UNIVERSITY of BENGHAZI .
Faculty of Dentistry

Postgradute Program

MSc in

ORAL BIOLOGY

2010

Study program for MSc in Oral Biology

University of Benghazi .

Faculty of Dentistry

Study program for MSc in Oral Embryology Oral Histology, and Dental anatomy (part II)

Academic Year 2009-2010

foreword

In the First year program of the this course, the student will study basic medical and dental subjects totaling (120 hours). These include general physiology, Histology, anatomy, microbiology, oral pathology and the basics of oral histology. Beside that a course of medical statistics and epidemiology.

The second year course will include comprehensive course of dental anatomy , oral histology, embryology physiology. Practical training in dental morphology and histo-techniques will be included. Other academic activity are included such as seminars and journal club which help the student to become more familiar with the advanced literature in their new field of study. In addition, these journal clubs help improve the students' skills of understanding and debating current topics of active interest in their field.

Dr M Ingafou

First year program

First year of the program is composed one full academic year. Time tables and venues for lecture are to be announced during the course. It is made up of a total (130 hours). The subjects are:

1- *Basic medical and dental sciences* *(100 hours)*
2- *Medical statistics and basics of epidemiology* *(30 hours).*

TABLE 1: LECTURES PROGRAM OF "BASIC MEDICAL SCIENCES"

Subject	Lecture	Time in hours
Anatomy	Outlook of Body structure, systems, organs and tissues.	2
	The skull and facial bones and cranial nerves	1
	Systemic anatomy of the head and neck	1
	Anatomy of the oral region: oral mucosa, dentition, nerve supply, blood supply, muscles of mastication and lymphatics	2
	Developmental anatomy	1
Microbiology	General microbiology	2
	Streptococci, staphylococci and micrococci. Lactobacillus,	1

	coranybacteria and actinomycetes	
	Neisseriacae, vionella nd capnophaga Enterobacteria Vibrios and campylobacters	1
	Fusobacteria and spirochetes Mycobacteria and Legionella Chlamydiae rickettesia and mycoplasma Viruses and Fungi	1
Histology	The subjects will be decided by the relevant department	
Oral Radiology	The subjects will be decided by the relevant department	
Physiology	The subjects will be decided by the relevant department	
Oral Pathology	The subjects will be decided by the relevant department	
Oral Histology	The subjects will be decided by the relevant department	
Total		**100**

NB. the number of lectures is liable to changes according to the arrangements with other departments in the university

TABLE 2: DETAILED LECTURING PROGRAM OF THE SUBJECT "MEDICAL STATISTICS AND BASICS OF EPIDEMIOLOGY " ***(30 HOURS)***

1.	Basics of statistics	1
2.	Frequencies, distribution and histograms	2
3.	Means, standard deviations and standard errors	1
4.	The normal distribution	1
5.	Confidence interval	1
6.	Significance tests for the mean	1
7.	Comparison of two means	1
8.	Comparison of several means and ANOVA	1
9.	Correlation and linear regression	1
10.	Multiple regression	1
11.	Probability	1
12.	The chi square test and contingency tables	1
13.	Measures of mortality and morbidity	1
14.	Survival analysis	1
15.	The Poisson distribution	1
16.	Non parametric tests	2
17.	Design strategies	1
18.	Sampling methods and screening	1

19.	Measures of disease frequency and association	1
20.	Descriptive studies	2
21.	Case control studies	1
22.	Cohort studies	2
23.	Clinical trials and intervention studies	1
24.	The role of chance, bias, and confounding	1
25.	The use of computers	2
	Total	30

Final exam of the first year

The student will set a comprehensive exam at the end the year including all the studied subjects. The failure in the second chance prompts the termination of the post-graduate career of the student.

Second year study program

The course of Oral Biology for the year 2009-2010 is coming in the a new layout to cover almost all the aspects of oral biology with great emphasis on undertaking more practical training , group discussions, and seminars.

It broadly covers four divisions in oral biology namely “oral embryology, dental anatomy, dental physiology, oral histology”. These are supplemented with advanced histotechniques and molecular biology. The requirements for the course are detailed clearly so the student will not be totally dependent on the tutors but the habits of self learning and team work policy are encouraged. The process of evaluation of the student’s progress will involve the assessment of the knowledge gained during the course, the utilization of internet resources, and the student’s ability to integrate such information in his practical life.

General Oral anatomy and Oral Histology

Objectives of the course

This course involves briefing the student about the scientific methodology employed in general and oral histology.

Lectures program

Introduction

Histotechnique in oral histology	1 hour
Biopsy of hard and soft tissue	2 hour

Light microscope	1 hour
Electron microscopy (interpretation and techniques)	6 hours
- The Scanning Electron Microscope (SEM).	
- The Transmission Electron Microscope (TEM)	
Total number of hours Lectures : 10	

Embryology

Objectives of the course

At the end of the course the student can easily diagnose the gross anomalies of the face, palate and to differentiate them from the causes of acquired disease like syphilis as example.

Lectures program

A- Introduction to orofacial growth and development	2 hours
B. Embryology	
1. Development of three germ layers.	
2. Neural crest and its derivative	2 hours
3. Branchial arches and their contribution to the development of oro facial region	1 hour
4. Development of pituitary and thyroid glands.	1 hour
5. Development of face	2 hours
6. Development of palate	1 hour
7. Development of the tongue and its anomalies	2 hours
8. Development of mandible and maxilla	1 hour
9. Teratogenic and congenital defects (congenital & genetic)	1 hour
C. Fibroblasts and their products extracellular matrix	2 hours
D. Epithelio-mesenchymal interaction	2 hours
E. Bone (types)	2 hours
F. Development of Teeth	2 hours
G. Agents affecting tooth development	2 hours
Eruption and Shedding	2 hours
H. Eruption and Shedding	2 hours
I. Child hood facial growth and development	3 hours
Total number of hours Lectures : 30	

Oral Histology

Course Objectives

Oral Histology and embryology are the sciences that are most relevant to the understanding of clinical oral manifestation. Therefore the curriculum of oral histology has been designed to encompass histological and embryological information with specific consideration of clinical connections. In addition to that the purpose of the curriculum is to familiarize dental professional with the parts of oral histology and embryology in order to acquire an understanding of how cells, tissues and organs develop and function.

The prerequisite for the material presented in this course is based upon having a basic knowledge of general histology, physiology, and biochemistry of cells, tissue and organs. In each subject of this curriculum special consideration has been put to describe the changing involving the oral tissues that are associated with the aging process. That will enable the student to discuss the normal aging process and how this may be related to disease process in oral tissue. Duration: Oral Histology will be taught for one academic year (54 hours for lectures and 56 hours for practical sessions).

Lectures program

A. Enamel	4 hours
B. Dentine	4 hours
C. Pulp	3 hours
D. Cementum	3 hours
E. Peridontal ligament	4 hours
F. Alveolar bone	3 hours
G. Oral mucosa	8 hours
H. Salivary gland	
Physiology	
EM	2hours
I. TMJ	2 hours
J. Maxillary sinus	2 hours
K. Surface structures of tooth	1 hour
Total number of hours Lectures : 36	

Oral Physiology

I. Relation of structure and function in the oral cavity	1 hour
1. Neural control of mastication	1 hour
2. Swallowing & Deglutition	2 hour
3. Speech	1 hour
4. Saliva (Functions & composition)	1 hour
5. 1 hour	
6. Pain	1 hour
7. Taste	1 hour
II- TMJ functions	1 hour
III. Defensive mechanisms of oral cavity	1 hour
IV. Repair and regeneration of dental tissue	1 hour
Total number of hours Lectures : 11	

Dental Anatomy

Objectives of the course:

1) Recognize the normal anatomic, physiologic, and biomechanical relationships of the dental structures for diagnosis and treatment of oral pathology as it involves the dentition.
2) Recognize the clinical significance and define the shape and contour relationships of the normal dentition,
3) Identify, describe, and be able to reproduce in drawings and wax, the morphology of permanent teeth from both an external perspective and a cross-sectional view,
4) Discuss the relationships between teeth and the investing and supporting structures
5) Correctly name the individual parts of the permanent teeth and their supporting structures,
6) Correctly identify natural teeth with and without anatomical variations

Lectures program

1.	Physiology of tooth form	2 hours
2.	Introduction and terminology of dental and oral structures	1 hours
3.	Geometric outline of tooth surfaces and aspects	2 hours
4.	Division to thirds	1 hours
5.	Line and point angles	1 hours
6.	Types of dentitions	1 hours
7.	Teeth notation systems	1 hours
8.	Crown landmarks	2 hours
9.	Chronology and eruption	4 hours
10.	Morphology of teeth:	
11.	Maxillary incisors	1 hours
12.	Mandibular incisors	1 hours
13.	Maxillary and mandibular canines	1hours
14.	Maxillary premolars	1 hours
15.	Mandibular premolars	1 hours
16.	Maxillary molars	2 hours
17.	Mandibular molars	2 hours
18.	Pulp cavity of permanent teeth	1 hours
19.	Geometric concept of crown outline	1 hours
20.	Primary teeth	
21.	Sequence of eruption and dental age	2 hours
22.	Physiological crown tooth form and it's effect on periodontium	2 hours
23.	Occlusion	
24.	Development of occlusion	2 hours
25.	Dental arches forms	2 hours

26.	Centric occlusion and relation	2 hours
27.	Arches relation and occlusal contact in centric occlusion	2 hours
28.	Curvatures of dental arches	1 hours
29.	Teeth overlaps (overbite and overjet)	1 hours
30.	Mandibular movement	2 hours
31.	Masticatory cycle	2 hours

32. Total number of hours Lectures : 44

Advanced Histology

1- Histo techniques.	2 hours
2- Tissue engineering.	6 hours
3- Molecular biology	6 hours

Total number of hours Lectures : 14

Total Lectures time in all divisions: 100 hours

Seminars

1. Amelogenesis
2. Dentinogenesis
3. Teeth angulations
4. Apoptosis in dental and paradental tissues
5. Bone biology
6. fibroblast

Practical Training

I- Requirements of Dental anatomy practical

Curving of premolars and molars on wax

II- Requirements of histo-techniques

1- Ground sections of enamel, dentin and cementum	5 slides
2- development of teeth (rat teeth)	5 slides
3- Oral mucosa and gingiva	5 slides
4- Decalcifies section in tooth and jaw	5 slides
5- Salivary glands	5 slides

Journal club subjects

1- Cell signals
2- Protein synthesis

The Thesis

The student can start the work with the subject of study and collection of the preliminary information, tabulation etc. from the start of the second year. The selection of study subject and study protocol will be done according the procedures undertaken in the dental faculty. The protocol of study must be officially submitted to the course coordinator and studied by the department and the faculty scientific committee for post-graduate studies.

It should be noticed that all the studies and researches must comply with the requirements of the quality control procedures and if necessary the approval by ethics committee. It is the responsibility of the university (or the faculty and the Oral biology department) to appoint examiners, supervisors and tutors and to set examination timetables and the distribution of marks. The main discussion of dissertation should be held in preferably restricted number of audiences, preferably the examiners alone or with few persons appointed by the university such as independent observers, quality control evaluators, or officers from the examination board.

Textbooks and further readings:

Books

1. Wheeler's Dental Anatomy Physiology and Occlusion. Major Ash and Stanley Nelson (Hardback ISBN13: 9780721693828)
2. Bhaskar, S.N. (1990)Orban's Oral Histology and embryology
3. Berkovitz, B.K.B ,Holland, G.R, Moxham, B.J (2002) :Oral Anatomy, embryology and histology, 3rd ed. , Pp: 256-268. Mosby Edinburgh
4. Nanci, A (2003): Ten Cate's Oral histology: Development, structure and function . 6th ed. , pp 299-328. Mosby
5. Avery, James K. (2000) Essentials of Oral Histology and Embryology: A Clinical Approach, 2nd ed. Mosby Publishers.

Web sites

1- http://dentistry.ouhsc.edu/oral-histology/
2- http://www.medicine.uiowa.edu/anatomy/dental/oralhist/
3- http://www.drgalil.ca/
4- http://www.thefreedictionary.com/oral%2c+of+soft+tissues+histology
5- http://www.ahns.info/clinicalresources/docs/oralcavity.php
6- http://www.unl.edu/CMRAcfem/em.htm