

Bachelor of Dental Sciences (B.D.S.) Degree Curriculum

Bachelor of Dental Sciences

(B.D.S.)

Curriculum

For International Students

Tehran University of Medical Sciences

Tehran, Iran

2018

Bachelor of Dental Sciences (B.D.S.) Degree Curriculum

In the name of God

First Chapter

Tehran University of Medical Sciences

Bachelor of Dental Sciences (B.D.S.) Degree Curriculum

-General characteristics of dentistry program (Bachelor degree)

1. Definition & Objectives:

Dentistry program (Bachelor degree) is one of the high educational course, being considered as a part of medical education plan. The Objectives of this program is training and teaching dental and oral specialists, having strong scientific bases for performing future researches in dentistry field, in addition to enjoying from educational-treating efficiency).

Also, they must cover qualitative and quantitative lack of needed human force, throughout the country; final Objectives of considered plan are as followed:

A) Establishing an oral health care/education system in coordination with general health (medical) care system;

B) Supplying preventive-treatment services dentistry services, being just and common, for all people of country. It is performed, by qualitative and quantitative developing a desired servicing-educational system in field of health and treatment.

C) Providing knowledge and abilities-in the field of oral health care-with needs of Islamic nation of Iran.

D) Duration of program and mode of system:

Duration of this program is equal to 5 years and its instruction is classified into following: general, basic and specialized (major). In accordance with way of teaching, it is divided into credits of theoretical, practical and theoretical-theoretical courses.

This program includes two phases:

-Phase 1 (1.5 years): In this part, students pass theoretical and practical courses of basic and general science, in university (class and laboratory).

- Phase 2 (3.5years): In this part, student learn specialized lessons in university (class and clinical parts). Also, they pass this course in clinical parts of the faculty and related hospitals in city and centers of province healthcare services for the Objectives of enjoying from more educational-treating efficiency.

Note: it is necessary to pass basic credits, for entering the clinical course (Second phase).

-Remark: Students not passing their credits of base science, shall be allowed to enter into clinical course, if remained credits are not prerequisite of major credits.

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Educational system is on the basis of bylaws, being issued by supreme council for planning. It is allocated 17 and 34 hours and each hour 60 minutes into each theoretical and practical credit, respectively.

3. Course Credits:

Total number of course credits is equal to 177, as following:

3-1-General credits	12 credits
3-2- Basic credits	41 credits
3-3- Specialized credits	124 credits

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Second chapter

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General Lessons

<i>Course Title</i>	<i>Credits</i>	<i>Theoretical</i>	<i>Practical</i>
Persian Language	3	3	
English Language	3	3	
Introduction to Religion	2	2	
Physical Training 1	1		1
Life Skills	1	1	
Physical Training 2	1		1
Information Technology in Dentistry	1		1
Total	12	9	3

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Basic Lessons

<i>Code</i>	<i>Course Title</i>	<i>Credits</i>	<i>Theoretical</i>	<i>Practical</i>
1	General Pathology (Theoretical)	2.5	2.5	
2	General Pathology (Practical)	0.5		0.5
3	Parasitology	1	1	
4	Immunology (Theoretical)	2.5	2.5	
5	Immunology (Practical)	0.5		0.5
6	Bacteriology	3	3	
7	Microbiology (Practical)	1		1
8	Biochemistry (Theoretical)	3	3	
9	Biochemistry (Practical)	1		1
10	Psychology	1	1	
11	Genetics	2	2	
12	Introduction to General and Oral Health	2	1.5	0.5
13	Anatomical Sciences 1	3	2	1
14	Anatomical Sciences 2	3	2	1
15	Anatomical Sciences 3	1	0.5	0.5
16	Medical Physics	1	0.5	0.5
17-1	Physiology 1(Theoretical)	2	2	
17-2	Physiology 2 (Theoretical)	2	2	
18	Physiology (Practical)	1		1
19	Virology	1	1	
20	Nutrition	1	1	
21	Dental Anatomy and Morphology	3	2.5	0.5
22	Dental and Maxillofacial (DMF) Radiology 1 (Theoretical)	1	1	
23	Dental Tissue in health and disease conditions	2	2	
	Total	41	33	8

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Specialized Lessons

<i>Code</i>	<i>Course Title</i>	<i>Credits</i>	<i>Theoretical</i>	<i>Practical</i>
24	OMF Pathology 1 (Practical)	1		1
25	OMF Pathology 2 (Practical)	1		1
26	Medical Ethics, Professional Commitment and Clinical Communication Skills	1	1	
27	Orthodontics 1 (Theoretical)	1	1	
28	Orthodontics 2 (Theoretical)	1	1	
29	Orthodontics 3 (Theoretical)	1	1	
30	Orthodontics 1 (Practical)	1		1
31	Orthodontics 2 (Practical)	1		1
32	Orthodontics 3 (Practical)	1		1
33	Orthodontics 4 (Practical)	1		1
34	Basic Principles of Endodontics 1	2	0.5	1.5
35	Basic Principles of Endodontics 2	2	0.5	1.5
36	Endodontics 1 (Practical)	2		2
37	Endodontics 2 (Practical)	2		2
38	Endodontics 3 (Practical)	1		1
39	Endodontics 1 (Theoretical)	1	1	
40	Endodontics 2 (Theoretical)	1	1	
41	Implantology (Theoretical)	1	1	
42	Implantology (Practical)	2		2
43	Local Anesthesia	1	0.5	0.5
44	Oral and Maxillofacial (OMF) Diseases 1 (Practical)	2		2
45	OMF Diseases 2 (Practical)	1		1
46	OMF Diseases 3 (Practical)	1		1
47	Systemic Diseases 1	1	1	
48	Systemic Diseases 2	1	1	
49	Systemic Diseases 3	1	0.5	0.5
50	Systemic Diseases 4	1		1
51	Basic Principles of Complete Denture Prosthodontics	3	2.5	0.5
52	Treatment of Complete Edentulous Patients	1	1	
53	Basic Principles of Partial	3	2.5	0.5

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	Prosthodontics			
54	Basic Principles of Fixed Prosthodontics	4	1	3
55	Complete Denture Prosthodontics 1 (Practical)	2		2
56	Complete Denture Prosthodontics 2 (Practical)	2		2
57	Partial Prosthodontics 1 (Practical)	2		2
58	Partial Prosthodontics 2 (Practical)	2		2
59	Fixed Prosthodontics 1 (Practical)	2		2
60	Fixed Prosthodontics 2 (Practical)	2		2
61	Fixed Prosthodontics 1 (Theoretical)	1	1	
62	Advanced Prosthodontics 1 (Theoretical)	1	1	
63	Advanced Prosthodontics 2 (Theoretical)	1	1	
64	Advanced Prosthodontics (Practical)	2		2
65	Periodontics 1 (Theoretical)	1	1	
66	Periodontics 2 (Theoretical)	1	1	
67	Periodontics 3 (Theoretical)	1	1	
68	Periodontics 1 (Practical)	1		1
69	Periodontics 2 (Practical)	1		1
70	Periodontics 3 (Practical)	1		1
71	Periodontics 4 (Practical)	1		1
72	Dental Equipment and Ergonomics	1	1	
73	Traumatology	1	1	
74	Basic Principles of Restorative Dentistry	3	2.5	0.5
75	Restorative Dentistry 1 (Theoretical)	1	1	
76	Restorative Dentistry 2 (Theoretical)	1	1	
77	Restorative Dentistry 1 (Practical)	1		1
78	Restorative Dentistry 2 (Practical)	2		2
79	Restorative Dentistry 3 (Practical)	1		1

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80	Oral and Maxillofacial (OMF) Surgery 1 (Theoretical)	1	1	
81	OMF Surgery 2 (Theoretical)	1	1	
82	OMF Surgery 1 (Practical)	1		1
83	OMF Surgery 2 (Practical)	1		1
84	OMF Surgery 3 (Practical)	2		2
85	OMF Surgery 4 (Practical)	2		2
86	Pain and Applied Pharmacology in Dentistry	1		1
87	DMF Radiology 1 (Practical)	1		1
88	DMF Radiology 2 (Practical)	1		1
89	DMF Radiology 3 (Practical)	1		1
90	DMF Radiology 2 (Theoretical)	1	1	
91	Specialized English 1	1	1	
92	Specialized English 2	1	1	
93	Oral Health and Community Dentistry 1 (Theoretical)	1	1	
94	Oral Health and Community Dentistry 2 (Theoretical)	1	1	
95	Oral Health and Community Dentistry 1 (Practical)	1		1
96	Oral Health and Community Dentistry 2 (Practical)	1		1
97	Diagnostic Dentistry 1	1	0.5	0.5
98	Diagnostic Dentistry 2	1	1	
99	Diagnostic Dentistry 3	2	2	
100	Diagnostic Dentistry 4	2	2	
101	Diagnostic Dentistry 5	1	1	
102	Pharmacology	2	2	
103	Medical Emergencies in Dentistry	1	0.5	0.5
104	Pulp and Periapical Complex	1	1	
105	Infection Control	1	1	
106	Pediatric Dentistry 1 (Practical)	2		2
107	Pediatric Dentistry 2 (Practical)	2		2
108	Pediatric Dentistry 3 (Practical)	2		2
109	Pediatric Dentistry 1 (Theoretical)	1	1	
110	Pediatric Dentistry 2 (Theoretical)	1	1	

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111	Basic Principles of Dental Materials	1	1	
112	Evidence-Based Dentistry	1	1	
113	Comprehensive Treatment in Dentistry 1	2		2
114	Comprehensive Treatment in Dentistry 2	2		2
	Total	124	52	72

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Basic Sciences

First Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
2311274	Persian Language	3
2311134	English Language	3
2311455	Biochemistry (Theoretical)	3
2311256	Biochemistry(Practical)	1
-	Introduction to Religion	2
8888888	Physical Training 1	1
272856	Introduction to General and Oral Health	2
2720000	Anatomical Sciences1	3
2720047	Physiology 1 (Theoretical)	2
Total		20

Second Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
1919191	Life Skills	1
2312181	Physiology 2(Theoretical)	2
2312163	Physiology (Practical)	1
2311202	Psychology	1
2720001	Anatomical Sciences 2	3
9999999	Physical Training 2	1
2312145	Genetics	2
272855	Medical Physics	1
2311378	Bacteriology	3
2311136	Virology	1
2312796	Practical Microbiology	1
Total		17

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Third Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
2720002	Anatomical Sciences 3	1
2311387	Parasitology	1
2720026	Nutrition	1
272853	Information Technology in Dentistry	1
2720006	General Pathology(Theoretical)	2.5
2720004	General Pathology (Practical)	0.5
2720003	Dental Tissue in health and disease conditions	2
2720005	Dental Anatomy and Morphology	3
2373001	Dental and Maxillofacial (DMF) Radiology 1 (Theoretical)	1
2311446	Immunology (Theoretical)	2.5
2311437	Immunology (Practical)	0.5
Total		16

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Preclinical and Clinical Sciences

Forth Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
2313002	Pharmacology	2
2413000	Oral and Maxillofacial (OMF) Surgery 1 (Theoretical)	1
2373003	DMF Radiology 2 (Theoretical)	1
2720012	Medical Ethics, Professional Commitment and Clinical Communication Skills	1
2720016	Basic Principles of Restorative Dentistry	3
2373000	DMF Radiology 1 (Practical)	1
2720015	Basic Principles of complete Denture Prosthodontics	3
2720014	Basic Principles of Partial Prosthodontics	3
2720018	Systemic Diseases 1	1
2313004	Infection Control	1
2720021	Pulp and Periapical Complex	1
2720025	Oral Health and Community Dentistry 1 (Theoretical)	1
-	Local Anesthesia	1
Total		20

Fifth Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
2414000	OMF Surgery 1(Practical)	1
2433001	Restorative Dentistry 1 (Theoretical)	1
2720020	Restorative Dentistry 1 (Practical)	1
2720031	Basic principles of Endodontics 1	2
272851	Basic Principles of Dental Materials	1
2720010	Diagnostic Dentistry 1	1
2374001	DMF Radiology 2 (Practical)	1
2363001	Complete Denture Prosthodontics 1 (Practical)	2
2720011	Diagnostic Dentistry 2	1
2720038	Oral Health and Community Dentistry 1(Practical)	1
2720013	Medical Emergencies in Dentistry	1
2720007	Dental Equipment and Ergonomics	1
2720007	Specialized English 1	1
2720029	Specialized English 2	1
Total		16

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Sixth Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
237400	OMF Diseases 1(Practical)	2
2720028	Diagnostic Dentistry 3	2
2363000	Partial Prosthodontics 1(Practical)	2
2344005	Orthodontics 1(Theoretical)	1
2384002	Periodontics 1(Theoretical)	1
2323000	OMF Pathology 1 (Practical)	1
2720038	Oral Health and Community Dentistry 2 (Practical)	1
2760068	Restorative Dentistry2 (Practical)	2
2433002	Restorative Dentistry 2 (Theoretical)	1
2760072	Oral Health and Community Dentistry 2 (Theoretical)	1
2760067	Basic principles of Endodontics 2	2
Total		16

Seventh Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
2760066	Basic Principles of Fixed Prosthodontics	4
2334000	Endodontics 1(Practical)	2
2374002	OMF Diseases 2(Practical)	1
2414001	OMF Surgery 2(Practical)	1
2344002	Orthodontics 1(Practical)	1
2384000	Periodontics 1(Practical)	1
2760069	Systemic Diseases 2	1
2760070	Diagnostic Dentistry 4	2
2385001	Periodontics 2 (Theoretical)	1
2345002	Orthodontics 2(Theoretical)	1
2333000	Endodontics 1(Theoretical)	1
2720041	Advanced Prosthodontics 1(Theoretical)	1
2364002	Partial Prosthodontics 2 (Practical)	2
Total		19

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Eighth Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
	Evidence-Based Dentistry	1
2720037	Pediatric Dentistry 1 (Practical)	2
2364000	Complete Denture Prosthodontics 2 (Practical)	2
2720036	Fixed Prosthodontics 1 (Practical)	2
2720022	Treatment of Complete Edentulous Patients	1
2374003	DMF Radiology 3 (Practical)	1
2334003	Endodontics 2 (Theoretical)	1
2344004	Orthodontics 2 (Practical)	1
2384001	Periodontics 2 (Practical)	1
2346002	Orthodontics 3 (Theoretical)	1
	Pain and Applied Pharmacology in Dentistry	1
2344006	Pediatric Dentistry 1 (Theoretical)	1
2720039	Diagnostic Dentistry 5	1
2334001	Endodontics 2 (Practical)	2
Total		18

Ninth Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
2720042	Advanced Prosthodontics 2 (Theoretical)	1
2385000	Periodontics 3(Practical)	1
2345001	Orthodontics 3 (Practical)	1
2385002	Periodontics 3 (Theoretical)	1
2345000	Pediatric Dentistry 2(Practical)	2
2345003	Pediatric Dentistry 2 (Theoretical)	1
232001	OMF Pathology 2 (Practical)	1
2314008	Implantology (Theoretical)	1
2414002	OMF Surgery 3 (Practical)	2
2414004	OMF Surgery 2 (Theoretical)	1
2354000	Fixed Prosthodontics 2 (Practical)	2
2434254	Restorative Dentistry 3 (Practical)	1
2720078	Comprehensive Treatment in Dentistry 1	2
2720077	Endodontics 3 (Practical)	1
Total		18

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Tenth Semester

<i>Course code</i>	<i>Course Title</i>	<i>Credits</i>
2386000	Periodontics 4 (Practical)	1
2346001	Orthodontics 4 (Practical)	1
2346000	Pediatric Dentistry 3 (Practical)	2
2720075	Systemic Diseases 3	1
	Comprehensive Treatment in Dentistry 2	2
2376000	OMF Diseases 3 (Practical)	1
	Advanced Prosthodontics (Practical)	2
	Implantology (Practical)	2
	Systemic Diseases 4	1
2720080	Traumatology	1
2415233	OMF Surgery 4 (Practical)	2
Total		16

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Third chapter

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Introduction to Religions

Number and type of credit: Theoretical (2 credits, 34 hours)

Prerequisite: none

Students should be aware that religion influences local and global events. It is imperative that they be educated regarding other religions. They should acquire knowledge of the founders, beliefs, main practices, symbols and festivals of various religions. They should also understand the similarities and differences among the religions studied. Throughout the ages, religion has had an influence on, and has been expressed through, the arts and architecture. As students study religious education, they also study history, literature, and vice versa. This religious education curriculum acknowledges and supports the notion that young people have a spiritual dimension and grow spiritually as well as physically, emotionally, psychologically and intellectually. This religious education curriculum acknowledges that the essence of all inter-faith dialogue is the awareness that human beings share essential truths and experiences that are much more important than those which divide them. Through their study, students should come to appreciate the intrinsic worth of each religion for its adherents

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Life Skills

Number and type of credit: Theoretical (1credit, 17 hours)

Prerequisite: none

Objectives: The Objectives of the Life Skills Curriculum is to help students and young people develop the skills needed to cope in the world. The main topics in this curriculum are heavily researched and accepted areas of need for development.

One of the goals of the Life Skills Curriculum is to provide instruction that supports the students' transition into community and adult life. Every activity has opportunities to make community connections and life in the community important and relevant.

The activities listed below are designed to support all students in becoming successful contributing members of society on- and off-reserve.

- Respect: Self-esteem & Self-confidence
- Problem Solving
- Decision Making
- Looking Past Tomorrow and Today
- Telephone Skills

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Information Technology in Dentistry

Number and type of credit: Practical (1 credit, 34 hours)

Objectives: Providing the students with becoming familiar with applicable softwares of research and education in dentistry and with using search engines properly.

Minimum required practical skills:

- Describing hardwares of a computer
- Typing and editing a scientific text in WORD program
- Creating an attractive, well-descriptive POWER POINT presentation
- Inserting data in an EXCELL program and following the instructions properly
- Searching for scientific issues by well-known medical websites and search engines including PubMed and Cochrane using appropriate keywords
- Becoming familiar with famous dental material and equipment's companies websites and providing required information
- Identifying digital systems and softwares in association with dentistry and describing their application principles

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Physical Training

Number and type of credit:

Physical Training 1: Practical (1 credit, 34 hours)

Physical Training 2: Practical (1 credit, 34 hours)

Prerequisite: none

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1 & 2- General Pathology

Number and type of credit: Theoretical: 2.5 credits/ Practical:0.5 credit

Prerequisite: Parasitology, Bacteriology, Virology, Anatomical sciences1, Theoretical physiology

Objectives: familiarity with the pathological changes of the body components and their application in the clinical workflow, prognosis and treatment of diseases

Theoretical general pathology (2.5 credits, 42.5 hours):

Subtitles:

- A. Basics of the pathology, cell irritations, growth and reactions
- A. Basics of the pathology: history, definitions and its practical and theoretical divisions
- B. Cell irritations: general causes, general mechanism, causes and mechanism in ischemic and hypo-ischemic irritations, mechanism in irreversible cell irritations, the role of free radicals in cell irritations, necrosis and its types, accumulation of the unnatural materials in the cell (fats, proteins, carbohydrates, pigments, elements and minerals, ...)
- C. Cell growth and differentiation: cell cycle, molecular accidents in cell growth, growth stimulator elements, and cell growth prohibiting elements
- D. Cell reactions: atrophy, hypertrophy, hyperplasia, metaplasia
- B. Inflammation and repair:
 - A. Acute, chronic and sub-acute inflammations, vascular changes, cell accidents and chemical modifications
 - B. Systems acting in inflammation including: complement system, coagulation system and kinin system
 - C. Post-inflammation repair: tissue repair mechanisms
- C. Hemodynamic defects:
 - A. Edema
 - B. Hyperemia and congestions, hemorrhage, hemostasis, thrombosis, coagulation

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- C. Emboli and its types
- D. Tissue infarction and shock and its pathogenicity
- D. Genetic diseases:
 - 1. Essential deviations of the genes and chromosomes and their formation and their normal and abnormal changes
 - 2. Gene disorders: the hereditary pattern in the autosomal dominant and recessive and X dependents, mentioning their instances
 - 3. Chromosomal disorders and mentioning their types
 - 4. Multifactorial disorders such as hypertension, Gout, ...
- E. Immunopathology:
 - A. Embryology, cell and histology of the immune system
 - B. Cytokines; introduction of the structure and function of H.L.A
 - C. Immunologic tissue damage mechanisms: hypersensitivity reactions and its types
 - D. Graft rejection and related mechanism
 - E. Pathogenicity of the autoimmune diseases and its types
 - F. Pathogenicity of immunodeficiency syndromes and its types
 - G. Amyloidosis
- F. Neoplasia:
 - 1. Definitions, naming and classification of the tumors, the characteristic of benign and malignant tumors, metastasis
 - 2. Cancers` molecular basis (etiopathology)
 - 3. Clinical aspects and tumors special techniques
- G. Infections:
 - 1. General principles and pathogenicity of infectious diseases, classification of the infectious diseases according to the microbe type

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2. The bacterial infections, i.e. Rickettsia, Chlamydia, Fungus, parasites and viruses
- H. Nutritional disorders
- I. Environmental factors pathogenicity
- J. Neonatal disorders

Practical general pathology (0.5 credit, 17 hours):

The aims that has to be seen in the practical part are:

1. Necrosis
2. Fat changes
3. Hyaline sediment
4. Amyloidosis
5. Acute inflammation
6. Chronic inflammation
7. Wound and repair tissue
8. Thrombosis
9. Hyperemia and congestion
10. Emboli
11. Tissue infarction
12. Pneumonia
13. Tuberculosis
14. Actinomycosis
15. Amebiasis in the intestine
16. Hydatid cysts

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17. Papilloma
18. Basal cell carcinoma
19. Squamous cell carcinoma
20. Fleck
21. Melanoma
22. Lipoma
23. Liposarcoma
24. Fibroma
25. Fibrosarcoma
26. Osteochondroma
27. Chondroma
28. Osteosarcoma
29. Hemangioma
30. Angiosarcoma
31. Benign teratoma
32. Malignant teratoma
33. Hydatiform mole
34. Karposi's sarcoma.

The practical part shall be held in 17 sessions and 2 microscopic slides are demonstrate dinevery session.

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3- Parasitology

Number and type of credit: Theoretical (1credit, 17 hours)

Prerequisite: none

Objectives: Theoretical instruction for the students so that they become familiar to parasitological and fungal diseases that cause lesions in the oral environment and its mucosa or live there freely and also to the parasitological contaminations that may transmit from the dentist to the patient.

Subtitles:

-Parasite Definition, Classification, Parasite and Host Relationship and Vice Versa, Parasite Nomenclature

-Definition, Characteristics, and Different Kinds of Protozoans

- Amoeba Characteristics: Entamoebagingivalis

- Trichomonas Characteristics and Trichomonastenax

- Leishmania

- Toxoplasma and Pneumocystis

- Generak Mycology

- Superficial Cutaneous Mycological Diseases

- Subcutaneous Mycological Diseases

- Actinomycosis

- Candidiasis

- Aspergillosis – Cryptococcosis

- Mucormycosis – Geotrichosis

- General Chromosology

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4 & 5- Immunology

Number and type of credit: Theoretical: 2.5 credits/ Practical:0.5 credit

Prerequisite: Anatomical sciences1, Theoretical physiology

Objectives: learning the cellular and molecular structure of human body

Subtitles:

Theoretical Immunology (2.5 credits, 42.5 hours)

-Properties and characteristics of anti -genes:

Natural and artificial proteins, hapten, poisons, auto-anti genes , allergies

-Competent cells and lymphatic tissues.

-Lymphocyte, plasmocytes, monocytes, macrophages, prestiqreticuloendothelial cells.

-Immune globins

-structure

-Mechanism of classes: IgE, IgD, IgA, IgM, IgG

-Genetic of immune globins

-Producing immune globins

-Camilman and its components:

-structure and its genesis

-Activation methods

-heredity deficiency and preventive diseases

-Non-specific reaction: Inflammation , phagocyte

-Mechanism of body resistance: Natural, congenital, acquired (active, inactive and adaptive or transitional)

-Antigenic and anti-body reactions

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- Increasing early sensitivity
 - Cytotoxic, immune hemolysis and immuno-cytolysis
 - Immune complex
 - Late sensitivity, biologic medium in cellular immunity
 - Immune genetic (system of HLA)
 - Immune hematology: blood types, blood transfusion, blood incompatibility between mother and fetus.
 - Tolerance line immunity
 - Auto immunity: mechanism, diagnosis and treatment
 - Immunology of cancer
 - Available factors in genesis of cancer immunity
 - Diagnosing humoral and cell immunity
 - Immune stimulation
 - Treatment & immunology
 - Immune-suppressor: biologic, chemical
 - Immunology of infective diseases: bacterial, parasitic, viral
- Immune-deficiencies

Practical Immunology (0.5 credit, 17 hours)

Those works should be performed by students:

- Precipitation in tube and in gel
- Microbial Agglutination
- Blood agglutination: determining RHO. ABO
- flocculation test: V.D. R.L

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-Measuring ASO

Those mechanisms should be performed, as demonstration form:

- Electrophoresis and immune electrophoresis

-Coombs test

-Cross match

-Complement titer

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6- Bacteriology

Number and type of credit: Theoretical: 2 credits/ Practical:1credit

Prerequisite: none

Objectives: Theoretical and Practical instructions for the students on familiarizing them to the bacterial diseases which cause lesions in the oral environment and its mucosa or to the free-living bacteria in there and also to the bacterial contaminations which may transfer from the dentist to the patient.

Least Expected Skills:

1. To adjust microscope and work with it.
2. To work with oven and autoclave.
3. To monitor the sterilization process with indicated Bacilli.
4. To differentiate common oral microorganisms under microscope.
5. To stain selected bacteria and see their mobility under microscope.
6. To sample from oral flora and different parts of the oral cavity.
7. To culture and isolate the bacteria.
8. To differentiate between pathogenic and non-pathogenic bacteria by investing the prepared samples under microscope.
9. To specify different kinds of Neisseria, Koch Bacillus and Leprosy, Enterobacteriaceae, Helicobacter and Campylobacter, Treponema by culturing them and investing the samples under microscope.
10. To do different methods of counting bacteria and antibiogram.

Subtitles:

- History of Microbiology
- Definition and Classification of Bacteria
- The Differences between Eukaryotes and Prokaryotes
- Shape, Size, and Anatomical Structure of the Bacteria
- Chemical Structure and Reproduction System of the Bacteria
- Studying Methods of the Bacteria

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- Bacterial metabolism and Physiology
- Microbial Genetics
- Effect of Physical factors on Bacteria
- Effect of Chemical factors on Bacteria
- Effect of Antimicrobials on Bacteria
- Bacterial Ecology
- Normal Flora of Oral cavity and other Organs
- Host and Parasite Relationship
- Bacterial Toxicity
- Pathogenicity of Bacteria
- Micrococeae: Staphylococcus, Micrococcus
- Streptococeae: Streptococcus, Pneumococcus
- Neisseriaceae (Gonococcus, Meningococcus)
- Vionellaceae (Vionella)
- Gram-Positive Spore-Forming Bacilli (Bacilli, Clostridia)
- Corynebacteria, Listeria, Lactobacilli
- Actinomycetales: Mycobacteria, Actinomycetes, Nocardia
- Enterobacteriaceae: Salmonella, Shigella, Escherichia, Klebsiella, Citrobacteria, Proteus
- Vibrionaceae
- Pseudomonadaceae and pseudomonas
- Brucellosis , Hemophilia , Bordetella, Alcaligene s, Achromobacter
- Bacteroidaceae: Bacteroids, Porphyromonas, Fusobacteria, Leptotrichia
- Spirillaceae

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- Spirochaetaceae: Spirochetes, Borrelia, Leptospira
- Chlamydiaceae
- Rickettsia
- Mycoplasma
- Microorganisms and Oro dental diseases

Practical Bacteriology

Subtitles:

- Familiarity with microscope and microbiology laboratory tools
- Sterilization
- Microorganism direct view
- Method of preparing a microbial culture and developing and staining germs and investigating their mobility
- Sampling (smear method ...) from oral normal flora and different areas of the mouth
- Culturing and isolating methods
- Microscopy test and culturing different kinds of Staphylococceae and differentiating between pathogenic and non-pathogenic Staphylococcus.
- Microscopy test and culturing Streptococcus and Pneumococcus, studying different kinds of hemolysis and other related tests for them
- Lactobacillus and Corynebacterium microscopy test and culturing Diphtheria Bacillus and Diphtheroids, gram staining, Albert staining, Neisseria staining
- Microscopic and culturing view of Neisseria
- Mycobacteriaceae: Studying Koch Bacillus and Leprosy, ZiehlNeelsen staining and then investing its culture
- Investing different kinds of Enterobacteriaceae culturing

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- Investing Helicobacter and Campylobacter
- Spirochaetaceae: Troponema
- Antibigram (Effect of antibiotics on the bacteria and)
- Different methods of counting bacteria

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7- Microbiology

Number and type of credit: Practical: (1 credit, 34 hours)

Practical microbiology (1 credit, 34 hours)

Subtitles:

- Being familiarity with microscope and tools of bacteria log laboratory
- Sterilization
- Method of preparing a microbial culture medium
- Method of culturing and separating bacteria
- Method of developing and staining germs and investigating their mobility

Microbiological test and culturing differed kinds of staphylococcus and diagnosing pathogenic staphylococcal, from non-pathogenic ones (Coagulase, Mannitol fermentation, phosphates test)

-Microbiological test and culturing streptococcal and pneumococcus , studying different kinds of , hemolytic and other tests, being related into them (bile dissolution, epsocin test, Insulin fermentation, bacitracin and etc),microbiological test of lactobacilli

-Studying neisseriaceae (gonococci meningococcae, microbiological test and culturing in differential selective an enriching mediums and explaining them, staining flanges).

-Microbiological tests, culturing and determining different kind of Yesinia, pastorallae, brucalae, hemophylucea

-Studying different kinds of vibrones (microscopic observing culturing and performing biochemical test and differential diagnosing pathogenic vibrones)

-Microbiological test and culturing diphtheria basil, diphtheria, staining germ, Albert banaice ,performing biochemical tests ,virulence, testing diphtheria basil .It is necessary to use coagulated serum, telluric doptas ,blood gels, for the Objectives of culturing diphtheria virus.

-Bacillaceae: Studying and culturing bacilli and some clostridium, staining anthrax, performing biochemical tests, studying other anaerobic bacteria.

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-Mycobacterium: studying leprosy and basil, staining zilnelsen, inoculation in sensitive animal, studying and culturing other kinds of actinomicits.

-Sprectocceae : Considering and investigating terbium, leptosepira, spiral

-Studying other bacteria, such as maycoplasma, Vicenza, Chlamydia and etc.

-Different ways of counting bacteria

-Functional activities, being related into virus

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8 & 9- Biochemistry

Number and type of credit: Theoretical: 3 credits/ Practical:1 credit

Objectives: familiarity with the biochemistry and bio-molecular aspects of the human body

Prerequisite: none

Theoretical Biochemistry (3 credits, 51 hours):

Subtitles:

- An introduction about biochemistry bio-molecular aspects of the human body
- Carbohydrates chemical structure
- Lipids chemical structure
- Acid amines and proteins` chemical structure, a brief presentation of water`s characteristics, PH and tampons
- Chemical structure of nucleotides and free nucleoids
- Vitamins and co-enzymes
- Enzymes
- Hormones (chemical structure, classification and mechanisms
- Biologic oxidation, energy and electron transmission chain
- Cell membrane and transportations
- Digestion and absorption mechanisms of carbohydrates
- Digestion and absorption mechanisms of lipids
- Digestion and absorption mechanisms of proteins, fate of amine groups, urea-making and metabolism of acid amines
- Nucleic acids and nucleotides` metabolism
- Proteins and nucleic acids` biosynthesis and anti biotic effects
- Blood chemical components

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- Water and electrolytes
- Metabolism adjustments
- Nutrition

Practical Biochemistry (1 credit, 34 hours):

Subtitles:

The biochemistry departments have to decide over the below choices regarding their facilities:

1. Familiarity with the laboratory equipment
2. Urine test
3. Blood composition test
4. Total blood protein measuring; electrophoresis of the proteins
5. Measurement of blood enzymes and possibly iso-enzymes
6. Measurement of blood electrolytes and rare elements

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10- Psychology

Number and type of credit: (2 theoretical credits, 34 hours)

Objectives: familiarity with the personality development of the children and adolescence and the pathogenic factors and discussing the issues related to mental disorders

Prerequisite: none

Subtitles:

1. Introduction and definitions of psychology from different aspects
2. The concept of the spirit from the Quran's point of view
3. Growth form different aspects and inter-personal differences
4. Perception and memory
5. Intelligence (definition, intelligence tests, different theories in this field)
6. Learning (types, Objectives and theories)
7. Personality (neurologic point of view, phenomenology, psychoanalytic, cognition, existentialism)
8. Personality disorders and classification of mental disorders, normal and abnormal behavior

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11- Genetics

Number and type of credit: (2 theoretical credits, 34 hours)

Objectives: studying the phenomenon of inheritance in the family and society level

Prerequisite: none

Subtitles:

1. The principles of inheritance, chromosomal diseases, genetic diseases
2. The diseases` inheritance basis, familial marriages, sexuality dependent diseases
3. Polygenic diseases, fetal diseases, blood group incompatibility
4. Immunogenic, abnormal hemoglobin disorders
5. Chromosome culture, genetic consult, congenital diseases

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12- Introduction to General and Oral Health

Number and type of credit: Theoretical: 1.5 credits/ Practical:0.5 credit

Prerequisite: none

Objectives: Familiarity of student with principles of health o discovering it' importance from cultural, social and economic aspects, being familiarity with internal and international facilities in different fields of health.

Subtitles:

- Introduction of Health and Dentition
- Primary Health Care
- Prevention and Control of Communicable and non-communicable diseases
- World Health Organization
- General Health Indices
- Local Health Organization
- Man power and Oral Health
- Principles of Preventive dentistry
- Introduction to Dentistry and Various Disciplines

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13-15 - Anatomical Sciences

Number and type of credit: Theoretical:4.5 credits/Practical:2.5 credits

Objectives: learning the microscopic structure of human body

Anatomical Sciences 1: Theoretical (2 credits, 34 hours)/ Practical (1 credit, 34 hours)

Prerequisite: none

Anatomical Sciences 2: Theoretical (2 credits, 34 hours)/ Practical (1 credit, 34 hours)

Prerequisite: Anatomical Sciences 1

Anatomical Sciences 3: Theoretical (0.5 credits, 8.5 hours)/ Practical (0.5 credit, 17 hours)

Prerequisite: Anatomical Sciences 2

Anatomical Sciences 1

Subtitles:

A. General anatomy, head and neck anatomy

1. The anatomy of bony structures of the human body with concentration on the structures of the head and neck
2. The detail anatomy of temporal and sphenoid bone
3. The detail anatomy of the jaws, nasal bone, palatal bone, conchae, lacrimal bone, zygomatic
4. The detail anatomy of the vertebrae, sternum, clavicle, scapula
5. The borders of neck, the elements of anterolateral region of the neck, the super facial and deep neck sheath, supra vertebrae sheath, infra and supra hyoid muscles, facial expression muscles
6. Thyroid gland, the sternocleidomastoid muscle, the cervical triangles, major cervical vessels, carotid sheath
7. Scalene muscle, hypoglossal nerve plexus, facial nerve plexus, jugular vein and artery

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8. Carotid nerve plexus, external and internal carotid artery, vagus nerve and sympathetic plexus
9. Sublingual and submandibular glands, facial muscles, facial vein, artery and nerve, facial sensory nerves
10. Masticatory muscles, temporal and parotid area and their contents
11. Pterygoid area, mandibular nerve, intra mandibular vein and artery, internal and external pterygoid muscles
12. Meninges, meningeal vein and artery, 12 cerebral nerves, cerebral veins and arteries
13. Eyes
14. Ears
15. Pharynx
16. Tongue
17. Thorax
18. Soft and hard palate
- B. Neuroanatomy:
 - 1 Introduction to neuron synapses; embryology and central nervous system
 - 2 Spinal cord
 - 3 Cerebrum and mid brain
 - 4 Verbal rhombencefalon
 - 5 Brosencephalon diencephalon
 - 6 The relationship within the hemisphere
 - 7 Blood circulation in the central nervous system; Autonomics nervous system; neural pathways of olfactory; neural pathways of senses of taste
 - 8 Neural pathways of earing; Fundamental of the equilibrium
 - 9 Osteology of vertebra, external ribs, clavicle, thorax

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10 Lungs (pleura); Heart and mediastinum

Practical General Anatomy (2.5 credits, 85 hours)

Subtitles:

1. Osteology of head and face
2. Anatomy of head and face and neck
3. A summary of upper and lower extremities
4. A summary of trunk and hip

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16- Medical physics

Number and type of credit: Theoretical (0.5credit, 8.5 hours); Practical (0.5 credit, 17 hours)

Prerequisite: none

Optical physics

Nature and properties of visible light, infrared rays, ultraviolet ray and their medical applications.

Physical study of eyes, diagnosing and treating spherical abnormalities, Astigmatism and its treatment modalities, properties of retina, optical field, observing colors, ophthalmic, bi-ocular vision, diplopic, recognizing prominence of things.

Practical plan

-Ultrasonic waves and their medical usage:

Producing and properties of ultrasonic waves, chemical and biological properties of ultrasonic waves, using these waves in medicine

-Practical plan:

Using high-frequency waves in medicine:

-Producing and properties of high –frequency waves

-Physiological properties and using high-frequency waves, in medicine.

A) Electrical surgery

B) Therapeutic therapy

-Bad effects of electrical current on body and protecting mehtods against it

Practical plan

-Nuclear medicine:

Structure of atom and energy of nuclei, Radioactive and its properties (ion-making rays), Natural radioactivity, Norton, made radioactivity, Molecules and their medical using, using radio-isotopes in diagnosing and treating.

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Practical plan

Physical meaning of radiology & radiotherapy

- Nature and properties of x-ray
- Generator of x-ray
- Attracting and measuring X-ray
- Physical rules of ray- based diagnosing and ray- therapy
- Radiobiology
- Protecting (X-rays, rays)

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17-18 - Physiology

Number and type of credit: Theoretical: 4 credits/ Practical: 1credit

Objectives: learning the functions of the cell, organs and body systems and their relationship

Prerequisite: Theoretical biochemistry1, Anatomical sciences1

Theoretical Physiology (4 credits, 68 hours):

Subtitles:

a. Cell physiology:

Hemostasis and body fluids, cell membrane structure and function, transportation mechanism (active transportation, non active transportation and facilitated transportation), membrane potential, muscular and neurotic tissue membrane physiology, action potential and it's diffusion, active potential in neurotic fibers, comparison of the active potential in cardiac muscle, nerve and striated and smooth muscle, the smooth muscle cell contractions, conduction in synapsis (nerve with nerve, nerve with striated muscle, nerve with smooth muscle), cell organs` physiology

b. Blood physiology:

Hematopoietic tissue physiology and it's steps, red blood cells` physiology, hemoglobin and it's role in gas carriage, white cell physiology, platelets` physiology and mechanism, blood coagulation, lymphatic and plasma physiology

c. Cardiac muscle physiology:

Physio-anatomy of the heart, cardiac muscle characteristics (electrical, conductive, oxygen provision and consumption), cardiac mechanics (systole and diastole, cardiac cycle), cardiac output, cardiac external nerves, the ions` effects on the heart, conduction specific tissue in the heart, electrocardiography, general information about vector cardiography, current damage

d. Blood circulation physiology:

General blood circulation physics (vascular resistance, viscosity, blood flow in the vessels, blood pressure, critical obstruction flow), the elements of the blood flow (the cardiac pumping, vascular resistance, blood volume), arterial blood circulation(arterial pressure, arterial pulse and related factors, arteriols` physiology, mean arterial pressure, arterial pressure measuring

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methods), capillary blood flow (capillary exchanges, osmotic and hydrostatic pressure in capillaries, Starling rule), venous blood circulation (transport and reservoir actions, venous pumping, central venous pulse, venous pressure determination), the cardiac history and its determination (heterometric and homeometric rules), neural regulation of the blood pressure (blood circulation reflexes such as chemical pressure receptors), humoral blood circulation (kidneys' role, hormones' role and blood ions), blood circulation adjustment in specific organs (heart, brain, skin, muscles), pulmonary blood circulation, lymphatic flow, muscular activities effects on cardiac system and blood circulation, blood circulation shock

e. Respiration physiology:

Physio-anatomy of the respiratory system, respiratory mechanics (respiratory muscles, alveolus pressure, pleural pressure), stretchability of the lungs and rib cage, role of the surfactant, work of breathing (stretching work, non-stretching work including viscosity and the airways), respiratory volumes, minute volume, rapid exhale in minute, peak respiratory flow, maximum respiratory volume, the dead volume and alveolus ventilation, gas transport rules, alveolus gas combination and pressure, pre-alveolus vascular gas combination, the ventilation to the blood flow proportion, blood gas transportation (the importance of the role of hemoglobin on the gas transportation), gas exchange in the tissue, the respiratory system and its components, respiratory neurological regulation, humoral regulation of the respiration, respiration in the extreme conditions (high altitude, muscular actions, fetal respiration), lungs' non-respiratory actions.

f. Renal physiology, body fluids adjustment:

Physio-anatomy of the kidney, renal blood circulation, nephrons' structure, glomerular filtration and measuring, tubular mechanisms for absorption and excretion of the material, plasma clearance, renal mechanisms for urine dilution and concentration, self regulatory mechanism of renal blood circulation, comparison of blood and urine composition, extra cellular fluid electrolytes adjustment, urinating mechanism

g. Arterial blood PH regulation physiology:

PH definition, Henderson Hasselbalch equation, acidosis and alkalosis types and compensating mechanism, blood tampon effect, extra cellular fluid tampon, intra cellular fluid tampon, respiratory system role in PH regulation, kidneys' role in PH regulation

h. Gastrointestinal system physiology and metabolism:

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Principles of the gastrointestinal motor actions, chewing and swallowing, gastric motor actions, small intestine motor actions, big intestine and recto-anal motor actions and defecation, saliva secretion and chemical digestion inside the mouth, gastric secretion and its regulation, gastric digestion, pancreatic exocrine secretion and its digestive actions, the bilious secretion and its digestive action, intestinal digestion, absorption in the gastrointestinal system, metabolic role of the liver, diet balance, vitamins physiologic actions, chewing and its neuromuscular mechanism

i. Nervous system physiology:

Physiology of corporal senses, spine physiology, cerebral trunk physiology, mid brain physiology, cerebellum physiology, thalamus physiology, hypothalamus physiology, brain membrane physiology, autonomic nervous system, body temperature, hearing and its disorders, vision and orbital physiology, general information about learning, memory and conditional reflexes, cerebro-spinal fluid, sense of taste and smell physiology, motor actions, basal ganglia, epilepsy, pain physiology

j. Endocrine physiology and sexual system:

Introduction to hormonology and the action mechanism, adenohipophysis and neurohipophysis glands physiology, hypophysis - hypothalamus relation, thyroid gland physiology, parathyroid glands physiology and calcium metabolism, pancreas, endocrine and blood sugar regulation, adrenal glandes (medula and cortex), general information on: thymus and epiphysis, menopause physiology, puberty physiology in boys and prostaglandins, menstrual cycles` physiology

Note: the below subtitles would be taught as the medical curriculum but in a briefer manner: cell environment physiology, respiration, renal and body fluid adjustments, gastrointestinal system and metabolism, blood circulation

Practical Physiology (1 credit, 34 hours)

Subtitles:

The practical part would be planned in accord with the theoretical plan

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19- Virology

Number and type of credit: Theoretical (1credit, 17 hours)

Prerequisite: none

Objectives: Theoretical and Practical instructions for the students on familiarizing them to the bacterial diseases which cause lesions in the oral environment and its mucosa or to the free-living bacteria in there and also to the bacterial contaminations which may transmit from the dentist to the patient.

Subtitles:

- Viruses structure and Characteristics and ways to prevent transmission
- Virus Reproduction
- Antivirals Effect and Mechanism
- Diagnostic Methods for Viral Diseases
- DNA Viruses, Poxviruses, Adenoviruses
- Polyomaviruses, Papilomaviruses, Parvoviruses
- Herpes viruses
- Hepatitisviruses
- RNA Viruses: Picornaviruses
- Mixo, Paramixoviruses and Rotaryviruses
- Retroviruses
- Other RNA Viruses

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20- Nutrition

Number and type of credit: (1 theoretical credit, 17 hours)

Objectives: Familiarity with importance of oral health and nutrition, in order to preventing from oral and dental diseases.

Subtitles:

Introduction and philosophy of preventive dentistry and reasons of needing to it, microbial plaque-health habits and necessity of keeping oral hygiene, teeth brushing -using related materials after teeth brushing nutrition and its effect in preventing from gingival diseases and decay of teeth -using fluoride in preventive pediatric dentistry- relation between preventive dentistry with other dentistry fields- indicators and their concepts in preventive dentistry- controlling patients, after treating and prevention.

Definition and history of nutrition -nutrition in dentistry -metabolism of energy and calories- carbohydrates, fats and protein nutrition, H₂O & electrolyte -minerals - metabolism of fluorine- vitamins -nutritional disorders and their relation with jaw and oral parts.

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21- Dental anatomy and morphology

Number and type of credit: Theoretical: 2.5credits/ Practical: 0.5credit

Objectives: familiarity with the teeth shape and morphology

Theoretical dental anatomy and morphology (2.5credits, 42.5 hours):

Subtitles:

1. General information about the teeth anatomy
2. Naming and formulation of the temporary and definitive teeth
3. The development, growth and eruption of the temporary and definitive teeth
4. The anatomy of the temporary teeth one by one
5. The anatomy of the definitive teeth one by one
6. The anatomy of the pulp chamber of the definitive teeth

Practical dental anatomy and morphology (0.5credits, 17 hours):

The educational requirement:

Curving the different surfaces leading to a fully curved set of all teeth by the student.

*This part of the course would be held in the laboratory

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23- Dental tissue in health and disease conditions

Number and type of credit: Theoretical (2 credits, 34 hours)

Objectives: The main goal of this integrated credit is introduction of preliminary principles of tooth and also tooth supporting tissues evolution. Additionally, the multistep dental caries are described and evidence-based caries control methods are discussed. Dental caries detection and practical individual and social dental caries control methods are introduced. All departments, associated with dental caries, are included in this credit.

References:

- Booklet of dental tissues in health and diseases
- Dental Caries, Ole fejerskov and Edwina Kidd, Last Edition

Subtitles:

- Embryology of head and neck
- Mesenchymal tissue formation and cells connections
- Dental buds Structure and tooth formation steps
- Histology of tooth (dentin- enamel- cement)
- Pulp
- Periodontium
- Bone Structure
- Oral Mucosa
- Histology of Salivary glands
- Observation of histological slides
- Biology of Dentin and Enamel
- Understanding of decay and its creation mechanism
- Different methods of Decay Detection
- Histopathologic aspects of caries

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- Epidemiology of Dental Caries
- Methods of controlling and preventing dental caries in society or individuals
- Radiographic diagnosis of caries
- Rampant caries, ECC and prevention methods
- Role of Nutrition in Dental Caries
- Evolutionary anomalies and dental structure defects
- Discoloration of teeth
- Radiography of dental anomalies

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24-25- Oral Pathology

Number and type of credit:

Practical Oral Pathology 1: Practical (1 credit, 34 hours)

Prerequisite: General pathology, Anatomical Sciences 1

Practical Oral Pathology 2: Practical (1 credit, 34 hours)

Prerequisite: Practical Oral Pathology 1

Practical Oral Pathology 1

Practical teaching of oral pathology (1-2) includes 40 microscopic slides of oral and a maxillary /mandibular lesions, being taught in laboratory

Oral pathology 2 practical (1 practical credit, 34 hours)

Number and type of credit: (1 practical credit, 34 hours)

Practical teaching of oral pathology (1-2) includes 40 microscopic slides of oral and a maxillary /Mandibular lesions, being taught in laboratory

Headlines:

Epithelial malignant & benign tumors

Benign:

Papilloma

Malignant:

1. Carcinoma in-situ
2. Squamous cell carcinoma
- 3- Verrucous carcinoma
4. Basal cell carcinoma

Mesenchyme benign & malignant tumors

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-Benign:

1. Fibroma
2. Lipoma
- 3-Mycoplasma
- 4.Schwannoma
5. Neurofibroma
6. Traumatic neuroma
7. hemangioma
- 8-Hereditary hemangioma
- 9-Sturge weber syndrome
- 10-lymphangioma
- 11-leiomyosarcoma&rhabdomyosarcoma

Malignant:

- 1-Fibrosarcoma
- 2-osteosarcoma

Lesions of salivary gland:

- 1-Histology of salivary gland
- 2-Disorder in saliva secretion
- 3-Sialadenitis (sialolithiasis)
- 4-Microbial& viral saliva infection
- 5-Cysts of saliva glands, such as mucocele&ranula
- 6-Salivary glands syndrome (mucocele&Sjogren)

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Salivary gland tumors:

Benign:

1-Pleomorphic Adenoma

Malignant:

1-Malignant Pleomorphic adenoma

2-Mucoepidermoid carcinoma

3. Adenoidcystic carcinoma

Metastatic lesions:

-Epithelial metastatic tumors

-Mesenchymal metastatic tumors.

Metabolic & hormonal diseases signs:

1-Mineral disorder: calcium / phosphorus- phosphorus- Sodium, potassium, zinc

2. Proteins disorder (amine acids), amyloidosis

3- Carbohydrates metabolism disorder including metabolism disorder, including metabolism disorder in Muccopolysaccharidosissyndrome

4. Fat metabolism disorder

5. Disorder of vitamins A, B, C, D

6. Hormonal metabolism disorders (pituitary- thyroid- parathyroid - adrenal)

7. Pancreas, Diabetes

Bone lesions:

1. Central Giant Cell Lesions
2. Hyperparathyroidism
3. Cherubim
4. Fibrous dysplasia
5. Central ossifyingfibroma

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6. Paget's disease

Pseudo- Tumors of oral cavity

1-Irritation fibroma

2. Epulisfissuratum

3. Pyogenic granuloma

4. Peripheral giant cell granulomaganuloma

5. Peripheral ossifying fibroma

6. EpulisGranulomatousa

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26- Medical Ethics, Professional Commitment and Communication Skills

Number and type of credit: 1 theoretical credit, 17 hours

Objectives: familiarity with the dental instruments, their application and maintenance

Subtitles:

- General and practical ethics and professionalism
- Altruism, respect, job sublimity and justice
- Honor and honesty, conscientiousness
- History and moral philosophy, and the four principles of bioethics
- Ideologies and moral theories
- Diagnostic tools in ethical decision making
- Informed consent, acquittal and determination of substitute decision-making capacity
- Confidentiality and speaking the truth
- The relationship of dentist with other members of the health
- Principles of office management, medical documentation, communication of dentists with patients
- Familiarity with the medical council, dental regulations, responsibility, medical malpractice and errors, atonement

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- Understanding the implications of certification, and the rules of court proceedings
 - Conflict of interest
 - Ethics in educational environments
 - Islamic jurisprudence traditions and its relation to ethics in dentistry
 - Challenges in medical ethics
 - Integrated case presentation
- Importance of effective communication between patient and dentist
- 1st part of communication: Begin a conversation
- 2nd part of communication: Data collection
- 3rd part of communication: Understanding patient's view
- 4th part of communication: Exchange of information
- 5th part of communication: Agreement on diagnosis and therapeutic approaches
- 6th part of communication: Ending conversation
- Role play sessions

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27-33- Orthodontics

Theoretical Orthodontics 1 (1 credit, 17 hours)

Prerequisite: none

Theoretical Orthodontics 2 (1 credit, 17 hours)

Prerequisite: Theoretical Orthodontics 1

Theoretical Orthodontics 3 (1 credit, 17 hours)

Prerequisite: Theoretical Orthodontics 2

Practical Orthodontics 1 (1 credit, 34 hours)

Prerequisite: Theoretical Orthodontics 1

Practical Orthodontics 2 (1 credit, 34 hours)

Prerequisite: Theoretical Orthodontics 2-Practical Orthodontics 1

Practical Orthodontics 3 (1 credit, 34 hours)

Prerequisite: Theoretical Orthodontics 3-Practical Orthodontics 2

Practical Orthodontics 4 (1 credit, 34 hours)

Prerequisite: Practical Orthodontics 3

Theoretical Orthodontics 1

Objectives: Teaching and considering jaws, dental, and muscular anomalies, both theoretical and practical- Determining normal and abnormal occlusion- manner of-growing facial and jaws bones- physiology and morphology of muscles and their relation with malocclusion -mechanism and physiology of maxillary joint and their relation with muscles.

Prerequisite: Histology & embryology –osteology- anatomy of head and neck - dental materials- oral pathology

Subtitles:

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1. Introduction, definition and orthodontic services
2. Making normal occlusion and those factors, being effective in producing normal occlusion.
 - A. Anatomy, physiology and morphology of oral cavity and its related structures.
 - B. Different stages of producing occlusion (milky-mixed- permanent)
 - C. Condition of normal occlusion in 3 dimensions
3. Growing skull including:
 - A. Importance of considering skull growth.
 - B. Stage of growing bones-different kinds of bone making system.
 - C. Considering skull growth- forming initial oral parts.
 - D. Growing head and face, before and after birth
4. Congenital anomalies including:
 - A. All kinds of oral and facial clefts.
 - B. Classification
 - C. Morphology and way of forming
5. Dental-jaw bones anomalies including:
 - A. Defining malocclusions
 - B. Ways of classifying dental-jaws malocclusions
 - C. Individual malocclusions
 - D. Group malocclusions
 - E. Different types of face

Practical Orthodontics 1

Practical orthodontics (1) includes:

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- A. Determining practical tools and materials of orthodontia
- B. Tooth wiring, manner of using simple movable, functional devices.

Theoretical Orthodontics 2

Headline

Etiology of malocclusion including:

- A. Systems of classifying etiology
- B. General Causes
- C. Local causes
- 7. Diagnosis including:
 - A. Principles of diagnosing
 - B. Clinical examination
 - C. Molding and considering orthodontic models.
 - D. Providing homographic and radiographies inside and outside of mouth
 - E. Values of all obtained standards and planning of all obtained and planning of treatment.
- 8. Biomechanical principles including:
 - A) Physiological movement
 - B. Orthodontic force
 - C. Dental changes in orthodontic movements

Practical Orthodontics 2 (1 practical credit, 34 hours)

Theoretical Orthodontics 3

Subtitles:

- Treatment Plan

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- Treating simple anomalies
- Orthodontic devices

Practical Orthodontics 3 (1 practical credits, 34 hours)

Practical Orthodontics 4 (1 practical credits, 34 hours)

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34-40- Endodontics

Number and type of credit:

Basic principles of Endodontics1: (2 credits, Theoretical: 0.5 , Practical: 1.5)

Basic principles of Endodontics2: (2 credits, Theoretical: 0.5 , Practical: 1.5)

Theoretical Endodontics 1 (1 credit, 17 hours)

Prerequisite: Basic principles of Endodontics1

Practical Endodontics 1 (2 credit, 68 hours)

Prerequisite: Basic principles of Endodontics2- Theoretical Endodontics 1

Theoretical Endodontics 2 (1 credit, 17 hours)

Prerequisite: Theoretical Endodontics 1

Practical Endodontics 2 (2 credits, 68 hours)

Prerequisite: Theoretical Endodontics2- Practical Endodontics1

Practical Endodontics 3 (1 credits, 34 hours)

Prerequisite: Practical Endodontics2

Objectives: Teaching a collection of Theoretical and practical textbooks into students; so that, they shall be able to diagnose and treat lesions, being related into pulp and its infective complications.

Theoretical Endodontics 1 (1 credit, 17 hours):

Subtitles:

1. Definition and history of endodontics
2. Familiarity with the internal anatomy of the teeth

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3. Principles of access cavity preparation
4. Familiarity with the endodontic instruments and materials
5. Biological principles and Objectives of canal cleaning and rinsing
6. Cleaning and shaping of the straight canals
7. Cleaning and shaping of the curved canals
8. Treatment accidents
9. Sterilization on Endodontics
10. Radiography in Endodontics

Practical Endodontics 1 (2 credit, 68 hours):

Training mean: phantom

Objectives: access cavity preparation, cleaning and shaping and obturation of upper and lower incisors, premolars, and molars

Theoretical Endodontics 2 (1 credit, 17 hours):

Subtitles:

1. Histology and embryology of the pulp, dentine and periapical tissues
2. Pulpal inflammation and stimulating factors
3. Microbiology and immunology in Endodontics
4. Pulpal diseases
5. Prevention of pulpal diseases
6. Periapical diseases
7. Principles of diagnosis and vital tests in Endodontics
8. Treatment plan in Endodontics

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9. Case selection in Endodontics
10. Local anesthesia in Endodontics
11. Isolation in Endodontics and use of rubber dam
12. Endodontics emergencies
13. Endodontic pharmacology

Practical Endodontics 2 (2 credits, 68 hours):

Requirements:

Performing the thorough treatment of at least 10 canals in the clinic including the single and double canal teeth.

Practical Endodontics 3 (2 credits, 68hours):

Requirements:

Performing the thorough treatment of at least 15 canals in the clinic including the single and double canal teeth and must include at least 3 molar teeth.

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41-42- Implantology

Number and type of credit:

Theoretical (1credit, 17 hours)

Prerequisite: Theoretical Radiology 2- Basic Principles of Partial Prosthodontics- Theoretical Periodontics3- Theoretical OMF Surgery2- Practical Periodontics3- Practical Fixed Prosthodontics 1 - Practical OMF Surgery3

Practical (2 credit, 68 hours)

Prerequisite: Theoretical Implantology

Objectives: The Objectives of this course is student's familiarity with general concepts of implant therapy and case selection and referral cases to specialist based on the degree of difficulty

Theoretical subtitles:

- Evolution and familiarity with the types of implants and their components
- Anatomical considerations for implant therapy
- Implant designing (Micro and Macro design)
- Biological consideration of hard and soft tissue around the implant
- Case selection and treatment plan from the perspective of surgery
- Case selection and treatment plan from the perspective of prosthodontics
- Methods and techniques for diagnostic imaging
- Diagnostic casts and surgical tips
- Principles of implant surgery and procedures
- Treatment method of implant-based over dentures
- Treatment of implant-based fixed prosthesis (screwed and cemented)
- Advanced surgery methods, hard tissue reconstruction surgery and sinus lifting
- Advanced surgery methods, soft tissue reconstruction

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- Complications and failures of implant from the perspective of surgery
- Complications and failures of implant from the perspective of prosthodontics
- Pre-implantitis
- Indexes, hygiene education and following sessions

Practical (2 credits, 68 hours)

Minimum expected practical skills:

- Proper case selection for implant therapy
- Evaluation of patient's tests and images
- Be able to put implant on the model in different areas
- Can prepare the patient for implant surgery
- Work as an assistant in an implant surgery
- Prosthetic treatment on the model
- Participating in cast preparation and preparing the patient for prosthetic treatment
- Visiting the patient in following sessions after surgery and performing the required things for patient
- Visiting the patient in follow-up sessions after giving him the denture and performing the required treatments
- Diagnose the iatrogenic complications and refer the patient

Practical Subtitles:

- Reviewing the records of treated patients
- Documenting, examination and the order of para clinical tests and analyzing them for treatment. Analyzing of CBCT and OPG radiographies
- Participation in evaluating the patient from the perspective of prosthetics and surgery. Cast preparation. Patient preparation for treatment
- Surgery on the model

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- Observing process of a surgery
- Participating in surgery
- Follow-up sessions after surgery and assessment of iatrogenic complications
- Report an evidence-based treatment

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43- Local anesthesia

Number and type of credit: Theoretical (0.5 credit)/ Practical(0.5 credit)

Minimum practical skills requirements:

The ability to explain pain neurophysiology and principles of local anesthesia.

The ability to name Amide and Ester local anesthetics and their indications.

The ability to explain the anatomy of 5th(trigeminal nerve)

The ability to explain Anesthetic techniques in both jaws

To explain local and systemic anesthesia complications and how to deal with it

To name instruments of anesthesia and use them in correct way

To apply anesthesia techniques correctly

Do the anesthesia techniques on each other properly supervised by the professor

- Pain neurophysiology and local anesthesia principles
- Local anesthetics
- Practical anatomy of nerves of the head and neck
- Local anesthesia techniques
- Local anesthesia complications
- An introduction of the appliances and performing the anesthesia techniques on replica
- Performing the anesthesia techniques on each other
- Observing and performing the anesthesia on patient supervised by the seniors

Main resources of the course: Malamed, last edition

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44-46- Oral and Maxillofacial Diseases

Practical OMF diseases 1(2 credit, 68 hours)

Practical OMF diseases 2(1 credit, 34 hours)

Prerequisite: Practical OMF diseases 1/ Systemic Diseases 1&2

Practical OMF diseases 3(1 credit, 34 hours)

Prerequisite: Practical OMF diseases 2

Practical OMF Diseases 1

1. Practical methods of intra and extra oral examinations in the clinic and preparing minimum of 6 full documents (complete examination)
2. Seminar presentation according the determined subject by the corresponding attending
3. Performing the screening examination of at least 50 patients and preparing referring documents and guiding the patient to the treatment process to the other departments

Practical Oral diseases 2

1. Attendance to the seminars of oral lesions (minimum 6 sessions) and active participation at the daily clinical pathology discussion
2. Two presentations according the determined subject by the corresponding attending and being
3. Performing complete examination of at least 10 patients
4. Performing the screening examination of al least 50 patients and preparing referring documents and guiding the patient to the treatment process to the other departments

Practical Oral diseases 3

1. Participation in the treatment of complicated cases (cases treated by master students) including: taking history and document preparation, differential diagnosis and definitive diagnosis after the required tests, preparing a presentation about the case and reporting as a case report, at least one case

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2. Familiarity with the appropriate communication with the other health care professionals and consultation
3. Familiarity with the para-clinical tests (i.e. radiographs, CT-Scan, laboratory tests) capability to interpret the results
4. Sampling methods; biopsy, cytology, bacteriological smears
5. Prescription and providing the patient with the sufficient information

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47-50- Systemic Diseases

Number and type of credit:

Systemic Diseases 1: Theoretical (1credits, 17 hours)

Systemic Diseases 2: Theoretical (1credits,17 hours)

Systemic Diseases 3: Theoretical (0.5 credit, 8.5 hours) Practical (0.5credit, 17 hours)

Systemic Diseases 4: Practical (1 credit, 34 hours)

Objectives: Becoming familiar with history taking method and controlling patient's vital signs, also to cardiovascular diseases cognition, venereal and infectious diseases, fungal and viral diseases, nutritional and metabolic diseases and types of diabetes, nutritional and metabolic diseases and the disorders of the endocrine glands and liver, water and electrolyte imbalance, disorders of the gastrointestinal tract and poisonings, blood diseases, hematologic and allergic diseases, oropharyngeal and neuromuscular cancers and oral symptoms related to each one, related tests and managements.

Course Management:

Faculty Educational Council is responsible for presenting the courses of systemic diseases.

Systemic Diseases 1

Subtitles:

- Taking History and Patient Evaluation of the Vital Signs and Controlling them
- Cardiovascular Diseases and Dental Management
- Bleeding and Clotting Disorders and Dental Management
- Hematologic and Lymphoid Lesions: Hodgkin and non-Hodgkin Lymphoma, Burkitt Lymphoma and likely lesions.
- Gastrointestinal Diseases and Poisonings, Oral Manifestations, and Dental Management
- Liver diseases and Hepatitis and Dental Management

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Systemic Diseases 2

Subtitles:

- Disorders of the Endocrine system (Diabetes, Thyroid, Adrenal) Oral Manifestations, and Dental Management
- Renal Diseases and Dental Management
- Allergy and Immunology, Oral Manifestations, and Dental Management
- Venereal and Infectious Diseases, Oral Manifestations, and Dental Management
- AIDS
- Neuromuscular Diseases and Dental Management
- Diseases of the Respiratory System, Oral Manifestations, and Dental Management
- Pregnancy and Lactation Dental Management
- Nutritional Disorders (Calcium and Vitamin Imbalance) , Oral Manifestations, and Dental Management

Systemic Diseases 3:

Subtitles:

Minimum Practical skills required:

1. To analyze and evaluate the patient's reception and hospitalization and clearance process in hospital
2. To supervise and evaluate systemic patients in hospital dentistry clinics
3. To request advice under supervision of masters and seniors for hospitalized dental patients

Learn-teach methods:

The diseases and surgery teams' partnership in this lesson presentation. The priority presentation of this lesson is in the hospital. In the case of hospital absence the systemic patients are examined and treated in outpatient surgery clinic and otherwise in dentistry clinic.

Subtitles:

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- Surgery plans in systemic patients
- Acquaintance with biography taking and examination and hospital file recording
- The patient reception and hospitalization process and clearance in hospital principles
- Acquaintance with systemic patients' management method in hospital dentistry clinics
- Laboratory tests interpretation

Systemic diseases 4

Suggested Learn-teach methods:

Presence at the patient's bedside as an observer- examination and treatment plan and offer service under the supervision of masters

The diseases and surgery teams' masters have partnership in this lesson presentation. The priority presentation of this lesson is in the hospital. In the case of hospital absence the systemic patients are examined and treated in outpatient surgery clinic and otherwise in dentistry clinic.

Minimum Practical skills required:

1. To examine the patient and complete his/her medical file with the help of biography taking
2. To present the systemic patients' dental diagnosis and treatment plan to the master
3. To present the required dentistry therapeutic services to the systemic patients
4. To request advice for dentistry services of the hospitalized patients

Subtitles:

- Acquaintance with dentistry advices of the hospitalized patients
- Dentistry under anesthesia
- Acquaintance with extensive jaws and face surgeries
- Dentistry diagnosis and treatment plan of systemic patients
- Health education and dentistry therapeutic services presentation to the systemic patients if features available
- Dentistry advice for hospitalized patients

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52- Treatment of Complete Edentulous Patients

Number and type of credit: Theoretical (1 credit, 17 hours)

Subtitles:

- Diagnosis and treatment plan in edentulous patients
- Preparation before complete prosthetic denture treatment
- Methods of taking impression in complete prosthetic denture
- Jaw movements and occlusion in complete prosthetic denture
- Articulators (understanding the components) and familiarity with different types of face bows
- Midterm exam
- Artificial tooth types and tooth selection, putting teeth in order, in abnormal jaw relations
- Checking occlusion, remounting, Denture delivery
- Complications after denture delivery
- Reline and rebase and tissue conditioning materials
- Immediate Denture

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55-56- Complete Prosthodontics Denture

Number and type of credit: 5 credits

Objectives: acquiring skill for how to treat the fully edentulous patients

Basic principles of Complete Prosthodontics Denture: Practical (2 credits, 68 hours)

Prerequisite: Dental Anatomy & Morphology- Basic Principles of Dental Material

Theoretical Complete Prosthodontics Denture 1 (1 credit, 17 hours)

Practical Complete Prosthodontics Denture 1 (2 credits, 68 hours)

Prerequisite: Basic principles of Complete Prosthodontics Denture

Practical Complete Prosthodontics Denture 2(2 credits, 68 hours)

Prerequisite: Practical Complete Prosthodontics Denture 1

Theoretical Complete Prosthodontics Denture 1 (1 credit, 17 hours)

Subtitles:

1. Introduction
 - Terminology of removable complete prosthodontics
 - Indications
 - Limitations, advantages and disadvantages
2. Functional anatomy in relation with complete prosthesis
 - Bone morphology
 - Anatomy of the muscles affecting the removable complete prosthesis
 - Oral mucosa
 - Surfaces of removable complete prosthesis
 - Anatomy of the lower 1/3 of the face
3. Impression taking
 - Definition and Objectives; tissue preservation, support, stability, retention, esthetics, impression materials
 - Types of impressions; primary impression, primary model preparation, special tray, definitive impression, border molding, boxing, definitive model preparation
4. Lower jaw movements
 - Anatomy of temporo-mandibular joint (TMJ)
 - Functional anatomy of the muscles and effective ligaments
 - Condylar movements, rotational movements, dispositional movements
 - Border movements
5. Jaw relations

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- Vertical relations
 - Horizontal relations
 - Orientation relations
 - Record base
 - Practical workflow of bite registration
6. Tooth selection
- Anterior teeth; size, shape, color, material
 - Posterior teeth; size, shape, color, material
 - Advantages and disadvantages of acrylic and porcelain teeth
7. Articulators
- Classifications
 - Simple
 - Pre adjusted; free plan
 - Adjustable
 - Semi adjustable; dentatus, hanau H2
8. Transferring the relations to the articulator
- Transferring the upper jaw model with the mounting gij
 - Transferring the upper jaw model with face bow
 - Transferring the lower jaw model
9. Try in of the arranged teeth
- Re-registration of the jaw relations in case of any incompatibility
10. Laboratory process
- Wax up, investment, processing, remounting, occlusal adjustment, finishing and polishing
11. Delivery to the patient
- Evaluation of the surfaces
 - Evaluation of the occlusion
 - Instruction and hygiene control
 - Follow up sessions

Practical removable complete prosthodontics 1 (2 credits, 68 hours):

Requirement:

Performing the total workflow of fabrication of removable complete prosthesis in the laboratory and delivering a set on complete denture (upper and lower jaw)

Practical removable complete prosthodontics 2(2 credits, 68 hours)

Requirements:

Performing the treatment on an edentulous patient regarding all the clinical and laboratory procedures and delivering the prosthesis (upper and lower jaw) to the patient and follow up of the patient at least for three sessions.

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57-58- Removable Partial Prosthodontics

Number and type of credit: 5 credits

Objectives: familiarity with preparation of the mouth for the removable partial prosthesis, treatment plan, prosthesis fabrication and performing the treatment

Basic principles of partial prosthodontics: Practical (1 credit, 34 hours)

Prerequisite: Basic principles of complete prosthetic Denture, Basic principles of Restorative Dentistry, Basic principles of Dental Materials

Theoretical Removable partial prosthodontics 1(1 credit, 17 hours)

Practical Removable partial prosthodontics 1(2 credits, 68 hours)

Prerequisite: Basic principles of partial prosthodontics

Practical Removable partial prosthodontics 2(2 credit,68 hours)

Prerequisite: Practical Removable partial prosthodontics 1/ Theoretical Prosthodontics 1

Theoretical Removable partial prosthodontics 2 (1 credit, 17 hours)

Subtitles:

1. A valid classification of partially edentulous arches; kennedy-applegate, krodock, classifications of partial prosthesis
2. Elements of a partial prosthesis
 - Major connectors of the upper jaw
 - Major connectors of the lower jaw
3. Support:
 - Definition, types of support
 - Rest, definition, major role, auxiliary roles, it`s location and types
4. Surveying
 - The surveyor device

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- Why should survey?
- Influencing factors on surveying
- 5. Retention:
 - Definition
 - Factors affecting on retention
 - Types of mechanical retention (direct retainers)
 - Clasps; definition, types of clasps, characteristics of a clasp (support, retention, stabilization, reciprocation, encirclement, passivity)
- 6. Indirect retainers:
 - Factors prohibiting rotational movements of partial prosthesis
 - Rotational movements and their axis
 - Types of reciprocation
- 7. Base:
 - Definition
 - Types, advantages and disadvantages
 - Roles; in tooth retained prosthesis, in tooth and tissues retained prosthesis
 - Characteristics of an ideal base
- 8. Minor connector:
 - Definition
 - Roles, types and location
- 9. Impression:
 - Impression materials
 - Primary impression and primary gypsum model

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- Workflow of process undertaken with the primary gypsum model; survey, metal frame design, special tray, definitive impression and definitive gypsum model preparation, relief and block out

10. Duplication and waxing

- Sprue
- Cylindering
- Casting
- polishing

Practical Removable partial prosthodontics 1(2 credits, 68 hours)

Requirements:

Design and fabrication of metal framework on the model

Practical Removable partial prosthodontics 2(2 credit, 68 hours)

Requirements:

Performing diagnosis, treatment plan and the treatment of at least one patient in need of partial prosthesis with metal framework and follow up of the patient for at least three sessions

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59-61- Fixed prosthodontics

Number and type of credit: 5 credits

Objectives:

- Learning the theoretical basis of fixed prosthesis and bring the knowledge to the clinical practice
- Acquiring the necessary skills to replace the missed teeth
- Acquiring the necessary skills to maintain and repair the patients' existing fixed prosthesis
- Esthetic and functional rehabilitation of the mouth

Basic Principles of Fixed Prosthodontics: Practical (2 credits, 68 hours)

Prerequisite: Dental Anatomy and Morphology, Basic principles of Endodontics1, Basic principles of Dental Materials

Theoretical Fixed prosthodontics 1 (1 credit, 17 hours)

Practical Fixed prosthodontics 1 (2 credits, 68 hours)

Prerequisite: Basic Principles of Fixed Prosthesis- Practical Restorative Dentistry 1

Practical Fixed prosthodontics 2 (2 credits, 68 hours)

Prerequisite: Practical Fixed prosthesis 1 - Practical Restorative Dentistry 2-Theoretical Advanced Prosthodontics 2- Practical Endodontics2

Theoretical Fixed prosthodontics 1 (1 credit, 17 hours)

Subtitles:

1. Principles of fixed prosthodontics; introduction, history and terminology
2. Biomechanical principles of tooth preparation; types of preparations and finish lines (pros and cons); location of the finish line

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3. Preparation of tooth for a full crown; casting full metal, porcelain fused to metal (PFM) and porcelain jacket crown
4. Temporary crown fabrication
5. Impression taking; tissue preparation for impression, gingival retraction and fluid control, impression materials, impression techniques
6. Cast and die preparation; different techniques of pinning and die preparation, types of dies (gypsum, plastic, epoxy resin), trimming and ditching
7. Registration of jaw relations and transferring to articulator; transferring the upper jaw relations using face bow, transferring the lower jaw relations (central relation, central occlusion), bite registration material
8. Wax up; die preparation for wax up, wax up for full crown and facing crowns and porcelain fused to metal
9. Pontic types and its wax up
10. Investment; investment material and their characteristics, sprues, vacuum mixture machine
11. Casting techniques; ovens, wax burn out, casting machines, melting alloys, proper temperature, fixing casting failures, finishing and polishing
12. Tooth preparation for partial veneer crowns; advantages and disadvantages, anterior $\frac{3}{4}$ crowns, posterior $\frac{3}{4}$ crowns, $\frac{7}{8}$ crowns
13. Tooth preparation for inlay and onlay; definition, advantages and disadvantages, preparation techniques
14. Biologic principles of tooth preparation; effect of preparation on the dental tissues, speed, temperature, sharpness of the burrs, cooling during preparation, under and excessive preparation, employment of varnishes and liners, impression taking, temporary crown materials, cements, biocompatibility of the material, infra gingival cords for gingival retraction

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Practical Fixed prosthodontics 1 (2 credits, 68 hours)

Requirements:

1. Preparation of second premolar for porcelain fused to metal (PFM) crown; on the model
2. Preparation of second molar for full casting metal crown; on the model
3. Impression taking
4. Die preparation and working cast; articulation
5. Wax up of retainer and pontic between two prepared teeth (first molar)
6. Investment and casting
7. Finishing and polishing, delivery
8. Preparation of upper incisor tooth for post and core
9. Fabricating the post and core of the prepared upper incisor tooth
10. The student must deliver a three credits bridge and a casting post and core at the end of the course

Practical Fixed prosthodontics 2 (2 credits, 68 hours)

Requirements:

Treating a patient needing a single crown or 3 credits posterior bridge with the post and core (all the laboratory process must be performed by the student)

1. Familiarity with the instruments and their application in the clinic
2. Being able to fill the documents and explaining the treatment options to the patient
3. Preparation of the canals for the post and core
4. Preparation of post and core (direct and indirect methods)
5. Cementation of post and core
6. Fabrication of the prosthesis
7. Delivery to the patient and follow up

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62-64- Advanced Prosthodontics

Number and type of credit:

Theoretical Advanced Prosthodontics 1: (1 credit,17 hours)

Prerequisite: Basic Principles of Partial and Fixed Prosthetic Dentures-Treatment of Complete Edentulous Patients

Theoretical Advanced Prosthodontics 2:(1 credit, 17 hours)

Prerequisite: Theoretical Advanced Prosthodontics 1

Practical Advanced Prosthodontics: (2 credits, 68 hours)

Prerequisite: Theoretical Advanced Prosthodontics 2

Minimum Practical skills required:

To be able to diagnose and design a treatment plan for patients with teeth and uncomplicated toothless areas (with master's diagnosis)

Subtitles:

- Diagnosis and treatment plan in patients with partial toothless areas
- Designing principles in partial dentures
- Tissue preparation levels, Base teeth recontouring and reshaping methods
- Impression methods in removable partial dentures (functional impression, altered cast)
- Jaw relationship record in types of toothless kenedy classification and record bases importance
- Laboratory levels and Delivery and post-delivery problems management
- Combination syndrome and Single denture
- Reline and repair in removable partial denture

Mid-term exam

- Acrylic and Provisional Prosthesis
- Over denture
- Aesthetic in removable partial dentures and attachments application in partial dentures

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- Case Presentation

Theoretical Advanced prosthodontics 2

Minimum Practical skills required:

To be able to diagnose and design a treatment plan for patients with teeth and uncomplicated toothless areas.

Subtitles:

- Diagnosis and treatment plan and prognosis in patients with teeth
- Diagnosis and treatment plan and prognosis in patients with teeth and partial toothless (Multi-disciplinary treatment plans)
- Treatment plan in root treated teeth
- Treatment plan and ... in teeth received periodontal therapy, electro surgery
- Casting Alloys (characteristics and clinical applications)
- Biomechanics and Advanced framework design+ types of connections
- Framework examination and troubleshooting+ soldering

Mid-term exam

- Porcelain and porcelain placement and porcelain examination
- Advanced ceramics- full ceramic crowns- CAD/CAM
- Cement and Bonding restorations
- Fixed-partial and partial base crown replacement
- Aesthetic in patients with teeth and partial toothless
- Color and color selection
- Treatment for cases with abrasion and vertical dimension reconstruction- Post-treatment cares- success and failure in treating patients with teeth and partial toothless

Practical Advanced Prosthodontics

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Minimum Practical skills required:

1. To choose patients with multi-disciplinary treatment plans for treating
2. To write down an optimal treatment plan due to the characteristics of a proper base tooth for a fixed prosthesis or a removable partial prosthesis and discuss it with her/his master and defend it
3. To communicate the patient properly and prepare a complete file due to all of the patient's problems with the help of an exact examination
4. To refer the patient to the specialist if necessary
5. To accomplish the working levels used to construct the intended dental prosthesis
6. To deliver the dental prosthesis acceptable aesthetically and coordinated in terms of biologic and occlusion to the patient
7. To evaluate the prosthesis quality and be able to change and adjust and repair it skillfully
8. To educate the patient and follow him/her and manage his/her post-delivery problems skillfully
9. To evaluate the effective reasons of the success and failure of the treatments in patient follow ups and discuss them with her/him master
10. To examine the patient's periodontium and its health in treatment and next follow up sessions and do necessary actions with periodontics team cooperation
11. To do one or some of the treatments below according to the master's opinion:
 - Remove the carries to control and design treatment plan
 - Cutting off and taking out the crown and bridge and making temp
 - Reline and rebase and repair
 - Provisional acrylic prostheses
 - Single-denture
 - Crowns based for partial dentures
 - Over denture
 - Full or partial denture treatment
 - Adding tooth or root wire clasp to the current patient prosthesis
 - Repair prosthesis fracture
 - Prepare surgery stent

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65-71- Periodontics

Number and type of credit: 7 credits

Objectives: familiarity with the gingival diseases and being able to diagnose, plan and perform the treatment

Theoretical Periodontics 1 (1 credit, 17 hours)

Prerequisite: none

Theoretical Periodontics 2 (1 credit, 17 hours)

Prerequisite: Theoretical periodontics1

Theoretical Periodontics 3 (1 credit, 17 hours)

Prerequisite: Theoretical periodontics2

Practical Periodontics 1 (1 credit, 34 hours)

Prerequisite: Theoretical periodontics1

Practical Periodontics 2 (1 credit, 34 hours)

Prerequisite: Practical periodontics1

Practical Periodontics 3 (1 credit, 34 hours)

Prerequisite: Practical periodontics2

Practical Periodontics 4 (1 credit, 34 hours)

Prerequisite: Practical periodontics3

Theoretical Periodontics 1 (1 credit, 17 hours):

Subtitles:

1. Introduction and history 2. Anatomy and histology of the periodontium; gingiva, root cement, periodontal ligament, alveolar bone, epithelial attachment
3. Etiology of the periodontal diseases; local and systemic
4. Microbiology of the periodontal diseases; microbial plaque and its formation mechanism

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5. Occlusal trauma
6. Pathology of periodontal diseases; tissue destruction mechanism and immunology
7. Epidemiology of periodontal diseases
8. Prevention from periodontal diseases and its methods
 - Brushing methods and how to teach them to the patient
 - Accessory tools for plaque removal
 - Fluoride and its preventive role; local and systemic application
 - Information about the toothpastes and mouth washes and polish materials

Practical Periodontics 1(1 credit, 34 hours):

Requirement:

1. Oral health education
2. Familiarity with periodontal instruments
3. Normal periodontium`s characteristics
4. Sterilization and disinfection in periodontal clinic
5. The application of periodontal instruments and how to work with them
6. Sharpening the instruments
7. Scaling on model

Theoretical Periodontics 2(1 credit, 17 hours):

Subtitles:

1. Signs and symptoms of periodontal diseases and their classification
2. Gingival hyperplastic diseases
3. Examination, history taking and document completion

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4. Prognosis of the diseases
5. Diagnosis; radiologic interpretation in periodontics
6. How to work with the instruments; scaling and curettage and periodontal surgeries
7. Scaling methods:
 - Supra-gingival scaling
 - Sub-gingival scaling
 - Root planning
 - Scaling with ultrasonic methods
8. Emergencies in periodontics
 - Periodontal abscess
 - Acute necrotizing ulcerative gingivitis (ANUG)
 - Pericoronitis
 - Acute gingivitis

Practical Periodontics 3(1 credit):

Requirement:

1. History taking, examinations and document completion
2. Diagnosis and periodontal treatment plan, performing the treatment and follow up of the patient for at least 3 sessions
3. Supra and infra gingival scaling with manual instruments for at least 3 patients
4. Root planning with manual instruments for at least 1 patient

Theoretical Periodontics 3(1 credit):

Subtitles:

1. Periodontal surgeries; principles and process

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- Gingivectomy, gingivoplasty
- Simple flap surgery
- 2. Classification and application of mucogingival graft
- 3. Types of gingival grafts
- 4. Surgical method in mucogingival surgeries
- 5. Osseous surgeries
- 6. Principles of root furcation regions
- 7. Types of sutures and their methods
- 8. Wound dressing in periodontics and follow up sessions
- 9. Tooth sensitivity and its treatment
- 10. Occlusion in relation with periodontal diseases
- 11. Periodontal lesions and their relation with endodontics, prosthodontics and orthodontics
- 12. Classification of splints and their role
- 13. Principles of dental implants

Practical Periodontics 3(1 credit):

Requirements:

- 1. Diagnosis and treatment planning of periodontal diseases
- 2. Working with ultrasonic instruments
- 3. Supra and sub gingival scaling and root planning with ultrasonic instruments of at least 4 patients, follow up of the patient for at least 3 sessions
- 4. Curettage or flap for at least 1 patient

Practical Periodontics 4 (1 credit, 34 hours):

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Requirements:

1. Diagnosis of periodontal diseases
2. Treatment of periodontal emergencies, at least 2 patients
3. Supra and infra gingival scaling and root planning, at least 2 patients
4. Gingival curettage, at least 1 patient
5. Assisting in the periodontal surgeries, at least 2 surgeries
6. Performing the periodontal surgeries, at least 1 patient

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72- Dental Equipment and Ergonomics

Number and type of credit: 1 theoretical credit, 17 hours

Objectives: familiarity with the dental instruments, their application and maintenance

Subtitles:

1. Principles:
2. Familiarity with the electric and pneumatic dental credits and then ones having micro motor board, Iranian dental credits and their parts
3. Familiarity with the water, portable, air and central suction and their parts
4. Familiarity with electric and pneumatic pedals and their parts
5. Calculating the electricity consumption of every chair and credit and credits` acronyms, calculating bar foot point and Fahrenheit to centigrade for the heating equipment, familiarity with credit light and the light volume to Lux
6. Chairs:
7. Familiarity with electric, hydraulic and pneumatic chairs and their parts
8. Familiarity with central compressor and dryers, dehumanizers and tank compressors and dry non-oil compressors
9. Familiarity with the hydraulic and gas dentist chair and their problems
10. Instruments:
11. Air born and ball bearing and light turbines
12. Blade air motors
13. Different air motors and familiarity with their internal structure
14. Low speed and high speed rotary instruments

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15. Laboratory and surgical hand pieces
16. Apex finder and pulp tester, scaling instrument, light cure, radiography device

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73- Traumatology

Number and type of credit: Theoretical (1 credit, 17 hours)

Objectives: Recognition of oral and maxillofacial injuries and therapeutic methods and special considerations in patient treatment and education. Also students become acquainted with post-treatment follow-up and preventive methods and strategies for injury based on the latest scientific evidence.

Minimum expected practical skills:

- Design a strategic plan for primary prevention and treatment and referral for dentofacial injuries
- Recognize simple dental injuries and cure them and refer more difficult cases

Subtitles:

- Familiarity with oral and maxillofacial traumas and management of them
- Classification. Epidemiology and Etiology of dental traumas
- Principles of Dental trauma examination and diagnosis
- Principles of Diagnosing and treating of injured primary teeth
- Side effects of primary teeth's injuries on the permanent teeth
- Radiographic techniques in Traumatology
- Diagnosis, treating and Prognosis of crown fractures
- Diagnosis, treating and Prognosis of crown-root fractures and root fractures
- Diagnosis, treating and Prognosis of Luxation injuries
- Diagnosis, treating and Prognosis of Avulsion. Splinting process
- Complication of injured mature and immature permanent teeth
- Injuries made by traumas to soft tissues
- Injuries made by traumas to bone
- Principles of diagnosing and treatment of maxillofacial fractures

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- Possible complications after maxillofacial and TMJ fractures
- Documenting and familiarity with legal issues following dental trauma

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74-79- Restorative Dentistry

Number and type of credit: 6 credits

Objectives: Teaching theoretical and practical credits into students; so that, they can be able to diagnose different degrees of decay and treating them.

Basic principles of Restorative Dentistry: Theoretical (2.5 credits), Practical (0.5 credit)

Prerequisite: Dental anatomy and morphology- Basic principles of Dental Materials

Theoretical Restorative Dentistry 1 (1 credit, 17 hours)

Prerequisite: Basic Principles of Restorative Dentistry

Practical Restorative Dentistry 1 (1 credit, 34 hours)

Prerequisite: Infection Control- Basic principles of Restorative Dentistry-Basic Principles of Dental Material

Theoretical Restorative Dentistry 2 (1 credit, 17 hours)

Prerequisite: Theoretical Restorative Dentistry 1

Practical Restorative Dentistry 2 (2 credits, 68 hours)

Prerequisite: Practical Restorative Dentistry 1

Practical Restorative Dentistry 3 (1credit, 34 hours)

Prerequisite: Practical Restorative Dentistry 2

Theoretical Restorative Dentistry 1(1 credit, 17 hours)

Subtitles:

1. Introduction to restorative dentistry
2. Dental caries; types, predisposing factors, clinical characteristic, diagnosis and development theories

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3. Manual and rotary instruments
4. Cavity preparation for different types of amalgam fillings
5. Cavity preparation for composite fillings

Practical Restorative dentistry1 (1 credit, 34 hours)

This course would be held in the laboratory

Requirements:

1. Amalgam cavity preparation
 - Class 1, 2,3,4,5
 - Buccal pit
 - Distolingual groove
 - Pin amalgam
2. Composite cavity preparation; Class 3,4,5
3. Filling of the prepared cavities

Theoretical Restorative dentistry 2 (1 credit, 17 hours)

Subtitles:

1. Clinical and radiographic examination, treatment plan
2. Isolation in restorative dentistry
3. Pulp protection material (liner, base)
4. Pulp capping
5. Periodontal considerations of restorative treatments
6. Biologic principles of cavity preparation
7. Amalgam; characteristic, techniques

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8. Polishing of amalgam and its effect on durability of the treatment
9. Infection control
10. Pins; types, characteristics and application

Practical Restorative dentistry 2 (2 credits, 68 hours)

Requirement:

1. Treatment of at least 6 patients needing class 1 amalgam filling
2. Treatment of at least 3 patients needing class 2 amalgam filling

Practical Restorative dentistry 3 (1credit, 34 hours)

Requirements:

1. Class 1 amalgam treatment: at least 3 cases
2. Class 2 amalgam treatment: at least 2 cases
3. Class 5 amalgam treatment: at least 3 cases
4. Complex amalgam filling treatment; at least 5 cases
5. Class 3 composite filling treatment: at least 4 cases

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80-85- Oral and Maxillofacial Surgery

Number and type of credit: 10 credits

Objectives: theoretical and practical training in order to familiarize the student with the principles of oral and maxillofacial surgery so that the student would be skilled enough to perform minor oral surgeries and provide enough information for the patients in need of major maxillofacial surgeries and refer the patient to the specialist.

Theoretical Oral and Maxillofacial Surgery 1 (1 credit, 17 hours)

Practical Oral and Maxillofacial Surgery 1 (1 credits, 34 hours)

Prerequisite: Theoretical OMF Surgery 1

Theoretical Oral and Maxillofacial Surgery 2 (1 credits, 17 hours)

Prerequisite: Theoretical OMF Surgery 1

Practical Oral and Maxillofacial Surgery 2 (1 credits, 34 hours)

Prerequisite: Practical OMF Surgery 1

Practical Oral and Maxillofacial Surgery 3 (2 credits, 68 hours)

Prerequisite: Practical OMF Surgery 2

Practical Oral and Maxillofacial Surgery 4 (2 credits, 68 hours)

Prerequisite: Practical OMF Surgery 3

Theoretical Oral and Maxillofacial Surgery 1 (1 credit, 17 hours)

Subtitles:

1. Principles of surgery, systemic diseases, examinations
- Introduction to the oral and maxillofacial surgery specialty

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- Preparing patient history
- Mental evaluation of the patient
- Communication with the patient
- Laboratory tests
- Systemic diseases; precautions and management of the complications in detail (cardiovascular, renal, cerebral, hematologic, metabolic, etc.)
- 2. Infection control
 - Principles of asepsis
 - Sterilization methods
 - Bacteriology of surgery
- 3. Local anesthesia; principles, effects, complications
 - Neuroanatomy in relation with local anesthesia
 - Pain management in the field of oral and maxillofacial surgery
 - Pharmacology of anesthetic drugs
 - Vasoconstrictors
 - Local anesthesia techniques
 - Local and systemic complications of local anesthesia and how to remedy them
 - Principles of sedation
- 4. Principles of surgery
 - Familiarity with surgical instruments
 - Sutures; types and characteristics
 - Surgical blade
 - Application of the instrument
 - Prep and drep of the patient prior to the surgery

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5. wound healing
6. Surgical pharmacology and prescription

Practical Oral and Maxillofacial Surgery 1 (1 credit, 34 hours)

Requirements:

1. Familiarity with the surgical instruments and the workflow of the oral and maxillofacial surgery department
2. History taking and filling the document (at least 10 patients)
3. Intra and extra oral examinations under the tutor's supervision (at least 5 patients)
4. Acquiring skill in local anesthesia techniques and performing on the patients (10 cases of infiltration and 5 cases of nerve block)

Theoretical Oral and Maxillofacial Surgery 2 (1 credit, 17 hours)

Subtitles:

1. Exodontia and its complications
 - Familiarity with the instruments
 - Principles of extraction of primary and definitive teeth
 - Indications and contraindications of surgery
 - Hemorrhage
 - Dry socket
 - Pain and inflammation
 - Dental alveolar bone fracture subsequent to the extraction
 - Damage to temporomandibular joint (TMJ)
 - Extraction of teeth with anatomic anomalies and remaining root

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- Impacted teeth surgery
- 2. Oroantral fistula (O.A.F); its surgical managements
- 3. Emergencies
 - Syncope and shock
 - Cerebrovascular accident
 - Metabolic diseases and their complications
 - Cardiovascular diseases and their complications
 - Emergency medications and their application
 - Cardiopulmonary resuscitation (CPR)
 - Injections (IV, IM, etc.)

Practical Oral and Maxillofacial Surgery 2 (1 credits, 34 hours)

Requirements:

1. Practicing local anesthesia techniques and performing on the patients (10 cases of infiltration and 5 cases of nerve block)
2. Familiarity with management of emergency situations in dental practice
3. Suture extraction
4. Extraction of upper and lower uni-root teeth (at least 5 cases)

Practical Oral and Maxillofacial Surgery 3 (2 credits, 68 hours)

Requirements:

1. Extraction of upper and lower anterior and premolar teeth (at least 4 cases)
2. Extraction of upper and lower molar teeth (at least 4 cases)
3. Nonsurgical extraction of remained root (at least one case)
4. Suturing (at least 4 cases)

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Practical Oral and Maxillofacial Surgery 4 (2 credits, 68 hours)

Requirements:

1. Extraction of upper and lower single root teeth (at least 15 cases)
2. Surgical extraction of remained root (at least one case)
3. Surgical extraction of semi erupted wisdom tooth
4. Assisting in oral surgeries performed in the oral and maxillofacial surgery department (at least 5 cases)

Practical Oral and Maxillofacial Surgery 5 (1 credit, 34 hours)

Requirement:

1. Tooth extraction; all cases (at least 15 cases)
2. At least 2 of these options;
 - Surgical extraction of complicated teeth
 - Impacted tooth surgery
 - Alveolectomy, excision of small tumors and cysts
 - Frenectomy
 - Arch bar application
 - Surgery of abscess
3. Acquiring skill in this fields:
 - Evaluation of vital signs; blood pressure, pulse, temperature, aspiration
 - Cardiac normal sounds
 - Laboratory test; prescription, interpretation
 - Cardiopulmonary resuscitation (CPR); practical

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- CT-Scan and MRI interpretation
- Intramuscular and intravenous injections
- Management of emergencies

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86- Pain and Applied Pharmacology in Dentistry

Number and type of credit: Workshop (1 credit)

Prerequisite: Pharmacology

Course general purpose:

This course is merged with the aim of familiarity of the student with drugs which is used more frequently in dentistry also student will get acquainted with prescription and common drug interactions.

- Pain definition, the threshold of pain and painfulness
- Transition ways, mechanism of creation and interpretation of pain
- Diagnosing odontogenic from non-odontogenic pains
- Control of odontogenic pains
- Mechanism and classification non-odontogenic pains (central and peripheral sensitivity)
- Curing with pain relief drugs
- Patient assessment with non-odontogenic oral and maxillofacial pains
- Non-odontogenic pains and their diagnosis
- Burning mouth syndrome
- Neuropathic pains (neuralgia,..)
- Atypical facial pains
- Muscular head and neck pains
- Types of headaches (migrains, cluster headache, fire headaches,...)
- Surgical interventions in non-odontogenic pains treatment
- Acquaintance with most common consumable drugs in medication and leader drugs and acquaintance with medicine applications and softwares
- Drug interactions in dentistry
- Principles of treatment with anti-biotics and prophylaxis
- Principles of treatment with anti-inflammations (local and systemic)
- Principles of treatment with anti-fungals and anti-viruses
- Recognition of side effect of drugs on body
- Sedative drugs and their complications
- Prescription and logical drug prescription

Main resources of the course: pain and pharmacology in dentistry textbook

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87-90- Oral Radiology

Number and type of credit: 5 credits

Objectives: acquiring skill in various radiological techniques and interpretation of results and its application in diagnosis and treatment plan of oral and maxillofacial diseases.

Theoretical Oral radiology 1 (1 credit, 17 hours)

Prerequisite: Medical physics, Dental Anatomy and Morphology

Practical Oral radiology 1 (1 credit, 34 hours)

Prerequisite: Theoretical Oral radiology 1

Theoretical Oral radiology 2 (1 credit, 17 hours)

Prerequisite: Theoretical Oral radiology 1

Practical Oral radiology 2 (1 credit, 34 hours)

Prerequisite: Theoretical Oral radiology 2-Practical Oral radiology 1

Practical Oral radiology 3 (1 credit, 34 hours)

Prerequisite: Practical Oral radiology 2

Theoretical Oral radiology 1

Subtitles:

1. Physical principles of radiology
2. Determinants factors in the quality of radiologic results
3. Side effects of radiation on vital organs
4. Side effects of radiation on the site of radiation
5. Radiation health and protection
6. Darkroom and its appropriate conditions

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7. Technical errors in the darkroom

Practical Oral radiology 1

Content:

1. Demonstration of intra oral radiographic techniques
2. Practicing on the model
3. Discussion about the common error between student with the tutor

Theoretical Oral radiology 2

Subtitles:

1. Examination and determining the necessary radiographs in order to achieve the proper diagnosis
2. Patient and his/her positioning for the radiation
3. Technique selection
4. Film positioning inside the mouth according to the employed technique and available holders
5. Radiographic elements setting; tube position, time, radiation
6. Different intra oral techniques:
 - Periapical; Bisecting angle, Parallel
 - Bite wing
 - Occlusal
 - Tomography
 - Cross section
7. Extra oral techniques:

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- Temporomandibular joint (TMJ) radiographs
 - Mandibular angle, body and ramus
 - Sinuses
 - Upper jaw
 - Cephalometry (anterior, posterior, lateral and profile)
8. Advantages and disadvantages of each technique

Practical Oral radiology 2

Content:

1. Performing intraoral (periapical and bite wing) radiographs at the faculty radiology service
2. Performing occlusal radiographs at the faculty radiology service

Practical Oral radiology 3

Content:

1. Performing radiographs at the faculty radiology service
2. Participation in the morning radiograph interpretation seminars

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91-92- Specialized English

Number and type of credit: Theoretical(2credits, 34 hours)

Specialized English 1 (1 credit, 17 hours)

Specialized English 2 (1 credit, 17 hours)

Specialized English 1 (1 credit, 17 hours):

Objectives: The aim of teaching specialized language is enabling student to use scientific texts, being written into foreign language.

-Text of lesson: In order to meeting above mentioned aim,

-Selected text for students is oral and dental analytic- Jack Yung. Yet, this text can be selected from other medical or dentistry books, by related professor and approval of educational board of college.

-Teacher: It is not necessary to choose Professors from language department, but those, being able to teach related book, can undertake language teaching.

-Test: It is necessary to estimate ability of student, in understanding books, being written into foreign language. This kind of estimation is performed by taking written, verbal and comprehension tests on the basis of covering above- mentioned Objectives.

Specialized English2 (1 credit, 17 hours) & Specialized English3 (1 credit, 17 hours)

Objectives: The aim of this stage is enabling students to use foreign scientific texts.

-Text of lessons:

Text of this lesson, being necessarily most difficult, in comparison to language 1- shall be selected from medical or dentistry books, by related professor and approval of educational board of college.

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93-96- Oral Health and Community Dentistry

Number and type of credit:

Theoretical Oral Health and Community Dentistry 1: (1 credit, 17 hours)

Prerequisite: Introduction to General and Oral Health- Psychology

Theoretical Oral Health and Community Dentistry 2: (1 credit, 17 hours)

Prerequisite: Theoretical Oral Health and Community Dentistry 1

Practical Oral Health and Community Dentistry 1 (1 credit, 34 hours)

Prerequisite: Theoretical Oral Health and Community Dentistry 1

Practical Oral Health and Community Dentistry 2 (1 credit, 34 hours)

Prerequisite: Theoretical Oral Health and Community Dentistry 2- Practical Oral Health and Community Dentistry 1

Objectives: The Objectives of this study is to enhance knowledge, change attitude and improve function of the students about supplying, preservation, improvement, prevention of the oral and dental diseases principles and improve people's lives quality through social activities and the last valid scientific evidences. Also he/she should be committed to the community members' oral health improvement while completely observing infection control program and proper communication with people and perform related responsibilities.

Lesson management:

The responsible team for presenting these lessons is oral health and social dentistry educational group or oral health specialist (a member of the scientific board or an invited one) and otherwise the teacher supply responsibility is on educational council of the faculty.

Theoretical Oral Health and Community Dentistry 1

Subtitles:

- Introductions and social dentistry principles
- Social factors effective on health
- Proposed approaches in health

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- Health and disease patterns
- Demographics
- Mouth and teeth health indicators
- Need assessment and needs in target groups (children, students ,mothers ,middle-ages,...)
- Health improvement and society benefit improvement
- Health education and behavioral change
- Acquaintance with health management basics
- Acquaintance with quality improvement basics and clinical governance

Theoretical Oral Health and Community Dentistry 2

Subtitles:

- Community assessment
- Risk assessment
- Conservative Dentistry
- Preventive strategic programs (decay, periodontal disease, cancer, mal occlusion, tooth coverage loss, trauma, fluorosis and quit smoking)
- Health sociology
- Health economy and offer and demand system in dentistry services
- Health system in Iran and the world
- Planning in health system

Practical Oral Health and Community Dentistry 1

Minimum Practical skills required:

1. To propose the clinical and social problems in the form of a specific question
2. To search the databases efficiently and targeted
3. To enumerate an article positive and negative points by reading it

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4. To be able to use learning assist tools to present educational concepts to the target groups
5. To know the principles of the oral and teeth health education to the target groups
6. To be able to teach the oral and teeth health principles and methods effectively to the target groups

Subtitles:

- To educate the evidence-based dentistry principles(search method and articles classification, EBD usage in responsiveness to the society oral health problems)
- Prepare educational media for the target groups
- Health education demonstration to the target groups(Health education)
- Health education to the target groups by the students
- Health education in the target community

Practical Oral Health and Community Dentistry 2

Minimum Practical skills required:

1. To numerate at least 3 high carries risk signs in persons by diagnostic criterias
2. To measure periodontal, decay and malocclusion indicators in the field
3. To perform fluoride therapy under supervision in the field
4. To perform sealant therapy under supervision in the field
5. To perform carries risk assessment under supervision in the field
6. To record personal nutritional information in the standard forms
7. To present nutritional advice to at least one patient

Subtitles:

- Risk Based Prevention and Risk assessment
- All together preventive methods education including fluoride therapy (specially varnish fluoride), Fissure sealant for the target groups according to WHO criteria
- Calibration and carries, periodontal and malocclusion indicators recording method
- Fissure sealant and fluoride therapy

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- Nutritional advice
- Patient risk assessment
- Target groups examination and carries, periodontal and malocclusion indicators recording

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97-101- Diagnostic dentistry

Number and type of credit:

Diagnostic Dentistry 1: Theoretical (1credit, 17 hours)

Prerequisite: Psychology

Diagnostic Dentistry 2: Theoretical (1credit, 17 hours)

Diagnostic Dentistry 3: Theoretical (2credits, 34hours)

Prerequisite: Diagnostic Dentistry 2- Practical OMF Diseases1

Diagnostic Dentistry 4: Theoretical (2credits, 17 hours)

Prerequisite: Diagnostic Dentistry 2 & 3

Diagnostic Dentistry 5: Theoretical (1credit, 17 hours)

Prerequisite: Diagnostic Dentistry 4

Objectives: Introduction to different types of oral soft and hard tissue lesions, clinical view, para clinical and pathologic changes. Also the student gets to know the ways of prevention from prevalence or reduction of soft and hard tissue damages.

Diagnostic Dentistry 1

Subtitles:

- Scientific sequence in patient encounter (from medical history to treatment & follow up) total patient approach
- Principles of examination & different methods (two-finger, four-finger...) signs & symptoms
- Natural oral landmarks
- Examination of cranial nerves, lymph, salivary, thyroid & TMJ
- Types of cervical tumors & principles of differentiation
- Examination & taking medical history

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Diagnostic dentistry 2

Subtitles:

- Clinical category of common oral & jaw lesions
- Histopathologic category of oral & jaw lesions
- Common ulcerative oral lesions: bacterial (ANUG), recurrent aphthous stomatitis & relative syndromes, traumatic & eosinophilic ulcer, SCC ...
- Common Mucocutaneous lesions (vesiculobullous): viral – immunologic: recurrent, chronic & acute herpes, multiform erythema, lichen plan, pemphigus, types of pemphigoid linear, IgA ...
- Microscopic appearance of common ulcerative & mucocutaneous lesions, immunologic lesions ...

Diagnostic dentistry 3

Subtitles:

- Pigmented lesions: melanin pigmented lesions: melanotic macule, melanoacanthoma, nevus & melanoma, related to drugs & smoking & related to systemic & hereditary diseases, so on.
- Microscopic features of pigmented lesions
- Vesiculobullous lesions: infectious, reactive, inflammatory – immunologic: candidiasis, hairy leukoplakia, frictional keratosis, habitary cheek mastication, lichen planus, lichenoid reactions...
- Microscopic features of benign epithelial & soft tissue lesions: papilloma, warts, condyloma, heck disease, seborrheic keratosis
- Pre malignant & malignant epithelial Vesiculobullous lesions: leukoplakia, erythroplakia, submucosal fibrosis, actinic keratosis, tobacco white lesions, SCC, verrucous carcinoma, side effects of tobacco & alcohol
- Microscopic features of pre malignant & malignant epithelial vesiculobullous lesions
- Exophytic lesions
- Microscopic features of non-epithelial benign soft tissue lesions: fibroma, giant cell fibroma, epulis fissuratum, pyogenic granuloma, peripheral giant cell granuloma, peripheral ossifying fibroma

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- Microscopic features of common benign & malignant soft tissue tumors: lipoma, hemangioma, traumatic neuroma, rhabdomyosarcoma, neural malignancies, oral soft tissue metastasis
- How to treat pathologic lesions – Types of biopsy

Diagnostic dentistry 4

Subtitles:

- Odontogenic & non odontogenic cysts: inflammatory cysts(radicular cyst, residual cyst & buccal bifurcation cyst)developmental(dentigerous,OKC,COC,LPC,infant gingival cyst,adult gingival cyst, glandular odontogenic cyst, epidermoid cyst,nasopalatin cyst,duct cyst,nasolabialcyst,lymphoepithelial cyst)
- Odontogenic tumors: ectodermal,mixed,ectomesenchymal tumors
- Hard tissue lesions pathology: osteomyelitis, giant cell lesions,fibroosseouslesions,developmentallesions,bone tumors
- Clinical appearances of endo-osseous lesions
- Principles of radiograph analysis & differential diagnosis
- Periapical radiolucent lesions
- Pericoronal radiolucent lesions
- Interradicular radiolucent lesions
- Non odontogenic cyst like radiolucent lesions
- Multilocular radiolucent lesions
- Ill-defined border single radiolucent lesions
- Well defined border multiple radiolucent lesions
- Diffused bone rarefaction lesions
- Odontogenic mixed opalescent lesions
- Non-Odontogenic mixed opalescent lesions
- Periapical radio opaque lesions
- Single, multiple & generalized radio opaque lesions

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Diagnostic dentistry 5

Subtitles:

- Practical anatomy for salivary glands & ducts
- Saliva, components & use
- Xerostomia& burning
- Halitosis
- Salivary gland diseases: developmental, mucocele, ranula, reactive or edematous, systemic, viral & bacterial sialadenitis, sjogren syndrome, sialosis
- Salivary lesions(benign & malignant cysts & tumors): mixed tumor, warthin tumor, basal cell adenoma, canalicular adenoma, mucoepidermoid carcinoma, adenoid cystic carcinoma, acinic cell carcinoma
- Salivary gland radiography and lesions
- Cytology & biopsy steps in pathology

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102- Pharmacology

Number and type of credit: Theoretical (2 credits, 34 hours)

Objectives: Defining mechanisms toxicity and method of using drugs in human

-Prerequisite: Biochemistry- physiology -anatomy

Subtitles:

Generosity of pharmacology -references -absorption and distributing medicines in body - metabolism- removing and manner of drug effects in their complications during pregnancy-increasing sensitivity against drugs- histamine -Bradykinins generalities of autonomous nervous system- Cholinergic nervous transmission and sympathetic stimulants -sympathetic alpha &beta ,receiving medications-anti- increasing blood pressure medications- nervous / muscular medications -generality of general anesthesia- general anesthesia and pre- anesthesia medications- Local anesthesia medication-relaxing , antipsychotic and anti-depression medications, soporific - anticonvulsant and anti-pathogenic medicines opioid and non-opioid analgesics-blooding in dentistry and it's treating generalities of antibiotics and sulfanamids-anti biotic - local anti-infective drugs-pharmacology of endocrines vitamins and minerals-pharmacology of some diseases ,being related into dentistry.

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103- Medical Emergencies in Dentistry

Number and type of credit: Theoretical (0.5 credit, 8.5 hours) practical (0.5 credit, 17 hours)

Objectives: Understanding emergency cases and gaining the skill for these situations

Minimum expected practical skills:

- Perform clinical examinations correctly, Check and record vital signs of the patient
- Assess the awareness level of patient as soon as possible
- Can do IV injections correctly
- Identify the equipment for opening patient's airway
- Perform ventilating process on moulage via bag valve mask
- Can open patient's airway with Jaw Thrust maneuver
- Perform Tracheal Intubation on adult moulage
- Practicing Cardio-Pulmonary Resuscitation Solo
- Practicing Cardio-Pulmonary Resuscitation Dual

Subtitles:

- Principles of Signs recognition and changes of awareness level
- Opening airway
- IV and IM injections
- Cardio-pulmonary emergencies and allergic reactions
- Examination principles and vital sign control
- Familiarity with equipment and facilities for opening the airway with surgery
- Participating in internal diseases department

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104- Pulp and Periapical Complex

Number and type of credit: Theoretical (1credit, 17 hours)

Objectives: Familiarity with pulp tissue in a healthy and unhealthy states and Recognizing the stimulant factors and trends of pulp and Peri radicular diseases with respect to the microbiology and immunology of the relevant tissues.

Minimum expected practical skills:

-Be able to observe and interpret clinical cases of pulp and peri radicular diseases

Subtitles:

-Embryology and histology of pulp

-Embryology and histology of peri radicular

- Pulp's stimulant factors (microbial, chemical, physical)

-Histopathology of pulp diseases

-Histopathology of peri radicular diseases

-Clinical symptoms of pulp diseases

-Clinical symptoms of peri radicular diseases

-Diagnosis and treatment plan in Endodontics

-Case presentation of pulp and peri radicular diseases

-Microbiology in Endodontics

-Immunology in Endodontics

-The process of histopathologic restoration in pulp and periapical diseases

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105- Infection Control

Number and type of credit: Workshop (1 credit, 34 hours)

Objectives: Familiarity of students with theoretical and practical principles of infection control, in such a way that by establishing the correct attitude, apply the scientific principles of infection control in the dental environment in all areas of education, treatment of patient and other cases well and skillfully with a high sense of responsibility.

Minimum expected practical skills:

- Be able to wash, clean and pack the instruments properly before sterilization
- Can work properly with sterilizing devices (autoclave, Dry heat, chemicals...)
- Perform at least two sterilization tests
- Perform at least one method of disinfection (floating, spraying ...) correctly and supervised
- Sterilize and disinfect high and low speed hand pieces based on international recommendations
- Use at least two common disinfectant properly
- Dispose of at least two sharp instruments properly and transfer to contaminated waste in the dental office
- Take the necessary considerations according to infection control measures for at least one case of contaminated personnel referral
- Perform personal protection steps in at least one simple process (restoration) and a complex process (surgery), respectively.

Subtitles:

- Microbiology and general principles of the transmission of infectious diseases
 - Infection transmission ways in Dentistry
- Infection control and some serious diseases in dentistry such as hepatitis, AIDS, Tuberculosis, HSV, and their Epidemiology
- Infection control methods in dentistry and personal protection steps
- Washing, cleaning and packing of instruments. Sterilization and maintenance methods

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- Steps, mechanism, materials and methods of disinfection
- Infection control in Restorative Dentistry
- Infection control in Endodontics
- Infection control in prosthodontics and dental laboratory
- Infection control in Radiology
- Infection control in Orthodontics
- Hospital Infection Control
- Monitoring of Infection Control measures, personal protection and waste disposal

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106-110- Pediatric dentistry

Number and type of credit: 8 credits

Objectives: acquiring preventive and therapeutic skills for treatment of oral diseases of pediatric patients.

Theoretical Pediatric dentistry 1(1 credit, 17 hours)

Prerequisite: Theoretical restorative dentistry1, Theoretical Radiology1, Periodontology1, Theoretical Endodontics1, Theoretical OMF Surgery1

Practical Pediatric dentistry 1(2 credits, 68 hours)

Prerequisite: Infection Control- Practical Radiology1- Practical Restorative Dentistry1- Practical Endodontics1- Theoretical Pediatric dentistry 1

Theoretical Pediatric dentistry 2(1 credit, 17 hours)

Prerequisite: Theoretical Pediatric dentistry 1- Pharmacology

Practical Pediatric dentistry 2(2 credits, 68 hours)

Prerequisite: Practical Pediatric dentistry 1- Practical Restorative Dentistry 2

Practical Pediatric dentistry 3(2 credit, 68 hours)

Prerequisite: Practical Pediatric dentistry 2

Theoretical Pediatric dentistry 1

Subtitles:

1. Principles of pediatric dentistry:
 - Importance of oral and general health of children

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- Importance of primary dentition and periodontal maintenance in children
- Importance of attention to children`s permanent teeth
- The development of face and jaws along with the general development of the child
- 2. Behavior management of the child:
 - A brief introduction of pediatric psychology
 - Case selection
 - Chief complaint, medical and dental history, epidemiology
 - Preparing the patient for accepting the treatment (psychological methods, drugs, sedation)
- 3. Clinical examination and documentation
 - Examination methods of newborns, children between 1 to 3 years old, older than 3
 - Interviewing the child and the parents for filing the documents, child`s previous encounter with medical ambit
 - Clinical and para clinical examinations
 - Differences between primary and permanent teeth
- 4. Caries, its characteristics and diagnosis
 - Pellicle and dental plaque
 - Cariogenic microorganisms, carbohydrates and their role in caries, Stephen curve, PH changes
 - Types of caries; baby bottle syndrome, rampant caries
 - Caries prevention; hygiene, diet control, vaccination, immunology, fluoride, sealants, antiplaque, preventive resin restoration
- 5. Restorations in pediatric patients
 - Anesthesia; types and administration
 - Rubber dam and other isolation methods

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- Cavity types in primary and permanent teeth of children
- Restorative materials employed in pediatric dentistry

Practical Pediatric dentistry 1(2 credits, 68 hours)

Requirement:

1. Laboratory tasks:

- Cavity preparation on extracted primary teeth: at least 4 cases
- Preparation on Stainless Steel Crown (SSC) on the model: 1 case
- Fabricating removable and fixed Space Maintainer: 1 case

2. Clinical tasks:

- Examination and diagnosis and documentation of incoming patients: at least 4 patients
- Oral hygiene education and fluoride therapy: at least 3 patients
- Fissure sealant therapy and preventive resin restoration (PRR): at least 2 patients of each
- Class 1 and 2 restorations of primary and permanent teeth: at least 5 cases of each
- Extraction of primary teeth: at least 5 case

Theoretical Pediatric dentistry 2(1 credit, 17 hours)

Subtitles:

1. Pulp capping in pediatric dentistry

- Direct and indirect pulp capping
- Pulpotomy and pulpectomy
- Pulp therapy for open apex permanent teeth; apexogenesis and apexification

2. Management of traumatic teeth in pediatric teeth

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- Examination and emergency treatments
- Diagnosis of fractures and subsequent treatment
- Types of splint
- Re-plantation of avulsed teeth
- 3. Prevention and management of oral disorders in children
 - Evaluation of occlusion and growth and development of jaw
 - Types of disorders
 - Appliances for prevention and stopping the progression of the disorder
- 4. Space management appliances:
 - Removable and fixed space management
 - Functional appliances
 - Extra and intra oral appliances for treatment of maxillofacial discrepancies

Practical Pediatric dentistry 2(2 credits, 68 hours)

Requirements:

1. Examination and diagnosis and documentation of incoming patients: at least 6 patients
2. Oral hygiene education, fluoride therapy and preventive resin restoration (PRR): at least 2 patients of each
3. Class 1 and 2 restorations of primary and permanent teeth: at least 5 cases of each
4. Extraction: at least 4 cases
5. Composite restoration of anterior teeth: at least 5cases
6. Treatment of traumatized anterior teeth: at least 2 cases
7. Stainless Steel Crown (SSC) treatment: at least 2 cases
8. Pulpotomy of primary teeth: at least 7 cases

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9. Pulpectomy of primary teeth: at least 1 cases

Practical Pediatric dentistry 3 (2 credit, 68 hours)

Requirements:

1. Documentation, examination and diagnosis: at least 3 cases
2. Fluoride therapy, fissure sealant therapy and preventive resin restoration: at least 4 cases of each
3. Restoration of posterior teeth for primary and permanent teeth: at least 3 cases
4. Composite restoration of anterior teeth: at least 3 cases
5. Extraction: at least 4 cases
6. Treatment of traumatized teeth with splint: at least 2 cases
7. Stainless Steel Crown (SSC) treatment: at least 2 cases
8. Pulp therapy of primary teeth: at least 5 cases
9. Apexogenesis and apexification: at least 1 case of each
10. Preparation of removable and fixed space maintainer: at least 1 case of each

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111- Basic Principles of Dental Materials

Number and type of credit: Theoretical (1 credit, 17 hours)

Objectives: Acquainting with chemical structure and physical properties of used materials in dentistry and their using cases

Subtitles:

Introduction -Crystalline structure and different states of matters and their biophysical applying-used materials in dentistry -Properties of materials and way of using them-molding materials - Acryl and using them-plastics , used for restoring natural teeth restructure of teeth, used restoring natural teeth - structure of teeth used for partial and complete denture and their different kinds tooth filler materials-wax -metals -golden alloys - gold solders and soldering -flux and using them in dentistry -different alloys , being used in partial dentures -casting defects -chemical and physical consistency of materials and way of using them.

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112- Evidence-Based Dentistry

Number and type of credit: Theoretical (1 credit, 17 hours)

Subtitles:

- Principles of EBD
- Question Forming
- Types of epidemiologic studies
- Descriptive analytical studies
- Interventional studies
- Diagnostic test evaluation
- Descriptive statistics
- Random and Systemic errors
- Interaction
- Principles of critical appraisal

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