

In the Name of God

Section I:

Title: Oral and Maxillofacial Pathology

Degree: Master of Science in Clinical Dentistry (M.Sc.)

Introduction

Oral and Maxillofacial (OMF) Pathology is one of dentistry post graduate courses that contains knowledge of etiology and procedure of diseases, recognition and reporting microscopical changes (histopathology) in tissues in relation to different diseases. In fact this profession tries to find a logical relation between Anatomical findings and symptoms of various diseases in the mouth and surrounding tissues and in the case of successful graduation it will lead to the M.Sc. degree.

Definition

The main subjects and services provided by the graduates of the program consist of: a. diagnosis b. consulting c. research

1. Role in diagnosis: Microscopic examination of biopsies, interpretation of the findings by microscopic examination, and writing the report of the diagnosis made.
2. Role in consultation: providing professional consultation for patients and colleagues, scientific associations and health care system.
3. Role in research: proposing research projects, analyzing data, preparing the reports, writing a scientific article and publication, criticizing related articles and regarding the research ethics.

The Aim of the Course

The overall goal of this program is to train an individual at the standard international level of awareness, knowledge, attitudes and practical skills and belief and with expertise in the field to be able to provide diagnostic services. In addition they would be able to provide services with standard quality in their field besides being capable of playing an active role in advancing sciences and expanding science and research limits.

General Competencies

Effective communication with patients and health professionals, accurate microscopic examinations, proper application of para-clinical tests, familiarity with modern science and technology, accurate diagnosis, conducting research with the aim of solving existing problems, educating patients, companions and colleagues, and management and executive participation in the health team.

Professionalism and ethical expectations from graduates: It is expected that graduates:

- a) **In the area of altruism:** preferring the patient's interests to their own, observance of justice while working with different patients, considering all physical, psychological, social and belief-related aspects of patients while treating them, spending enough time in all phases of patient care, paying attention to patients' demands and discomforts, observance of the patients' bill of rights.
- b) **In the area of dutifulness and responsibility:** have enough commitment to do their tasks, answer patients' questions, provide patients and their companions with information regarding the patient's status in the most appropriate way, avoid unnecessary interferences with colleagues' work and interact with the health team members, ask patients' permission for examining and taking any diagnostic-therapeutic measures, and instructing patients properly regarding prevention, appearance of side effects, disease reoccurrence and improvement of life quality.
- c) **In the area of honor and honesty:** be truthful, honest and confident and respect patient's privacy.
- d) **In the area of respecting others:** respect patients' conventions, traditions and habits, respect patient as a human being, respect patients' time and observe order and regularity, respect patients' companions, colleagues and therapeutic team members, and have an appearance appropriate to professional prestige.
- e) **In the area of professional career:** accept critique, know their scientific limitations, ask for advice and help if needed, improve their knowledge and skills constantly, do diagnostic-therapeutic measures according to available facilities and scientific achievements, and observe the standards of completing medical record and reporting.

Specific Competencies and Skills

This program is designed in a way that the graduates will obtain at least the following capabilities:

- Histopathology practical basic based on knowledge of anatomy, histopathology, cell biology and pathology principles.
- Introduction with different aspects of histopathology.
- Obtaining specific knowledge in various diseases of the oral cavity and surrounding tissues.
- Obtaining diagnostic expertise in oral and maxillofacial diseases at the microscopic and macroscopic level.
- Understanding new and improved technologies and equipment in order to select suitable techniques for diagnosis of lesions of the mouth, jaw and face.
- Obtaining the ability to adjust the biopsy reports in the Gross and microscopic level.
- Obtaining Knowledge of protection, health and occupational safety in the laboratory.
- Obtaining management skills to manage an Oral Pathology laboratory.
- Ability to education, research and access to scientific resources.
- Gain insight on education and research general topics relating to pathology and other related sciences.
- Gain awareness and attitudes regarding professional standards and ethics and medical law.

The Terms and Conditions of Admission to the Course

Applicant's documents, including his/her DDS/BDS degree, CV, Recommendation, etc. will be reviewed by the faculty members of OMF Pathology Department. Based on the documents, the applicant will be accepted for either an interview or a three month evaluation period to be an observer in Oral and Maxillofacial Pathology Department. If he/she could successfully pass the interview/evaluation period, he/she will be accepted to continue as a M.Sc. student.

Educational Strategies, Methods and Techniques

The following educational strategies are considered in OMF Pathology postgraduate education:

Learner-centered education, learning based on problem solving, integration of basic and clinical sciences, evidence-based learning, lifelong community-oriented education, and systematic education.

The educational system of the OMF Pathology MSs program is semestrial. Course types are in theoretical, practical, theoretical-practical forms that are presented in basic, related and special science courses forms.

Student Assessment

A variety of assessment methods including theoretical exam, DOPS, OSCE, Seminar presentation, portfolio, etc, depending on the course, is implemented.

Number and Type of Credits and Tables of the Courses

The OMF Pathology MSs program is a 3 year full time program in accordance with the regulations of the Council of Dental and Specialty Educations.

Course structure

OMF Pathology post graduate courses` structure includes basic, related and special science courses:

1 . Basic courses are considered to be substructure of related and specialized sciences and the purpose is relearning, reminding and deepening the issues that some were mentioned in pre graduate dentistry course.

Basic science courses which are 789 hours (h) of post graduate program are taught in two forms:

A. Common basic science courses are taught 483 h by basic science specialists.

B. Special basic science courses are taught 306 by OMF Pathology department and related attendings` supervision.

2. Related science courses: These courses discuss the scientific relationship with other specialty fields of dentistry and teach knowledge, creativity and making correct decisions to residents so that they can participate in team work attempts to provide comprehensive care for patients by recognizing abilities, priorities, limitations and new developments in science. Related science courses are 1003 h of post graduate program which are presented in two parts: Faculty related and Hospital related.

3. Special science courses: These courses which are the main post graduate program content are taught with the goal of knowledge and science promotion and skill acquisition in OMF Pathology.

Special science courses are 1717 h of the post graduate program which will be taught by the related education department faculty members.

Total education hours of OMF Pathology M.Sc. program is 3509 h.

1: Common basic science

Code	Course	Units			Hours			Total	Prerequisite
		Theoretical	Practical	Workshop	Theoretical	Practical	Workshop		
1	Medical Education(1)	-	-	1	-	-	51	1	
2	Medical Education(2)	-	-	2	-	-	102	2	
3	Research Methodology & EBD	-	-	2	-	-	102	2	
4	Clinical Photography*	-	-	1	-	-	51	1	
5	Medical Emergency*	-	-	0.5	-	-	24	0.5	
6	Medical Regulation & Ethics	-	-	1	-	-	51	1	
7	Infection Control & Patient`s safety*	-	-	1	-	-	51	1	
8	Clinical Management & Governance*	-	-	1	-	-	51	1	
Total		-	-	9.5	-	-	483	9.5	

*These courses are elective but the resident should at least select one.

2. Special basic science courses

Code	Course	Units			Hours			Total	Prerequisites
		Theoretical	Practical	Workshop	Theoretical	Practical	Workshop		
9	Theoretical general pathology	4	-	-	68	-	-	4	
10	Theoretical head and neck anatomy	2	-	-	34	-	-	2	14 & 15
11	Basic immunology	1	-	-	17	-	-	1	
12	Theoretical oral histology	1	-	-	17	-	-	1	14&15
13	Practical oral histology	-	1	-	-	34	-	1	12
14	Theoretical general histology	1	-	-	17	-	-	1	
15	Practical general histology	-	1	-	-	34	-	1	14
16	Theoretical molecular biology	1	-	-	17	-	-	1	
17	Practical molecular biology	-	2	-	-	68	-	2	

total	10	4	-	170	136	-	14	-
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3. Faculty related courses

Code	Course	Units			Hours			Total	Prerequisites
		Theoretical	Practical	Workshop	Theoretical	Practical	Workshop		
18	Principles of personal safety in laboratory	-	-	1	-	-	51	1	
19	Theoretical oral medicine	1	-	-	17	-	-	1	
20	Practical oral medicine	-	1	-	-	34	-	1	19
21	Practical oral and maxillofacial surgery	-	1	-	-	34	-	1	
22	Theoretical oral radiology	1	-	-	17	-	-	1	
total		2	2	1	34	68	51	5	-

4. Hospital related courses

Code	Course	Units			Hours			Total	Prerequisites
		Theoretical	Practical	Workshop	Theoretical	Practical	Workshop		
23	Hospital theoretical and practical general pathology	17		-	1 semester		-	17	9,36,37
24	ENT pathology	-	1	-	-	34	-	1	
25	Dermatopathology	-	2	-	-	68	-	2	14,15
26	Dermatology	-	1	-	-	34	-	1	9
27	Clinical ENT	-	1	-	-	34	-	1	-
28	Neuropathology	-	1	-	-	34	-	1	9
29	Hematopathology	-	1	-	-	34	-	1	9,14,15
30	Hematology	-	1	-	-	34	-	1	9,14,15
total		25		-	-	850	-	25	-

5. Special science courses

Code	Course	Units			Hours			Total	Prerequisites
		Theoretical	Practical	Workshop	Theoretical	Practical	Workshop		
31	Theoretical specialized oral and maxillofacial pathology 1	3	-	-	51	-	-	3	
32	Theoretical specialized oral and maxillofacial pathology 2	2	-	-	34	-	-	2	31
33	Theoretical specialized oral and maxillofacial pathology 3	3	-	-	51	-	-	3	32
34	Theoretical specialized oral and maxillofacial pathology 4	4	-	-	68	-	-	4	33
35	Theoretical specialized oral and maxillofacial pathology 5	5	-	-	85	-	-	5	34
36	Practical specialized oral and maxillofacial	-	3	-	-	102	-	3	

	pathology 1								
37	Practical specialized oral and maxillofacial pathology 2	-	3	-	-	102	-	3	36
38	Practical specialized oral and maxillofacial pathology 3	-	3	-	-	102	-	3	37
39	Practical specialized oral and maxillofacial pathology 4	-	3	-	-	102	-	3	38
40	Literature review 1	2	-	-	34	-	-	2	4
41	Literature review 2	2	-	-	34	-	-	2	40
42	Passage report writing 1	-	2	-	-	68	-	2	
43	Passage report writing 2	-	4	-	-	136	-	4	42
44	Passage report writing 3	-	4	-	-	136	-	4	43
45	Passage report writing 4	-	4	-	-	136	-	4	44
46	Thesis 1	-	-	2	-	-	102	2	

47	Thesis 2	-	-	2	-	-	102	2	46
48	Thesis 3	-	2	-	-	68	-	2	47
49	Thesis 4	-	-	2	-	-	102	2	48
50	Thesis 5	-	-	2	-	-	102	2	49
total		21	28	8	357	952	408	57	-

Ethical issues

The graduates should,

- Observe the Patient's Bill of Rights¹ when working with the patients.
- Strictly observe Biosafety and Patient Safety Rules* concerning the patients, personnel and workplace.
- Observe the Rulebook for Dress Code².
- Strictly observe the Regulations of Working with the Laboratory Animals³.
- Carefully preserve resources and equipment.
- Truly respect faculty members, the staff, classmates and other students and work for creating an intimate and respectful atmosphere.
- Observe social and professional ethical considerations in criticism.

1, 2 and 3 are contained in the Enclosures.

* Biosafety and Patient Safety Rules will be set out by the Educational Departments and will be available to the students.

Section II

Unit title: Medical Education (1)

Unit code: 1

Number and type of unit: 1 workshop unit

Educational hours within the course duration: 51h

Prerequisite: none

Aims:

The aim of the Medical Education (1) and (2) units is for the residents to obtain the necessary ability to take part in the education and evaluation of theoretical, workshop, preclinical and clinical courses in their specialty field.

Subtitles

1. The role of the faculty members in the field of education
2. Principles of teaching-learning
3. Types of learning
4. Skills regarding the process of teaching
5. Characteristics and duties of faculty
6. Lesson plan
7. Educational aims
8. Principles of preparing educational contents
9. Speech
10. The text of questions and answers
11. Small group education
12. Different methods of group training
13. Roll fulfillment and simulation
14. Clinical education
15. Educational aids
16. Smart boards
17. PowerPoint preparation

Unit title: Medical Education (2)

Unit code: 2

Number and type of unit: 2 workshop units

Educational hours within the course duration: 102h

Prerequisite: none

Aims:

The aim of the Medical Education (1) and (2) units is for the residents to obtain the necessary ability to take part in the education and evaluation of theoretical, workshop, preclinical and clinical courses in their specialty field.

Subtitles

1. Specific lesson plans
2. Student evaluation and its methods
3. Multiple-choice questions
4. Descriptive questions
5. Level classification of exam questions
6. Evaluation
7. Dops design
8. OSCE exams
9. Oral exam
10. Question analysis
11. Plan evaluation
12. Course planning
13. Log book
14. Port folio
15. Perspectives based on learning ability
16. Standard patent
17. Integration in education

Unit title: Research methodology and EBD
 Number and type of unit: 2 workshop units
 Educational hours within the course duration: 102h
 Prerequisite: none

Unit code: 3

Aims:

Acquisition of knowledge and familiarity with the methods of research in the field of education and skill acquirement in order to publish the results of research.

Subtitles:

	Content	Method of learning-teaching	Duration (hours)
1	Principles of research and evidence-based dentistry and designing questions in evidence-based dentistry	Problem oriented lecture	3
2	A review of the scientific resources	Problem oriented lecture	3
3	Search engines and important and practical sites in dentistry	Workshop	6
4	Familiarity with resource management software for all types of studies in dentistry	Practical	9
5	Types of studies in dentistry	Interactive lectures	3
6	Descriptive studies	Lecture, discussion in small groups	3
7	Indicators of health and disease measurement	Problem oriented lecture	3
8	Indicators of measuring correlation	Problem oriented lecture	3
9	Principles of analytical-observational studies	Lecture	3
10	Interventional studies	Problem oriented lecture	3
11	Review studies	Lecture	3
12	Evaluation of diagnostic tests	Problem oriented lecture	3

13	Errors and causation	Problem oriented lecture	3
14	Principles of descriptive statistics	Problem oriented lecture	6
15	Estimation and hypothesis testing	Problem oriented lecture	6
16	Critical evaluation	Lecture	3
17	Prioritization and topic selection and proposal	Lecture, discussion in small groups	3
18	Objectives, hypothesis and variables and research management and ethics	Lecture, discussion in small groups	3
19	Methods of data collection and questionnaires	Lecture, discussion in small groups	3
20	Sampling and sample size calculation	Lecture, discussion in small groups	3
21	Research Errors – Bias	Problem oriented lecture	3
22	Interactions and research errors – confounding	Problem oriented lecture	3
23	Special considerations in cohort studies and case-control studies	Lecture, discussion in small groups	3
24	Special considerations in interventional studies	Lecture, discussion in small groups	3
25	Special considerations in evaluating diagnostic tests	Lecture, discussion in small groups	3
26	Qualitative studies	Problem oriented lecture	3
27	Familiarity with statistical tests used in dentistry	Problem oriented lecture	6

Unit title: Clinical photography *

Unit code: 4

Number and type of unit: 1 workshop unit

Educational hours within the course duration: 51h

Prerequisite: none

Aims:

Familiarity with types of cameras and taking specialized photographs from dental patients and storing them.

Minimum skills expected:

The resident must be continuously proficient regarding the steps needed in emergencies and must apply them on standardized patient. For this purpose, a flowchart of emergency treatments must be displayed by residents.

Subtitles

	Content	Method of learning-teaching	Duration (hours)
1	Familiarity with types of standard and proper cameras and learning how to use cameras and a fulcrum	Workshop	1
2	Familiarity with a types of retractors, mirrors and how to use them	Workshop	1
3	Portrait and profile photography	Workshop	1
4	Intra-oral and extra-oral photography	Workshop	1
5	Taking photographs from radiographs and casts	Workshop	1
6	Familiarity with 3 dimensional pictures and how to prepare them	Workshop	1
7	Familiarity with the resolution of possible problems established during the workshop and group photography	Workshop	1
8	Executing standard photographs and their	Workshop	3

	analysis		
9	Taking 3 dimensional graphs and analyzing them	Workshop	3
10	Superimposing photographs and radiographs	Workshop	1
11	Familiarity with storage of images (two-dimensional and three-dimensional)	Workshop	1
12	Familiarity with software related to photography and editing pictures	Workshop	1
13	Power point slide presentation	Workshop	1

Main reference:

Mastering Digital Dental Photography, 2006 Ed.

Unit title: Medical emergencies

Unit code: 5

Number and type of unit: 0.5 workshop unit

Educational hours within the course duration: 24h

Prerequisite: none

Aims:

Skill acquisition in the diagnosis and treatment of common medical emergencies in dental clinics in Skill Labs and learning on training models

Subtitles

1. How to obtain medical history and its role in the prevention and diagnosis of emergencies and examinations
2. Equipment and facilities in emergencies
3. Common emergencies and their management, including hypersensitivity reactions, respiratory problems and changes in the level of consciousness
4. CPR
5. Circulation – Airway- Breathing techniques
6. Application of drugs in medical emergencies
7. Practical skills in medical emergencies (injection, serum therapy ...)
8. Familiarity with emergency materials and facilities in the department and shared facilities in the school

☒ It is recommended that sessions be held as 3h workshop sessions and this course be taught by Oral and Maxillofacial Surgeons (which can be organized in collaboration with the Department of Emergency Medicine)

Unit title: Medical Regulation and Ethics

Unit code: 6

Number and type of unit: 1 workshop unit

Educational hours within the course duration: 51h

Prerequisite: none

Aims:

Empowering residents in morality theories, their professional obligations towards the society and the legal rights of patients and colleagues. During this course the recognition skills of residents regarding ethical issues and their analysis is strengthened so that they can make the best decisions considering ethical and legal regulations in educational and research environments as faculty members and researchers and during service delivery as a therapist.

Subtitles

	Content	Method of learning-teaching	Duration (hours)
1	General and practical ethics and professionalism	Workshop	1
2	Altruism, respect, job sublimity and justice	Workshop	1
3	Honor and honesty, conscientiousness	Workshop	1
4	History and moral philosophy, and the four principles of bioethics	Workshop	1
5	Ideologies and moral theories	Workshop	1
6	Diagnostic tools in ethical decision making	Workshop	1
7	Informed consent, acquittal and determination of substitute decision-making capacity	Workshop	1
8	Confidentiality and speaking the truth	Workshop	1
9	The relationship of dentist	Workshop	1

	with other members of the health		
10	Principles of office management, medical documentation, communication of dentists with patients	Workshop	1
11	Familiarity with the medical council, dental regulations, responsibility, medical malpractice and errors, atonement	Workshop	1
12	Understanding the implications of certification, and the rules of court proceedings	Workshop	1
13	Conflict of interest	Workshop	1
14	Ethics in educational environments	Workshop	1
15	Islamic jurisprudence traditions and its relation to ethics in dentistry	Workshop	1
16	Challenges in medical ethics	Workshop	1
17	Integrated case presentation	Case presentation and literature review	1

Unit title: Infection Control & Patient's Safety

Unit code: 7

Number and type of unit: 1 workshop unit

Educational hours within the course duration: 51h

Prerequisite: none

Aims:

For residents to understand and perform methods and skills of patient safety in dental clinics and hospitals.

Subtitles

1. Patient safety
2. The importance of human factors in patient safety.
3. Understanding complex and effective systems in patient care and safety
4. Establishment and use of effective teams
5. Lessons from past mistakes to avoid future risks
6. Recognition and management of health risks
7. Ways to improve quality in order to improve safety
8. Increasing communications between patients, staff, and supervisors
9. Care, prevention and infection control
10. Immunity and safety in infectious diseases
11. Increase and improvement of drug safety
12. Microbiology of common infectious diseases in dentistry and their transmission
13. * Participation in educational departments and implementing given trainings

In teamwork each resident discusses related issues.

*This section is evaluated by faculty members in 5 integrated sessions during the resident's clinical interventions in the department while implementing given trainings. Additional clinical training is also presented. It is expected that the trained issues become institutionalized in residents and in future semesters faculty members monitor it and affect it in their evaluation.

Reference:

Patient Safety Curriculum Guide, Multi-professional Edition, World Health Organization Publications, available in the following website:

http://whqlibdoc.who.int/publications/2011/9789241501958_eng.pdf

Unit title: Clinical Management and Governance

Unit code: 8

Number and type of unit: 1 workshop unit

Educational hours within the course duration: 51h

Prerequisite: none

Aims:

Understanding the models and tools of management of service quality, needs of service excellence, patient safety, management and evaluation exert, believing the need to improve the quality of oral health services through the establishment of models and tools for quality management including models of clinical service governance.

Minimum practical skills expected:

It is expected that in the end of this course residents demonstrate management of clinical services while providing oral health care and in higher semesters demonstrate it automatically.

Subtitles

	Content	Method of learning-teaching	Duration (hours)
1	Quality and methods for its improvement	Workshop	1
2	Management of the quality of oral health care	Workshop	1
3	Governance of clinical services and its prerequisites	Workshop	1
4	Models and tools of quality management	Workshop	1
5	Patient safety	Workshop	1
6	Clinical efficacy	Workshop	1
7	Concepts of clinical efficacy and evidence based dentistry and clinical audit	Workshop	1
8	Interaction with patients, concomitant and community	Workshop	1
9	Education, training and managing staff	Workshop	1
*10	Improvement of the quality of services of the specialty	Workshop	5

*11	Evaluating the substantiation and performance of clinical governance concepts in the specialty	Workshop	3
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Unit title: theoretical general pathology

Unit code: 9

Number and type of unit: 4 theoretical units

Educational hours within the course duration: 68h

Prerequisite: none

Presenter: pathology department of medical school

Aims: Familiarity with basic principles of diseases` physiopathology in general pathology

Subtitles: familiarity with general pathology:

- Cell
- Inflammation
- Tissue healing
- Hemodynamic disorders
- Genetic disorders
- Immune system disorders
- Neoplasia
- Infectious diseases
- Metabolic, environmental and nutritional disease

Educational method:

- Small group Discussion
- Programmed Lecture
- Lecture

Evaluation method: written exam

Unit title: theoretical head and neck anatomy

Unit code: 10

Number and type of unit: 2 theoretical units

Educational hours within the course duration: 34h

Prerequisite: theoretical and practical general pathology

Presenter: anatomy department

Aims: Familiarity with oral and maxillofacial structures and their development and growth, recalling and deepening the regional anatomy science and applicable anatomy of head, neck and face

Subtitles: familiarity with applicable anatomy of these structures:

- Oral cavity
- Muscles and their attachment in oral and perioral regions
- Submandibular region
- Sublingual region
- Pharyngeal region
- Nose
- Maxillary and paranasal sinuses
- Salivary glands
- TMJ
- Visceral spaces and cervical muscles and lymphatic chains
- Maxillofacial bones

Educational method:

- Text review
- Lecture
- Programmed lecture

Evaluation method: according to the presenter department

Unit title: basic immunology

Unit code: 11

Number and type of unit: 1 theoretical unit

Educational hours within the course duration: 17h

Prerequisite: none

Presenter: immunology department

Aims: Familiarity with basic principles of immunology

Subtitles:

- Familiarity with general immunology principles including: immune system components, innate and acquired immunology , Cellular and humoral immunology , Complement system, Immune response regulation, Hypersensitivity reaction, autoimmunity
- Familiarity with immunologic response of dental pulp and periapical tissues and periodontium and saliva
- Familiarity with immunology of tumors

Educational method:

- Text review
- Lecture
- Programmed lecture

Evaluation method: written exam

Unit title: theoretical oral histology

Unit code: 12

Number and type of unit: 1 theoretical unit

Educational hours within the course duration: 17h

Prerequisite: theoretical and practical general histology

Presenter: histology department

Aims: Familiarity with growth and development of fetus and histologic view of oral cavity and adjunct structures tissues

Subtitles: familiarity with histologic characteristics of:

- dental bud and various dental structures
- oral various regions` mucosa
- salivary glands
- bone
- Paranasal sinuses

Educational method:

- Text review
- Lecture
- Programmed lecture

Evaluation method: written exam

Unit title: practical oral histology

Unit code: 13

Number and type of unit: 1 practical unit

Educational hours within the course duration: 34h

Prerequisite: theoretical oral histology

Presenter: histology department

Aims: Familiarity with growth and development of fetus and histologic view of oral cavity and adjunct structures tissues

Subtitles: lamella observation:

- Fetus head and face
- Dental bud and development
- Enamel
- Dentinopulpal system
- Periodontium
- Oral mucosa
- Salivary glands
- Bone
- Paranasal sinuses
- TMJ

Educational method: lamella observation

Evaluation method: lamella exam

Unit title: theoretical general histology

Unit code: 14

Number and type of unit: 1 theoretical unit

Educational hours within the course duration: 17h

Prerequisite: none

Presenter: histology department

Aims: Familiarity with principles of general histology

Subtitles: familiarity with histology of

- Cell structure principles
- Muscle
- Bone
- Skin
- Nervous system
- Blood cells
- Connective tissue
- Lymphatic nodes and drainage

Educational method:

- Text review
- Lecture
- Programmed lecture

Evaluation method: written exam

Unit title: practical general histology

Unit code: 15

Number and type of unit: 1 practical unit

Educational hours within the course duration: 34h

Prerequisite: none

Presenter: histology department

Aims: Familiarity with theoretical general histology subtitles` microscopic view

Subtitles: observation of lamella:

- Overall cell morphology
- Muscle
- Bone
- Skin and specialized mucosa
- Nervous system
- Blood cells
- Connective tissue

Educational method: lamella observation

Evaluation method: lamella exam

Unit title: theoretical molecular biology

Unit code: 16

Number and type of unit: 1 theoretical unit

Educational hours within the course duration: 17h

Prerequisite: none

Presenter: genetics department, immunology department

Aims: Familiarity with molecular basis of cell biologic activities, RNA and DNA function and protein biosynthesis

Subtitles:

1. Familiarity with molecular structure of DNA and RNA
2. Familiarity with protein synthesis
3. Familiarity with types of alternations and chromosome disorders (mutations, mendelic disorders and multi factorial inheritance)
4. Molecular biology and a radio-oncogenes cancer genetics, tumor suppressor genes, genes influencing cell proliferation, cell cycle, mutations influencing genome stability and control

Educational method: lecture

Evaluation method: written exam

Unit title: practical molecular biology

Unit code: 17

Number and type of unit: 2 practical units

Educational hours within the course duration: 68h

Prerequisite: none

Presenter: genetics department, immunology department

Aims: Familiarity with conventional and modern methods in molecular biology and their application in diseases diagnosis

Subtitles: familiarity with these techniques

1. PCR
2. Gel Electrophoresis
3. Flow cytometry IHC
4. Immunofluorescent
5. Macromolecule blotting & probing
 - Southern blot
 - Northern blot
 - Western blot
 - Eastern blot
6. DNA microarray
7. FISH

In situ hybridization

Educational method: observation of laboratory process

Evaluation method: according to the presenter department

Unit title: laboratory personal safety principles

Unit code: 18

Number and type of unit: 1 workshop unit

Educational hours within the course duration: 51h

Prerequisite: none

Presenter: professional health department

Aims: Familiarity with component and application of laboratory equipment, maintenance and personal safety and infection control

Subtitles:

1. Personal safety principles, laboratory materials preservation and application principles
2. Personal safety against laboratory material
3. Personal safety against sharp equipment
4. Microtome application principles
5. Infection control principles
6. Laboratory trash disposal principles

Education method:

1. engagement lecture
2. lecture
3. demonstration

Evaluation method: according to the presenter department

Unit title: theoretical oral medicine

Unit code: 19

Number and type of unit: 1 theoretical unit

Educational hours within the course duration: 17h

Prerequisite: none

Presenter: oral medicine department

Aims: familiarity with applicable aspects of oral diseases diagnosis

Subtitles

1. Familiarity with applicable pharmacology
2. familiarity with lab test order
3. familiarity with prescription
4. familiarity with clinical examination interpretation
5. oral manifestation of systemic diseases

Educational method: lecture

Evaluation method: written exam

Unit title: practical oral medicine

Unit code: 20

Number and type of unit: 1 practical unit

Educational hours within the course duration: 34h

Prerequisite: theoretical oral medicine

Presenter: oral medicine department

Aims: observation of various oral diseases` clinical manifestation and differential diagnosis

Subtitles:

1. familiarity and conducting the intra and extra oral examinations including hard and soft tissues, salivary glands, lymphatic nodes and muscles of the neck, TMJ
2. practical familiarity with the process of differential diagnosis based on lesions` clinical signs and Para clinical findings(radiography-lab)
3. practical familiarity with process of case presentation
4. practical familiarity with oral manifestations of systemic diseases

Educational method: presence and observation in clinic –case presentation

Evaluation method: log book

Unit title: practical oral and maxillofacial surgery

Unit code: 21

Number and type of unit: 1 practical unit

Educational hours within the course duration: 34h

Prerequisite: none

Aims: familiarity with clinical manifestation and surgical principles of oral lesions

Subtitles:

1. presence in oral and maxillofacial clinic with the purpose of familiarity with examination, differential diagnosis and biopsy of lesions
2. presence in oral and maxillofacial surgery ward with the purpose of familiarity with treatment process
3. presence in oral and maxillofacial surgery OR to observe hospital surgeries of lesions under general anesthesia
4. presence in morning report

Educational method: presence in the department, clinic and OR and observing the patients and examination and treatment

Evaluation method: log book

Unit title: theoretical oral radiology

Unit code: 22

Number and type of unit: 1 theoretical unit

Educational hours within the course duration: 17h

Prerequisite: none

Presenter: oral radiology department

Aims: radiologic interpretation of oral lesions

Subtitles:

1. familiarity with radiographic interpretation based on conventional radiographic cliché view
2. familiarity with modern imaging technologies and interpretation

Educational method: engagement lecture-lecture

Evaluation method: written exam

Unit title: hospital theoretical and practical general pathology Unit code: 23

Number and type of unit: 17 practical-hospital units

Educational hours within the course duration: 1 semester

Prerequisite: theoretical general pathology, practical oral and maxillofacial specialized pathology 1, 2

Presenter: pathology department of medical school

Aims: practical familiarity with general lesions pathologic principles and their microscopic alternations

Subtitles:

1. Practical familiarity and conducting tissue samples` preparation methods for microscopic study and independent preparation and assessment of received samples under attending`s supervision
2. Practical familiarity with report writing principles in general pathology and independent reporting of received samples under attending`s supervision
3. Reviewing the lamella archive of general pathology in relation to the mentioned topics in subsequent theoretical course
4. Active participation in slide seminar
5. Active participation in tumor board and CPC

Education method:

- Education by general pathology attending
- Observation of general pathology residents
- Lamella observation and participation in report writing

Evaluation method: according to the presenter department

Unit title: ENT pathology

Unit code: 24

Number and type of unit: 1 practical unit (hospital)

Educational hours within the course duration: 34h

Prerequisite: none

Presenter: ENT department

Aims: familiarity with classification and microscopic view of ENT diseases

Subtitles:

1. Observation of microscopic views of non- tumoral diseases of pharynx, nasopharynx, hypopharynx and larynx
2. Observation of microscopic view of tumoral disease diseases of pharynx, nasopharynx, hypopharynx and larynx
3. Observation of microscopic view of tumoral and non-tumoral diseases of nose and paranasal sinuses
4. Observation of microscopic view of salivary gland disease

Note: the resident is obligated to review the subsequent lamella archive in addition to routine daily samples

Educational method: lamella observation-direct lamella observation by the attending with microscope

Evaluation method: exam from lamella including microscopic description and diagnosis

Unit title: dermatopathology

Unit code: 25

Number and type of unit: 2 practical units (hospital)

Educational hours within the course duration: 68h

Prerequisite: theoretical and practical general histology

Presenter: pathology department

Aims: practical familiarity with classification of dermal and mucosal pathology and observation of pathologic views of dermatomucosal lesions

Subtitles:

1. Practical familiarity with dermatomucosal lesions classification
2. Observation of microscopic views of pigmented lesions
3. Observation of microscopic views of Vesiculobullous lesions
4. Observation of microscopic views of genodermatos lesions
5. Observation of microscopic views of epidermad lesions
6. Observation of microscopic views of dermal lesions
7. Observation of microscopic views of infectious diseases
8. Familiarity and observation of modern dermal lesions diagnostic methods such as immunofluorescence

Note: the resident is obligated to review the subsequent lamella archive in addition to routine daily samples

Education method: lamella observation

Evaluation method: exam from lamella

Unit title: dermatology

Unit code: 26

Number and type of unit: 1 practical unit (hospital)

Educational hours within the course duration: 34h

Prerequisite: theoretical general pathology

Presenter: dermatology department

Aims: practical familiarity with clinical classification of dermal and mucosal diseases and observation of their signs

Subtitles:

1. Familiarity and observation of pigmented lesions
2. Familiarity and observation of Vesiculobullous lesions
3. Genodermatos
4. Familiarity and observation of epidermis, dermis and the attachments
5. Familiarity and observation of dermal infectious diseases (microbial , viral and fungal)
6. Familiarity and observation of dermal sampling methods

Educational method: presence in the department and patient examination

Evaluation method: log book

Unit title: clinical ENT

Unit code: 27

Number and type of unit: 1 practical unit (hospital)

Educational hours within the course duration: 34h

Prerequisite: none

Presenter: ENT department

Aims: basic familiarity with ENT infectious diseases

Subtitles:

1. Familiarity with clinical manifestations of ENT infectious diseases
2. Familiarity and observation of sinus laryngoscopy and endoscopy
3. Familiarity with salivary glands diseases
4. Familiarity with clinical manifestations of pharyngeal and nasal and paranasal sinuses tumoral lesions and their signs

Educational method: presence in the clinic –observation of patient examination-
patients examination under attending`s supervision

Evaluation method: log book

Unit title: neuropathology

Unit code: 28

Number and type of unit: 1 practical unit (hospital)

Educational hours within the course duration: 34h

Prerequisite: theoretical general pathology

Presenter: pathology department

Aims: familiarity with classification and microscopic view of common CNS & PNS diseases

Subtitles:

1. Practical familiarity with CNS & PNS diseases classification
2. Observation of microscopic view of common CNS & PNS non-tumoral lesions
3. Observation of microscopic view of common CNS & PNS tumoral lesions

Note: the resident is obligated to review the subsequent lamella archive in addition to routine daily samples

Educational method: lamella observation-direct lamella observation by the attending with microscope

Evaluation method: exam from lamella including microscopic description and diagnosis

Unit title: hematopathology

Unit code: 29

Number and type of unit: 1 practical unit (hospital)

Educational hours within the course duration: 34h

Prerequisite: theoretical general pathology, theoretical and practical general histology

Presenter: oncology-hematology department

Aims: familiarity with classification and microscopic view of common blood and bone marrow diseases

Subtitles:

1. Practical familiarity with hematologic diseases classification
2. Familiarity and observation of non- neoplastic blood and bone marrow diseases
3. Familiarity and observation of neoplastic blood and bone marrow diseases

Educational method: lamella observation-direct lamella observation by the attending with microscope

Evaluation method: exam from lamella including microscopic description and diagnosis

Unit title: hematology

Unit code: 30

Number and type of unit: 1 practical unit (hospital)

Educational hours within the course duration: 34h

Prerequisite: theoretical general pathology, theoretical and practical general histology

Presenter: oncology-hematology department

Aims: practical familiarity with clinical manifestation of hematologic diseases, their classification and oral manifestation of common hematologic diseases

Subtitles:

1. Practical familiarity with hematologic diseases classification and clinical signs
2. Practical familiarity with oral manifestation of common hematologic diseases (tumoral and non-tumoral)
3. Familiarity with laboratory tests in hematologic diseases diagnosis
4. Familiarity and observation of chemotherapy principles and subsequent oral side effects

Educational method: presence in clinic-observation of patient examination by the attending

Evaluation method: log book

Unit title: theoretical specialized oral and maxillofacial pathology1 Unit code: 31

Number and type of unit: 3 theoretical units

Educational hours within the course duration: 51h

Prerequisite: none

Aims: familiarity with oral and maxillofacial specific lesions

Subtitles: familiarity and study the Neville`s book 1-7 sections

1. Oral and maxillofacial developmental defects
2. Dental disorders
3. Pulp and periapical diseases
4. Bacterial infections
5. Fungal diseases
6. Viral infections

Educational method:

- Self-directed learning
- Motivating question
- Text review
- Programmed lecture

Evaluation method: written exam

Unit title: theoretical specialized oral and maxillofacial pathology 2 Unit code: 32

Number and type of unit: 2 theoretical units

Educational hours within the course duration: 34h

Prerequisite: theoretical specialized oral and maxillofacial pathology 1

Aims: familiarity with oral and maxillofacial specific lesions

Subtitles: familiarity and study the Neville`s book 8-15 sections

1. Physical and chemical damages
2. Immunologic diseases and allergy
3. Epithelial pathology
4. Salivary glands pathology
5. Soft tissue tumors
6. Hematologic disorders
7. Bone damages
8. Odontogenic cysts and tumors

Educational method:

- Self-directed learning
- Motivating question
- Text review
- Programmed lecture

Evaluation method: written exam – presence in literature review sessions

Unit title: theoretical specialized oral and maxillofacial pathology 3 Unit code: 33

Number and type of unit: 3 theoretical units

Educational hours within the course duration: 51h

Prerequisite: theoretical specialized oral and maxillofacial pathology 2

Aims: familiarity with oral and maxillofacial specific lesions

Subtitles: familiarity and study the Neville`s book following sections:

1. Dermatomucoal diseases
2. Oral manifestation of systemic disease
3. Facial pains and neuromuscular disorders

Familiarity and study the Regezi book following sections:

1. Vesiculobullous diseases
2. Ulcerative lesions
3. White lesions
4. Red bluish lesions
5. Pigmented lesions
6. Verrucopapillary lesions
7. Connective tissue lesions

Educational method:

- Self-directed learning
- Text review
- Programmed lecture

Evaluation method: written exam

Unit title: theoretical specialized oral and maxillofacial pathology 4 Unit code: 34

Number and type of unit: 4 theoretical units

Educational hours within the course duration: 68h

Prerequisite: theoretical specialized oral and maxillofacial pathology 3

Aims: familiarity with oral and maxillofacial specific lesions

Subtitles: familiarity and study the Regezi book following sections

1. Salivary gland diseases
2. Lymphatic diseases
3. Jaw and neck cysts
4. Odontogenic tumors
5. Non-odontogenic benign tumors
6. Inflammatory jaw lesions
7. Malignancies of the jaws
8. Genetic and metabolic diseases
9. Dental disorders
10. Common dermal lesions of head and neck

Educational method:

- Self-directed learning
- Text review
- Programmed lecture

Evaluation method: written exam

Unit title: theoretical specialized oral and maxillofacial pathology5 Unit code: 35

Number and type of unit: 5 theoretical units

Educational hours within the course duration: 85h

Prerequisite: theoretical specialized oral and maxillofacial pathology 4

Aims: familiarity with advanced level of oral pathology theoretical subtitles

Subtitles:

- familiarity and study the Ackerman and Gnepp book following sections
Gnepp: 4th and 6th sections (oral mucosa and salivary glands lesions)
Ackerman:1st,2nd,3rd sections
-Introduction
-Gross Techniques in surgical Pathology
-Special Techniques in surgical Pathology

Note: these subtitles may change according to the board exam references

- Neville book review

Educational method: text reading

Evaluation method: written exam

Unit title: practical specialized oral and maxillofacial pathology 1 Unit code: 36

Number and type of unit: 3 practical units

Educational hours within the course duration: 102h

Prerequisite: none

Aims: reviewing selected slide archive

Subtitles:

- Studying one hundred lamellas of 25 common oral cavity lesions (according to the following list). These slides are prepared as an educational pack by the department. Radiographic and clinical information of the samples will be provided if necessary

1	Leukoedema	2	Torus
3	Incisive canal cyst	4	Dermoid cyst
5	Lymphoepithelial cyst	6	Periapical cyst
7	Periapical granuloma	8	Osteomyelitis
9	Tuberculosis	10	Actinomycosis
11	Candidiasis	12	Herpes
13	Reactive fibrosis	14	Palatal papillary hyperplasia
15	Giant cell fibroma	16	Pyogenic granuloma
17	PGCG	18	POF
19	Non-specific ulcers	20	Hyperkeratosis
21	Mild dysplasia	22	Moderate dysplasia
23	Severe dysplasia	24	Carcinoma in situ
25	SCC and metastasis		

Educational method:

- Learning from the attending
- Modular education
- Self-directed learning
- Motivating questions

Evaluation method:

- Log book, MSF, Dops exams from lamellas

Unit title: practical specialized oral and maxillofacial pathology 2 Unit code: 37

Number and type of unit: 3 practical units

Educational hours within the course duration: 102h

Prerequisite: practical specialized oral and maxillofacial pathology 1

Aims: reviewing selected slide archive

Subtitles:

- Studying one hundred lamellas of 25 common oral cavity lesions (according to the following list). These slides are prepared as an educational pack by the department. Radiographic and clinical information of the samples will be provided if necessary

1	Verrucous carcinoma	2	Papilloma
3	Verruca vulgaris	4	BCC
5	Keratoacanthoma	6	Seborrheic keratosis
7	Melanoma	8	Nevus
9	Focal melanosis	10	Dentigerous cyst
11	OKC	12	Eruption cyst
13	COC	14	Lateral periodontal cyst
15	Ameloblastoma	16	Unicystic ameloblastoma
17	Desmoplastic ameloblastoma	18	Glandular odontogenic cyst
19	Odontogenic orthokeratinized cyst	20	AOT
21	Odontoma	22	Mixoma
23	Ameloblastic fibroma	24	pindborg tumor
25	Ameloblastic fibro odontoma		

Educational method:

- Modular education
- Self-directed learning
- Motivating questions
- Log book

Evaluation method:

- exams from lamellas

Unit title: practical specialized oral and maxillofacial pathology 3 Unit code: 38

Number and type of unit: 3 practical units

Educational hours within the course duration: 102h

Prerequisite: practical specialized oral and maxillofacial pathology 2

Aims: reviewing selected slide archive

Subtitles:

- Studying one hundred lamellas of 25 common oral cavity lesions (according to the following list). These slides are prepared as an educational pack by the department. Radiographic and clinical information of the samples will be provided if necessary

1	Ameloblastic carcinoma	2	Lichen planus
3	Pemphigus	4	Pemphigoid
5	Lupus	6	Erythema multiform
7	Sarcoidosis	8	Mucocele
9	Mucous retention cyst	10	Pleomorphic adenoma
11	Carcinoma ex PA	12	Basal cell adenoma
13	Oncocytoma	14	Canalicular adenoma
15	Wartin tumor	16	Acinic cell carcinoma
17	Adenoid cystic carcinoma	18	PLGA
19	Mucoepidermoid carcinoma	20	Salivary duct carcinoma
21	Fibrous dysplasia	22	COF
23	FCOD	24	CGCG
25	Cementoblastoma		

Educational method:

- Learning from the attending
- Modular education
- Self -directed learning
- Motivating questions

Evaluation method:

- Log book , Dops

Unit title: practical specialized oral and maxillofacial pathology 4 Unit code: 39

Number and type of unit: 3 practical units

Educational hours within the course duration: 102h

Prerequisite: practical specialized oral and maxillofacial pathology 3

Aims: reviewing selected slide archive

Subtitles:

- Studying one hundred lamellas of 25 common oral cavity lesions (according to the following list). These slides are prepared as an educational pack by the department. Radiographic and clinical information of the samples will be provided if necessary

1	Lipoma	2	Hemangioma
3	Lymphangioma	4	Neurofibroma
5	Schwannoma	6	Leiomioma
7	lymphoma	8	Hodgkin`s lymphoma
9	Rhabdomyocarcoma	10	Leiomyosarcoma
11	Teratoma	12	Fibro sarcoma
13	Granular cell tumor	14	Langerhans cell disease
15	Cherrubism	16	Euing sarcoma
17	Osteoblastoma	18	Chondrosarcoma
19	TBC	20	ABC
21	Traumatic neuroma	22	Malignant fibrous histiocytoma
23	Burkitt lymphoma	24	Plasmocytoma
25	Osteosarcoma		

Educational method:

- Learning from the attending
- Modular education
- Self -directed learning
- Motivating questions

Evaluation method:

- Log book , Dops

Unit title: literature review 1

Unit code: 40

Number and type of unit: 2 theoretical units

Educational hours within the course duration: 34h

Prerequisite: none

Aims: assessment of reliable national and international articles with the purpose of acquiring new knowledge about oral pathology research methodology

Subtitles:

1. Familiarity with scientific writing
2. Familiarity with assessment and presentation of Persian and English articles
3. Familiarity with assessment and conclusion of the articles
4. Familiarity with article classifications

Note: articles are selected by the attending and the priority is with the journals determined by dental education council for the board exam. Residents should present at least 50 articles, maximum 5 of which could be focused and in seminar form.

Education method: discussion and seminar

Evaluation method: article presentation in groups and evaluation by the attending according to the checklist

Unit title: literature review 2

Unit code: 41

Number and type of unit: 2 theoretical units

Educational hours within the course duration: 34h

Prerequisite: literature review 1

Aims: assessment of reliable national and international articles with the purpose of acquiring new knowledge about oral pathology research methodology

Subtitles:

1. Familiarity with scientific writing
2. Familiarity with assessment and presentation of Persian and English articles
3. Familiarity with assessment and conclusion of the articles
4. Familiarity with article classifications

Note: articles are selected by the attending and the priority is with the journals determined by dental education council for the board exam. Residents should present at least 50 articles

Education method: discussion and seminar

Evaluation method: article presentation in groups and evaluation by the attending according to the checklist

Unit title: passage and report writing 1

Unit code: 42

Number and type of unit: 2 practical units

Educational hours within the course duration: 68h

Prerequisite: none

Aims: familiarity with process of delivery, cutting and staining of the samples – familiarity with microscope

Subtitles:

1. Familiarity with process of delivery of the samples, collecting required clinical and Para clinical information for diagnosis , coding ,archive registration and official process
2. Familiarity with microscopic description of oral lesions
3. Familiarity with microscope types, settings, application and maintenance
4. Familiarity with cutting, passage and preparation of microscopic lamella sample
5. Familiarity with types, settings, applications and maintenance of microscopes
6. Familiarity with passage method on the model
7. Familiarity with tissue processing principles , paraffin embedding, tissue collating, block numbering, cutting and the lamella preparation and H&E staining
8. Familiarity with specific staining principles and application
9. Familiarity with specific stain`s combination
10. Familiarity with equipment and material of processing, paraffin embedding, cutting and staining
11. Familiarity with errors and types of artifacts during lamella preparation

Educational method:

- Theoretical education by the attending
- Demonstration by the attending and lab technician
- Simulation by use of mannequins

Evaluation method:

- Direct observation of practical skills(Dops)
- Multi source feedback(MSF) and recording in the log-book

Unit title: passage and report writing 2

Unit code: 43

Number and type of unit: 4 practical units

Educational hours within the course duration: 136h

Prerequisite: passage and report writing 1

Aims: sample diagnosis and reporting

Subtitles:

1. Clinical and microscopic findings integration and presentation of final diagnosis
2. Molecular diagnosis techniques indication
3. Assessment and report of at least 30 samples independently and under attending`s supervision

Education method:

- Practical education by the attending
- Lamella assessment under attending`s supervision

Evaluation method:

- Dops
- Case-based discussion
- MSF, log-boog

Unit title: passage and report writing 3

Unit code: 44

Number and type of unit: 4 practical units

Educational hours within the course duration: 136h

Prerequisite: passage and report writing 2

Aims: conducting passage procedure and report writing of received samples

Subtitles:

1. Conclusion of clinical and microscopic findings and presentation of final diagnosis
2. Molecular diagnosis technique application
3. Assessment and report of at least 30 samples independently and under attending`s supervision

Education method:

- Practical education by the attending
- Lamella assessment under attending`s supervision

Evaluation method:

- Dops
- Case-based discussion
- MSF, log-boog

Unit title: passage and report writing 4

Unit code: 45

Number and type of unit: 4 practical units

Educational hours within the course duration: 136h

Prerequisite: passage and report writing 3

Aims: conducting passage procedure and report writing of received samples

Subtitles:

1. Conclusion of clinical and microscopic findings and presentation of final diagnosis
2. Molecular diagnosis technique application
3. Assessment and report of at least 30 samples independently and under attending`s supervision

Education method:

- Practical education by the attending
- Lamella assessment under attending`s supervision

Evaluation method:

- Dops
- Case-based discussion
- MSF, log-boog

Unit title: Thesis (1) to (5)

Unit code: 46-50

Number and type of unit: ten practical-workshop units

Educational hours within the course duration: 476 h

Thesis (1) - Aim: Selection of research subject within the area of specialty.

This course is held in two workshop units and must be taken to account in the educational program. The research subject will be chosen with the assistance of the relevant supervisor throughout the workshop sessions. Field research must be done out of workshop time and the outcome of it must be presented during the workshop sessions. The resident must have gathered his/her documents to present the proposal by the end of the semester. The proposal must be preregistered in the research council and the evidence suggesting that the resident has passed the course by the deadline must be handed to the postgraduate director.

Thesis (2)- Aim: Registration of research subject.

This course is held in two workshop units and the resident must participate in sessions held in collaboration with statistical consultant and/or statistic experts or epidemiologists. The resident must complete his/her proposal by the end of the semester and must register it in the relevant site. Meetings must also be held with the supervising professor during these sessions.

Thesis (3)- Aim: Performing the research.

This course is held in two practical and must be taken to account in the educational program. The time and manner of performance of this unit is up to the supervisor and can be organized in continuous or interrupted sessions. The supervisor must inform the postgraduate director of the department about the progress so that other educational programs can be coordinated. If the research requires more time than one semester, the measures that must be taken during that semester should be confirmed by the supervisor.

Thesis (4)- Aim : writing the thesis and relevant article.

It is a two unit workshop course must be taken to account in the educational program. The resident should statistically analyze data, extract the results and write the thesis under the supervision of the supervisor and statistical consultant. The resident is obliged to write and submit at least one paper to a valid journal. If the research is to be done in more than one semester, the resident must analyze and extract the primary results.

Thesis (5)- Aim: Defense of thesis

This is a two unit work shop course that should be considered in the educational program. The resident must complete the thesis, present his findings and defend the thesis. 54

Notice: It is apparent that all researches may not follow this sequence and timing and may require more time. It is possible to extend the performance to reschedule the dead line only with the confirmation of the vice dean of research