fundamental restorative principles and to correlate the oral sciences with clinical practice based on research evidence.

Its major objective is the development of teachers and practitioners having broad knowledge and capability in the diagnosis treatment planning, and in the rendering of comprehensive restorative care.

In addition, the graduate student will gain experience in teaching restorative dentistry to undergraduate students in the laboratory and during the clinical sessions. The student will also have the ability to develop a research protocol in a restorative dentistry related problem, conduct the research and report the findings as well as present them in national and international dental conferences.

This course is aimed at ensuring that students attain a high standard of clinical competence in operative and esthetic dentistry. At the end of this course, students should be able to:

1. Manage assigned cases requiring comprehensive restorative work, as approved by the Course Director.
2. Present the finished cases applying evidence base dentistry approach.
3. Finish a number of cases requiring comprehensive restorative management, as shown in the minimum requirement chart. The cases managed should include the following procedures:
 - a. Amalgam/amalgam build-up
 - b. Direct composite resin restorations: different classes, composite veneers
 - c. Bleaching
 - d. Indirect composite resin restorations
 - e. Glass-ionomer cement restorations: different types
 - f. Cast gold restorations: single full crowns, inlays onlays
 - g. Preventive resin restorations, fissure sealants
 - h. Porcelain fused to metal restorations, porcelain veneers, porcelain onlays
 - i. Implants (single implant)
4. Each student must acquire the following:
 - a. Digital camera for intra-oral
 - b. Personal computer (preferably a Laptop) and a printer to write his/her case presentation, seminar, research papers
 - c. Students will be provided of the following:
 - Cubicle
 - Dental Assistants
 - Instruments
 - Materials

Criteria for Selection

The admission policy is designed to identify those candidates with standards of integrity, motivation and resourcefulness as well as basic knowledge required for completing the graduate program.

Applicants must hold the Bachelor's degree of Dental Surgery (BDS) with a minimum grade Good

Applicants must have spent the mandatory internship year, followed by at least two years in clinical dentistry.

Program Duration

The Graduate Program in Operative Dentistry encompasses a minimum duration of two years of full-time study.

Upon successful completion of the program, the candidate will be awarded a Master's degree in Dentistry and a Certificate of Clinical Competency in Operative Dentistry.

Legal issues

Vaccination against infectious diseases

Prior to the commencement of your clinical placement you are required to comply with the College of dentistry, Arab Medical University Clinical Director Circular: Occupational Screening and Vaccination Against Infectious Diseases. Participation in screening and vaccination according to the Circular is a prerequisite for students for clinical placement in the facilities of Dental Clinic at Faculty of Dentistry . Failure to comply with the requirements of the Circular may jeopardize completion of your studies. The Circular requires that you consult your local doctor to obtain proof of your immunity status and/or be vaccinated against diphtheria, tetanus, measles, mumps, rubella, chicken pox, hepatitis B, influenza and tuberculosis. For further information, contact your Clinical Director at Faculty of Dentistry AMU.

RESTORATIVE DENTISTRY
YEARLY TIME TABLE

| COURSE NO. | COURSE TITLE | Duration |
|-------------------|--|-------------------|
| YEAR I | | |
| 1 | Biostatistics in Dentistry | one academic year |
| 2 | Advanced Oral Biology | one academic year |
| 3 | Advanced Oral & Maxillofacial Pathology | one academic year |
| 4 | Applied Head and Neck Anatomy | one academic year |
| 5 | Advanced Oral & Maxillofacial Radiology | one academic year |
| 6 | Pulp Biology | 18 weeks) |
| 7 | Restorative Dentistry Seminar | one academic year |
| 8 | Current Literature Review in Restorative Dentistry | one academic year |
| 9 | Cariology | 18 weeks |
| 10 | Advanced Clinical Restorative Dentistry | one academic year |
| 11 | Advanced Restorative Dentistry | one academic year |
| 12 | - Laboratory Techniques | 18 weeks |
| 13 | Advanced Treatment Planning/Case Presentation | one academic year |
| ** | | |
| SUMMER I | | |
| * | Advanced Clinical Restorative Dentistry | 6 weeks |
| YEAR 2 | | |
| 1 | Occlusion | 18 ws ** |
| 2 | Dental Biomaterials | 18ws ** |
| 3 | Research Methods & Scientific Writing | 18ws ** |
| 4 | Clinical Dental Therapeutics | 18ws** |
| 5 | Occlusion (Practical) | 18ws ** |
| 6 | Education Methods | 18ws ** |
| 7 | Color Science and Restorative Dentistry Materials | one year |
| 8 | Current Literature Review in Restorative Dentistry | one year) |
| 9 | Implantology | 18 ws ** |
| 10 | *Advanced Clinical Restorative Dentistry | one year |
| 11 | *Advanced Treatment Planning/Case Presentation | one year) |

* Pass/ Fail Specialty Course

** half Year

SUMMER II

*Advanced Clinical Restorative Dentistry
Research / Thesis

6 weeks

YEAR 3

*Advanced Clinical Restorative Dentistry
*Teaching Practice
Research / Thesis

(one year)
18 ws **
one year

COURSE DESCRIPTION

Occlusion

1 (1,0)**

The design of this course meets the requirements of graduate students in Prosthodontics, Restorative Dentistry and Orthodontics in particular and other students in general.

The course provides the background for the static and dynamic aspects of occlusion and its importance in clinical dentistry. Topics on stomatognathic physiology and craniomandibular dysfunctions are adequately covered. Engineering principles of mandibular motion to explain the articulator design principles of occlusion in natural and restored dentitions will be reviewed and presented, as necessary, in laboratory demonstrations.

Dental Biomaterials

3 (3,0)**

This course provides the graduate student with the knowledge to comprehend fundamentals of material science as it applies to dental practice. Current literature, controversies and research in dental biomaterials will be comprehensively covered. The design of the course is primarily for graduate students in restorative dentistry and prosthodontics.

Pulp Biology

2 (2,0)

The course is offered during the first academic year. During its first half, the course will focus on the normal pulp tissue from the histological, physiological and biomechanical points of view. During the second half of the year the course will concentrate on the aetiology and pathogenesis of pulpo-periapical diseases.

Advanced Restorative Dentistry Seminar

4 (4,0)

These courses are intended to provide students with in-depth knowledge of the various aspects of restorative dentistry. Selected books and classical journal articles in operative dentistry and fixed prosthodontics are reviewed.

Current Literature Review in Restorative Dentistry

4 (4,0)

The aim of these courses is to ensure that students are abreast with the current literature in restorative dentistry and that they appreciate the impact which this has on the practice of restorative dentistry as well as future research. Students are expected to read published articles very critically.

Cariology

1 (1,0)**

This course is designed to give students a strong background in cariology. The basic scientific and clinical aspects of dental caries are highlighted.

Advanced Clinical Restorative Dentistry

11 (0,11)

These courses are aimed at ensuring that students attain a high standard of clinical competence in restorative dentistry. Comprehensive patient management and the interrelationships between restorative dentistry and other dental and medical specialties are emphasized.

Advanced Restorative Dentistry Laboratory Techniques

3 (0,3)**

The aim of this laboratory course is to make the students highly skilled in the various techniques followed in operative dentistry and fixed prosthodontics.

Advanced Treatment Planning/Case Presentation

3 (3,0)

These courses are intended to inculcate in the students the habit of considering all clinical parameters in the formulation of patient treatment plans. Cases managed by the students in the clinic are presented for discussion.

Color Science and Restorative Dentistry Materials

2 (2,0)

This course is to enable students acquire the knowledge, skill and attitude necessary for the fabrication of crowns and fixed partial dentures. At the end of the course, student should, in addition, appreciate the biological, mechanical and aesthetic aspects of fixed prosthodontics.

Occlusion (Practical)

1 (1,0)**

This course provides the laboratory background for the static and dynamic aspects of occlusion and its importance to restorations. Engineering principles of mandibular motion to explain the articulator design principles of occlusion in both natural and restored dentition will

be reviewed and presented in the laboratory exercises. The course is designed to meet the need of graduate students in restorative dentistry, prosthodontics and orthodontics in particular and any other students in general.

Implantology

1 (1,0)**

This course is designed to introduce students to the principles and practice of dental implantology. The scientific basis for osteointegration as well as the clinical applications and techniques will be emphasized. Both surgical and prosthodontic aspects will be covered

Teaching Practice

1 (0,1)**

This course provides students an opportunity to participate in the teaching of operative dentistry, thus putting into practice the basic concepts in educational methods.

Advanced Clinical Restorative Dentistry

Comprehensive patient management and treating patients according to evidence base research

Minimum Clinical Requirements

| Restoration | No. |
|---------------------------------|------------------------|
| Class II amalgams | 20 |
| Amalgam build ups | 10 |
| Anterior composites | 20 |
| Posterior composites | 20 |
| Glass ionomers (RMGIC) | 10 |
| Pit and fissure sealants | 5 |
| GI/composite laminates | 5 |
| Preventive resin restorations | 5 |
| Composite veneers | 5 direct |
| Esthetic post and cores | 5 custom, 5 prefab |
| Ceramic veneers | 5 |
| Porcelain onlays | 3 |
| Gold onlays | 3 |
| Implant | 1 single units |
| PFM /All - ceramic crowns | 5 PFM, 5 All - ceramic |
| Full mouth rehabilitation cases | 1 |

Master of Science Program Operative Dentistry

Syllabus: Oral Biology

Field of education: Oral Biology for Operative Dentistry

Course content

The course deals with the oral cavity as a biological entity as well as a unique organ in the body and the aim is to provide up-to-date knowledge of the formation of the oral structures, oral tissue reactions in health and disease, as well as facilitating the understanding of healing and regenerative procedures, all based on current scientific knowledge.

With a focus on cellular functions, molecular biology and morphology, the course covers oral developmental biology including the formation of teeth and bone and facial growth and development; bone and connective tissue biology; salivary gland function and the composition and physiology of saliva; as well as some introductory information on related matters of interest.

1. Connective tissue biology
2. Collagen and proteoglycans
3. Cell and matrix interactions
4. Growth, growth factors and development
5. Bone structure and metabolism
6. Human genetics - terminology
7. Human genetics - molecular mechanisms
8. Embryonic development
9. Craniofacial development
10. Early tooth development, ectodermal-mesenchymal interactions
11. Dentinogenesis, amelogenesis and biomineralisation
12. Development of the periodontal ligament
13. Tooth eruption
14. Composition and physiology of the saliva and the salivary glands

Learning outcomes

On completion of the course, the participant will be competent to apply knowledge of major biological concepts and awareness of how these are connected within various areas of oral biology.

The participant will also be able to relate their understanding of structures, functions, chemical composition, development and metabolic pathways of oral tissue to clinical dentistry.

Required reading

1. A. Nanci: Ten Cate's Oral Histology. Development, Structure, and Function. 6th edition. Mosby, 2003.

Assessment

Course assessment will be conducted as an oral or written examination. A written examination will comprise short-answer questions.

Grading scale

The grades are Pass or Fail. 60% Pass grades

Course evaluation

There will be a written and/or verbal course evaluation following the examination. The result of the evaluation will be communicated to the students and will serve as a guide for planning of future courses.

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Syllabus: Oral and Maxillofacial Radiology

Field of education: Oral and maxillofacial radiology for Operative Dentistry Program

Position in the educational system

This course is part of the continuing education program in Operative dentistry. The course may be given as a single educational activity or as part of the more comprehensive continuing educational program.

Course content

This course will provide training in radiation physics, radiation biology, radiation safety and hygiene, basic biological sciences, imaging sciences and interpretation of conventional and digital images, CT, MRI and allied imaging modalities. More specifically, the following subjects will be addressed:

1. Quality assurance: X-ray-machines, films, processing and digital
2. Radiation biology, doses and protection
3. Panoramic, lateral cephalometric
4. Intraoral radiography
5. Digital radiography and image processing
6. Tomographic imaging
7. Magnetic resonance imaging
8. Radiological object localization
9. Fluoroscopy and examinations with contrast agents
10. Paranasal sinuses
11. TMJ
12. Preoperative implant examinations
13. Postoperative implant examinations
14. Analysis of images of the posterior part of the upper jaw
15. The process of radiography
16. Case presentations and discussion

Learning outcomes

On completion of the course, the course participant will be familiar with:

- quality assurance and radiation biology, doses and protection
- intraoral, panoramic and cephalometric radiography
- interpretation and analysis of advanced modality images such as magnetic resonance, medical and computed tomography
- pre and postoperative implant examinations

Required reading

1. Oral Radiology-principles and interpretation. White S.C. & Pharoah M.J. The C V Mosby Company, St Louis, 2004.
2. Radiography in Oral Endosseous Prosthetics. Gröndahl K., Ekestubbe A. & Gröndahl H-G. Nobel Biocare AB. 1996.
3. Papers, being distributed during the course.

Assessment

Course assessment will be conducted as an oral or written examination. A written examination will comprise short-answer questions.

Grading scale

The grades are Pass or Fail. 60% Pass grades

Syllabus: Oral Pathology

Field of education: Oral pathology

Responsible department:

Course content

The aim of the course in Oral pathology is to give a thorough knowledge about common diseases of the oral mucosa and adjacent tissues and good acquaintance with several more uncommon diseases. The education is mainly focused on etiology and pathogenesis and great importance is put on creating understanding of the connection between clinical/radiological findings and histopathological appearance.

Content: Histological techniques, reactive lesions of the oral mucosa, benign soft tissue tumours, dermatologic diseases including lichenoid reactions, pigmented lesions of the oral mucosa, viral, bacterial and fungal infections, orofacial granulomatosis, precancerous lesions, malignant tumours of the oral mucosa, cysts, odontogenic tumours, benign and malignant bone tumours, tumour-like lesions of the jaw bone, salivary gland tumours. The course is clinically orientated and each headline is presented and exemplified by authentic patient cases.

Learning outcomes

On completion of the course, the course participant will be familiar with

1. The connection between the clinical and/or radiologic characteristics and the histopathologic picture of common diseases of the oral mucosa, the jaw bones and the intraoral salivary glands and furthermore also of less common diseases of special interest as malignant tumors are included.
2. The etiology, pathogenesis, treatment and prognosis of the disease.
3. The use of different, diagnostic, laboratory, staining methods as e.g. immunohistochemistry.

Required reading

1. Regezi, Sciubba and Jordan: Oral Pathology. Clinical Pathologic correlations. Saunders. 5 ed. 2007.

Assessment

Course assessment will be conducted as an oral or written examination. A written examination will comprise short-answer questions.

Grading scale

The grades are Pass or Fail. Out of 100 60% is Pass grade

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Cariology

Cariology covers both the prevention and restorative dentistry. It also includes handling of dental erosion and other nearby related problems. The aim is to give the course attendants increased knowledge about the diagnosis, risk assessment and prevention in relation to both dental caries and dental erosion in order to improve the management of the patient in the clinic.

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Syllabus: Cariology

Field of education: Cariology

Course content

The course will focus on etiology, epidemiology, risk assessment, saliva, dry mouth, microbiology, diet and prevention. The course will describe both the caries disease and dental erosions. Emphasis will be placed on the connection between general health and these two conditions on the hard tissue. The course involves a combination of lectures, demonstrations, seminars and case discussions. Upon completion of the course, the course participants are expected to be familiar with the following course content:

1. Epidemiology and etiology
2. Risk patients and correct disease history taking
3. Clinical and radiographic assessment of symptoms of disease
4. Microflora, saliva sampling and diet history
5. Caries risk assessment with Cariogram
6. Prevention strategies
7. Use of fluoride both at home and in the clinic
8. Dietary advice and use of sugar substitutes
9. Non-invasive dental treatment, including Carisolv
10. The concept of minimal invasive dentistry

Learning outcomes

On completion of the course, the course participant will be familiar with:

1. Communication with patients to facilitate gathering of subjective clinical data
2. Complete medical history taking and clinical assessment to understand the role between dietary habits and dental caries and erosion
3. Modern methods for diagnosis
4. Determination of the use of salivary test for risk assessment.
5. Use of modern methods for prevention of caries and erosion
6. Identification of risk patients and the use of pedagogic models
7. Alternative techniques for caries removal

Required reading

1. Fejerskov, Kidd, Nyvad, Baelum, eds. "Dental Caries. The disease and its clinical management". Blackwell Munksgaard, UK (Second edition) 2008.
2. Scientific articles related to the specific areas.

Assessment

Course assessment will be conducted as an oral or written examination. A written examination will comprise short-answer questions.

Grading scale

The grades are Pass or Fail. Out of 100 60% is Pass grade

Course evaluation

The participants will be asked to fill in a written course evaluation following the examination. The results of the evaluation will be communicated to the students and will function as a guide for the development of the course.

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BOOK REVIEW

Topic Content

- 1. INTRODUCTION TO DENTISTRY,**
- 2. CLINICAL SIGNIFICANCE OF DENTAL ANATOMY, HISTOLOGY, PHYSIOLOGY AND OCCLUSION**
- 3. FUNDAMENTAL CONCEPTS OF ENAMEL AND DENTIN ADHESION**
- 4. FUNDAMENTALS IN TOOTH PREPARATION**
- 5. INSTRUMENTS AND EQUIPMENT FOR TOOTH PREPARATION**
- 6. INFECTION CONTROL**
- 7. PRELIMINARY CONSIDERATIONS FOR OPERATIVE DENTISTRY**
- 8. INTRODUCTION TO COMPOSITE RESTORATIONS**
- 9. CLASSES III, IV, AND V DIRECT COMPOSITE AND OTHER TOOTH COLORED RESTORATIONS**
- 10. CLASSES I, II, AND VI DIRECT COMPOSITE AND OTHER TOOTH-COLORED RESTORATIONS**
- 11. CLASS I AND II INDIRECT TOOTH-COLORED RESTORATIONS**
- 12. ADDITIONAL CONSERVATIVE ESTHETIC PROCEDURES**
- 13. INTRODUCTION TO AMALGAM RESTORATIONS,**
- 14. CLASSES I, II, AND VI AMALGAM RESTORATIONS**
- 15. CLASSES III AND V AMALGAM RESTORATIONS**
- 16. COMPLEX AMALGAM RESTORATIONS**
- 17. CLASS II CAST METAL RESTORATIONS**
- 18. DIRECT GOLD RESTORATIONS**
- 19. FAILURE OF VARIOUS RESTORATIONS**