



---

# Study program

---

Integrated undergraduate and graduate  
academic study of Dental Medicine

Zagreb, 2010

# Contents

1	Introduction.....	1
1.1	Reason for the establishing the study of Dental Medicine .....	1
1.2	Previous experience in implementing equivalent or similar study programs.....	3
1.3	Openness of the study towards student mobility.....	3
2	General .....	4
2.1	Title of the academic study program .....	4
2.2	Coordinator and performer of the academic study program .....	4
2.3	Duration of the academic study program .....	4
2.4	Admission requirements .....	4
2.5	The reasons for initiating an academic study program which integrates the undergraduate and graduate part of the study into one entity.....	4
2.6	Academic title obtained upon completion of the study: .....	5
3	Description of the academic study program .....	6
3.1	List of obligatory and elective courses with the required number of teaching hours and ECTS points.....	6
3.2	Description of courses.....	9
3.2.1	Anatomy .....	9
3.2.2	Anesthesiology and Reanimatology .....	19
3.2.3	Biochemistry .....	21
3.2.4	Pain .....	28
3.2.5	Cervicofacial Pathology .....	31
3.2.6	Dental Pharmacology .....	34
3.2.7	Dental Photography.....	40
3.2.8	Dental Implantology .....	44
3.2.9	Dental Medicine for the Elderly .....	47
3.2.10	Dental Radiology .....	50
3.2.11	Dental Materials .....	54
3.2.12	Dermatovenerology.....	57
3.2.13	Pediatric Dentistry I .....	63
3.2.14	Pediatric Dentistry II .....	68
3.2.15	Endodontics I .....	72
3.2.16	Endodontics II .....	76
3.2.17	English I.....	80

3.2.18	English II.....	83
3.2.19	Ethics .....	87
3.2.20	Ethics in Dental Medicine .....	89
3.2.21	Fixed Prosthodontics I .....	93
3.2.22	Fixed Prosthodontics II .....	97
3.2.23	Physics .....	101
3.2.24	Physiology.....	106
3.2.25	Forensic Dental Medicine .....	112
3.2.26	Gynecology and Obstetrics.....	117
3.2.27	Histology with Embryology.....	121
3.2.28	Immunology.....	125
3.2.29	Infectology .....	129
3.2.30	Internal Medicine .....	132
3.2.31	Cariology .....	135
3.2.32	Chemistry.....	139
3.2.33	Surgery.....	145
3.2.34	Clinical Pharmacology.....	149
3.2.35	Clinical Periodontology.....	152
3.2.36	Comparative Odontology .....	155
3.2.37	Maxillofacial Surgery .....	158
3.2.38	Microbiology with Parasitology.....	163
3.2.39	Dental Microscope .....	166
3.2.40	Minimally Invasive Surgery.....	169
3.2.41	Removable Prosthodontics I.....	171
3.2.42	Removable Prosthodontics II.....	177
3.2.43	Tooth Morphology with Dental Anthropology.....	184
3.2.44	Neurology .....	193
3.2.45	Ophthalmology.....	197
3.2.46	Occlusion .....	200
3.2.47	Occlusion and Function .....	204
3.2.48	Oncology and Radiotherapy .....	207
3.2.49	General Pharmacology .....	210
3.2.50	General and Social Dental Medicine .....	213
3.2.51	General Radiology .....	216

3.2.52	Oral Hygiene .....	219
3.2.53	Oral Surgery I .....	221
3.2.54	Oral Surgery II .....	228
3.2.55	Oral Medicine I .....	235
3.2.56	Oral Medicine II .....	240
3.2.57	Orofacial Genetics .....	245
3.2.58	Orthodontics.....	249
3.2.59	Fundamentals of Esthetics in Dentistry .....	254
3.2.60	Basics in Use of Computers .....	258
3.2.61	Otorhinolaryngology .....	261
3.2.62	Pathophysiology .....	265
3.2.63	Pathology.....	277
3.2.64	Pediatrics .....	286
3.2.65	The Management in Dental Medicine.....	292
3.2.66	History of Dental Medicine.....	295
3.2.67	Preclinical Endodontics.....	298
3.2.68	Preclinical and Laboratory Fixed Prosthodontics .....	302
3.2.69	Preclinical and Laboratory Removable Prosthodontics.....	306
3.2.70	Preclinical Oral Surgery .....	312
3.2.71	Preclinical Orthodontics .....	317
3.2.72	Preclinical Periodontology.....	320
3.2.73	Preclinical Restorative Dental Medicine.....	324
3.2.74	Prevention and Infection Control in Dental Medicine .....	329
3.2.75	Occupational diseases in dentistry.....	332
3.2.76	Introduction to pediatric dental medicine .....	335
3.2.77	First Aid.....	339
3.2.78	Psychiatry and Psychological Medicine .....	341
3.2.79	Psychostomatology .....	347
3.2.80	Smoking and Oral Health.....	350
3.2.81	Restorative Dental Medicine I .....	352
3.2.82	Restorative Dental Medicine II .....	356
3.2.83	Social Medicine and Epidemiology.....	361
3.2.84	Cell Biology with Genetics .....	365
3.2.85	Statistics in Dental Medicine .....	370

3.2.86	Dental Care of Medically Complex Patients .....	373
3.2.87	Temporomandibular Disorders - Diagnosis and Therapy.....	376
3.2.88	Physical Education I .....	379
3.2.89	Physical Education II .....	380
3.2.90	Introduction to Dental Medicine .....	381
3.2.91	Introduction to Scientific Work I .....	385
3.2.92	Introduction to Scientific Work II .....	388
3.2.93	Child Neglect and Abuse.....	390
3.3	Organization of the study program, study cycles and students' obligations. Admission requirements for the following semester and the following year of study as well as the prerequisites for enrollment of a particular course.....	392
3.4	List of courses and/or modules which can be taught in a foreign language.....	393
3.5	Criteria and conditions of ECTS credit transfer – allocation of ECTS credit value to courses which the students can select from other academic graduate programs within the same university or from other institutions of higher education .....	393
3.6	Completion of academic studies .....	394
4	Prerequisites for performing the academic study program.....	395
4.1	Premises wherein the program is realized.....	395
4.2	Facilities and equipment .....	395
4.3	Full-time teaching staff participating in the courses.....	396
4.4	Part-time teaching staff participating in the courses by contract of collaboration .....	400
4.5	Information on engaged teachers.....	402
4.6	Information on teachers engaged under agreement about external cooperation .....	563
4.7	List of teaching bases for practical part of classes .....	603
4.8	Optimal number of students .....	603
4.9	Evaluation of the costs of study per student .....	603
4.10	Methods of quality and success monitoring of the study program; participation of the students in evaluation of the study program.....	603

# 1 Introduction

The School of Dental Medicine is the only independent biomedical higher education institution in the Republic of Croatia and it is one of the member faculties of the University of Zagreb. The study of dental medicine embraces integrated undergraduate and graduate university study programs belonging to the field of biomedicine and health. The study aims at teaching university students to become health professionals. Its aim is to educate and train biologically oriented, technically competent, socially sensitive practitioners of dental medicine who adhere to the highest standards of professional conduct and ethics, and who can function effectively as members of the nation's health care delivery system. They should be trained to treat the diseases of the oral cavity, dental diseases as well as the diseases of jaws and other structures of the stomatognathic system. In addition, the study pursues a special task in order to raise awareness among students, adults and children about the importance of their oral health and preventive measures.

## 1.1 Reason for the establishing the study of Dental Medicine

Dental medicine consists of biomedical knowledge and skills which graduates must acquire to become competent, curious, and caring dental practitioners who treat the patient as an individual.

It is necessary to reach high standards of academic education in order to become a dental practitioner who is able to manage prevention, epidemiological monitoring, diagnostics and treatment of dental and oral diseases. Also, they should acquire proficiency through advanced training, leading to specialization. In addition, the study of dental medicine pursues a special task in the postgraduate course aiming at education of Ph.D. graduates with the purpose of further professional and scientific advancement.

The purpose of creating a six year study of dental medicine was based on actual needs for providing a quality health care in the Republic of Croatia. Besides, the laws and regulations related to health and medicine have to be adjusted to those which have been set up by the European Union.

The application of new concepts, materials and technologies is essential for an advanced dental education. Our goal is to fully participate in the European system of higher education, which requires further restructuring in accordance with the Bologna declaration as well as in compliance with the laws and regulations of the European Union. The conversion of teaching processes into an educational system compatible with the European one was the reason for inviting the DentEd visitation team in 2001 in order to evaluate our possibilities for adjustment. DentEd Evolves operates within the Association for Dental Education in Europe – ADEE in collaboration with the American Dental Association – ADA and their leading experts gave us useful advice. This visitation paved the way for our future development and, due to helpful advice given by the DentEd team; we have already made substantial progress. Furthermore, the PEER mission consisting of eminent experts from the European Union which visited our School from 8-13 July, 2008, gave further recommendations and guidelines for changes and improvements of the study program, which are now being implemented.

Therefore, the School of Dental Medicine, University of Zagreb set the goal of educating doctors of dental medicine who:

- understand the meaning and application of public health care guidelines and the need for health care of the individual and community
- have sufficient knowledge and understanding about structures, functions and behavior of the human body

- possess the appropriate skills and attitudes which enable them to behave responsibly within the professional framework
- have the possibility of lifelong education
- behave in accordance with ethical standards
- respect legal regulations

There are seven categories representing the areas of professional domain of doctors of dental medicine. All those areas are interdisciplinary in their orientation encouraging critical thinking and can be applied to patients of different ages.

1. Professionalism

After graduation, a doctor of dental medicine is expected to be competent in a wide spectrum of skills including research, analytical and problem-oriented communication and presentation skills, which are based on contemporary knowledge. Doctors of dental medicine should understand problems related to dental profession as well as their leading role in dental practice.

Ethics and law

After graduation, doctors of dental medicine should display knowledge and understanding of moral and ethical responsibilities which are included into the patient's care as well as care about the entire community. They should also be familiar with modern legal regulations relating to everyday clinical practice.

2. Communication and social skills

Doctors of dental medicine should be competent in communication with patients and their families, their associates and colleagues by respecting their age as well as their social and cultural background.

3. Basic knowledge and possibility of collecting data from literature

Doctors of dental medicine should be able to apply a whole range of basic concepts from biological, medical, technical and clinical sciences with the purpose of differentiating between physiological and pathological conditions.

After graduation, doctors of dental medicine should possess a certain degree of 'informatics literacy' based on which they can collect and use information from available literature.

4. Collecting clinical data

Obtaining and storing the entire documentation regarding the medical, oral and dental status of the patients. This should include a whole range of biological, medical, psychological and social information for the purpose of evaluation of oral and dental status of patients. Doctors of dental medicine should be able not only to maintain but also to improve their professional skills and competences throughout their entire working life.

5. Diagnosis and treatment planning

This, in the first place, relates to making decisions, giving clinical opinions and evaluation for the purpose of making differential, preliminary and definitive diagnoses based on the interpretation of results of clinical and radiological examination as well as application of diagnostic tests taking into account social and cultural background of patients.

6. Treatment – achieving and maintaining oral health

This domain represents a wide range of basic and supplementary competences needed in order to achieve and maintain oral health of patients of different age groups as well as those with special needs. After graduation, doctors of dental medicine should be aware of their abilities and limits of their work. They should also be able to refer patients to a specialist if needed.

7. Preventive measures and health promotion

Improving oral health on the individual level, on the level of the family and the community.

## **1.2 Previous experience in implementing equivalent or similar study programs**

Long-term experience in educating doctors of dental medicine, in 48 years of independent existence of the School of Dental Medicine enables an accurate evaluation of our work to date. Today we face a great challenge of improving our existing education system and adjusting it to European standards.

The goal of each study program is to educate young experts and scientists, who can face modern challenges, at the same time ensuring mobility of experts in accordance with the requirements of the European system of higher education as well as the European market.

The proposed study program of dental medicine, by following a long-lasting tradition, accepts modern concepts of education and applies the most recent scientific insights as well as skills based on them.

Expert scientific and teaching staff along with improving of study conditions by permanent updating of equipment despite the existing lack of working space, which will hopefully be resolved in time in cooperation with the University of Zagreb and the Ministry of Science, Education and Sports, all support our belief that this new study program can improve the teaching process for the benefit of both students and teachers as well as the entire academic community and society.

## **1.3 Openness of the study towards student mobility**

By accepting modern concepts of teaching and by comparing it with leading European universities, the students are enabled to spend a part of their education in academic institutions throughout Europe. The suggested changes of the study program will contribute to further promotion of the international profile of the School of Dental Medicine, University of Zagreb as well as to promote student mobility.

## 2 General

### 2.1 Title of the academic study program

Integrated undergraduate and graduate university study of Dental Medicine

### 2.2 Coordinator and performer of the academic study program

School of Dental Medicine, University of Zagreb

### 2.3 Duration of the academic study program

The program lasts six years (12 semesters).

### 2.4 Admission requirements

Prospects and requirements for enrollment in the academic study program in Dental Medicine are determined by:

- general and social needs for dental health services,
- global concept of dental health care on the Republic of Croatia level – the appropriate odds ratio between doctors of dental medicine and number of inhabitants,
- collaboration and exchange of dental experts with members of the EU and neighbouring countries

A shortlist of candidates who applied to enroll in the academic study program is composed according to the following system of scores:

- Based on evaluation of secondary school grades – up to 400 points
- Based on the state graduation exam
  - Croatian language – up to 100 points
  - Mathematics – up to 50 points
  - Foreign (or Classical) language - up to 50 points
  - Biology or Physics or Chemistry\* - up to 300 points

\*A prerequisite for enrolment in the study is for the applicant to have passed at least one of the mentioned subjects. If the applicant passed two or three subjects, the subject with the highest obtained score is considered.
- Based on the evaluation of special competences  
A psychomotor ability test devised by the School of Dental Medicine – up to 100 points.
- Based on the applicant's additional achievements – no points

### 2.5 The reasons for initiating an academic study program which integrates the undergraduate and graduate part of the study into one entity

In Europe, biomedical groups of study are traditionally conceived as integrated studies in which the undergraduate and graduate studies are merged into one entity. There are several reasons for that, the most important being the result from previous experience in which it was obvious that the study of dental medicine required universal knowledge of biological and preclinical sciences, medical subjects, dental subjects as well as humanities and some general subjects. Only in this way, it is possible to meet the requirements of the profession thus ensuring and stressing the significance of integrated holistic care about patients.

Current demands for responsible members of dental profession have resulted in a need for doctors of dental medicine educated in such a manner to be capable of making their own decisions as well as having complex medical insight and to solve problems in compliance with the principles of ethics and deontology. Therefore, dental medicine is not a mere craft but also an amalgam of medical doctrines and skills. Such a level of different knowledge and skills can only be obtained gradually and once integrated, they form a competent doctor of dental medicine.

## **2.6 Academic title obtained upon completion of the study:**

Doctor of Dental Medicine (DMD)

### 3 Description of the academic study program

#### 3.1 List of obligatory and elective courses with the required number of teaching hours and ECTS points

1st year of study of Dental Medicine										
		COURSE	I semester			II semester			Total hours	ECTS
			L	S	E	L	S	E		
OBLIGATORY	1	Physics	20	20	20				60	6
	2	Chemistry	30	15	30				75	8
	3	Biochemistry				30	15	30	75	8
	4	Cell biology with genetics	15		30	15	30		90	9.5
	5	Anatomy	20	26	13	16	26	29	130	14
	6	Histology with embryology	13	11	15	14	7	20	80	8.5
	7	Ethics	15				15		30	3
	8	Physical education I							60	
	TOTAL		113	72	108	75	93	79	600	57
ELECTIVE	9	First aid				4		11	15	1.5
	10	Basics in use of computers					10	15	25	1.5
	11	English I	15	15					30	1.5
	13	Introduction to dental medicine	5	10					15	1.5
	TOTAL		20	25		4	10	26	85	6.0

2nd year of study of Dental Medicine										
		COURSE	III semester			IV semester			Total hours	ECTS
			L	S	E	L	S	E		
OBLIGATORY	1	Tooth morphology with dental anthropology	15		30	15		45	105	10.5
	2	Cariology				15			15	1.5
	3	Occlusion				15		30	45	4.5
	4	Dental materials	30						30	3
	5	Physiology	8	33	28	7	24	20	120	12
	6	Pathology	30	15		45	15		105	10.5
	7	Immunology	20	10					30	3
	8	Microbiology with parasitology	5	20	35				60	6
	9	Social medicine and epidemiology	10	20					30	3
	10	General pharmacology				15		15	30	3
	11	Physical education II							60	
	TOTAL		118	98	93	112	39	110	630	57
ELECTIVE	12	General and social dental medicine	15						15	1.5
	13	History of dental medicine				7	8		15	1.5
	14	English II				15	15		30	1.5
	TOTAL		15			22	23		60	4.5

3rd year of study of Dental Medicine										
COURSE			V semester			VI semester			Total hours	ECTS
			L	S	E	L	S	E		
OBLIGATORY	1	Neurology	15		15				30	2.5
	2	Dental pharmacology	15	15	15				45	3.5
	3	Internal medicine	23	10	20	22	10	20	105	9
	4	General radiology	15	3	12				30	2.5
	5	Dental radiology				15	3	12	30	2.5
	6	Infectology	15		25				40	3
	7	Preclinical and laboratory fixed prosthodontics	15		30	15		45	105	9
	8	Preclinical and laboratory removable prosthodontics	15		30	15		45	105	9
	9	Preclinical restorative dental medicine	15		45	15		45	120	10
	10	Pathophysiology	15		15	15		30	75	6
	11	Ophthalmology	15		15				30	2.5
	TOTAL		158	28	222	97	13	197	715	59.5
ELECTIVE	12	Smoking and oral health	15						15	1.5
	13	Orofacial genetics				15			15	1.5
	14	Statistics in dental medicine				15	5	10	30	1.5
	15	Prevention and infection control in dental medicine				1	6	8	15	1.5
	16	Occupational diseases in dentistry				15		4	19	1.5
	TOTAL		15			46	11	22	94	7.5

4th year of study of Dental Medicine										
COURSE			VII semester			VIII semester			Total hours	ECTS
			L	S	E	L	S	E		
OBLIGATORY	1	Anesthesiology and reanimatology	9		6				15	1
	2	Pediatrics	15		15				30	2.5
	3	Oncology and radiotherapy	15		15				30	2.5
	4	Surgery	15	15	15	15	15	15	90	7
	5	Preclinical oral surgery	15		20				35	2.5
	6	Preclinical periodontology	15		30				45	3.5
	7	Fixed prosthodontics I	15		45			45	105	9.5
	8	Removable prosthodontics I	15		45			45	105	9.5
	9	Restorative dental medicine I			45			45	90	7
	10	Preclinical endodontics				15		30	45	3.5
	11	Dermatovenereology				15		30	45	3.5
	12	Psychiatry and psychological medicine				15		15	30	2.5
	13	Introduction to pediatric dental medicine	15		15				30	2
	TOTAL		229	15	251	60	15	225	695	56.5
ELECTIVE	14	Oral hygiene	10	5					15	1.5
	15	Dental photography		5	10				15	1.5
	16	Pain				10	5		15	1.5
	17	Gynecology and obstetrics				10		5	15	1.5
	18	Introduction to scientific work I				5	10		15	1.5
	19	Occlusion and function	15	15					30	1.5
	20	Minimally invasive surgery				4	2	9	15	1.5
	TOTAL		25	25	10	29	17	14	120	10.5

5th year of study of Dental Medicine										
COURSE			IX semester			X semester			Total hours	ECTS
			L	S	E	L	S	E		
OBLIGATORY	1	Oral surgery I	15		30	15		30	90	5.5
	2	Fixed prosthodontics II	15		45			60	120	7
	3	Removable prosthodontics II	15		45			60	120	7
	4	Pediatric dentistry I	15		30	15		30	90	6
	5	Restorative dental medicine II			45			45	90	5.5
	6	Endodontics I	15		45			45	105	7
	7	Clinical periodontology	15		45			45	105	7
	8	Oral medicine I	15		15				30	3
	9	Preclinical orthodontics			45				45	3
	10	Temporomandibular disorders - diagnosis and therapy	15	15					30	2
	11	Otorhinolaryngology	10	15	20				45	3
	TOTAL		130	30	365	30		315	870	56
ELECTIVE	12	Forensic dental medicine	15		15				30	1.5
	13	Dental care of medically complex patients	9	6					15	1.5
	14	Child neglect and abuse				15			15	1.5
	15	Comparative odontology				10	5		15	1.5
	16	Introduction to scientific work II			15				15	1.5
	17	Psychostomatology	8		7				15	1.5
	18	Clinical pharmacology					15		15	1.5
	19	Cervicofacial pathology				5	5	5	15	1.5
	TOTAL		32	6	37	30	25	5	135	12

6th year of study of Dental Medicine										
COURSE			XI semester			XII semester			Total hours	ECTS
			L	S	E	L	S	E		
OBLIGATORY	1	Oral medicine II	15		30			45	90	7
	2	Orthodontics		15	60		15	45	135	13
	3	Oral surgery II			45			60	105	10
	4	Endodontics II			60				60	6
	5	Pediatric dentistry II			30			30	60	6
	6	Maxillofacial surgery		30	45				75	7
	7	Ethics in dental medicine	15	15					30	3
	8	Comprehensive dental practicals							500	
	9	Graduate thesis								4
	TOTAL		30	60	270		15	180	1055	56
ELECTIVE	10	Dental implantology	15						15	1.5
	11	Dental medicine for the elderly	15						15	1.5
	12	Dental Microscope	15		4				19	1.5
	13	Fundamentals of esthetics in dentistry	15						15	1.5
	14	The management in dental medicine	15						15	1.5
	TOTAL		75		4				79	7.5

## 3.2 Description of courses

### 3.2.1 Anatomy

Basic information about the course					
Title	Anatomy				
Code	71274	Abbreviation	112OANAT		
Total ECTS points	14	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Anatomy				
Course leader	Professor Zdravko Petanjek, MD, PhD				
Course load					
	1	2	Total		
Lectures	20	16	36		
Seminars	26	26	52		
Laboratory practicals	13	29	42		
ECTS			14		
Course description					
<p>The aim of the course is to acquire basic overview about the structure and function of the human body. Particular attention is given to the study of anatomical – topographical regions important for the further education of dental students. Cadaver section, anatomical structures on cadavers and models, video projections during class, continuous active work with students (oral and written examination) and consultations, enable students to successfully master the course and allow the integration of their knowledge and basic clinical concepts.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam	Yes	Major preliminary exam	
Rules of grading and additional information					
<p>Students have to be present for all parts of the course and actively participate in practicals and seminars. Students are divided into groups. Each group has its own assistant. All groups and their work will be supervised. A schedule and list of student groups is displayed on the notice board of the Department of Anatomy.</p> <p>The class preparedness of the students will be checked by a minor oral quiz. Correction of the negative score of the minor oral quiz obtained during the course will be possible during the next thematic unit only if the current thematic unit is passed. For the successfully completed course, student is allowed to have up to two negative grades obtained on minor quizzes during one semester.</p> <p>Three written major quizzes, encompassing a larger number of topics, will be held during the course. The exact dates of major quizzes will be announced during the course. Students who passed all written major quizzes will be exempt from taking the written exam.</p>					

Only students who obtained the signatures of the teachers proving fulfilled requirements during class will be allowed to enter the exam.

To pass the final written exam students have to answer at least 51% of questions correctly. A passed written exam is a requirement to enter the oral examination.

## Weekly teaching plan

### 1. component

#### Lecture topics:

1. Introduction to anatomy. Anatomical terminology
2. Cranial nerves. Morphology of the base of the brain and base of the skull.
3. Introduction to bones, joints and muscles
4. Respiratory system
5. Heart and mediastinum
6. Digestive system I
7. Digestive system II
8. Digestive system III
9. Urinary system
10. Reproductive system I

#### Seminar topics:

1. Bones and joints of trunk and upper limb
2. Bones and joints of pelvis and lower limb
3. Thorax (I)-respiratory system, muscles of thorax, mechanics of breathing,
4. Thorax (II)
5. Abdomen (I) abdominal viscera (I)
6. Abdomen (II) abdominal viscera (II)
7. Abdomen (III) retroperitoneal viscera
8. Pelvis and genital organs, male and female genital organs
9. Upper limb (I)
10. Upper limb (II)
11. Lower limb (I)
12. Lower limb (II)

#### Laboratory practicals topics:

1. Bones and joints of trunk and upper limb
2. Bones and joints of pelvis and lower limb
3. Thorax (I)-respiratory system, muscles of thorax, mechanics of breathing,
4. Thorax (II)
5. Abdomen (I) abdominal viscera (I)
6. Abdomen (II) abdominal viscera (II)
7. Abdomen (III) retroperitoneal viscera
8. Pelvis and genital organs, male and female genital organs
9. Upper limb (I)
10. Upper limb (II)
11. Lower limb (I)
12. Lower limb (II)

### 2. component

#### Lecture topics:

1. Anatomy I – Morphology of central nervous system
2. Anatomy II – Functional organization of peripheral nervous system

<ol style="list-style-type: none"> <li>3. Anatomy III – Functional anatomy of sensory and motor system</li> <li>4. Cranial bones</li> <li>5. Facial bones</li> <li>6. Nasal cavity and paranasal sinuses.</li> <li>7. Oral cavity. Larynx and pharynx. Swallowing mechanism</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Meninges</li> <li>2. Organization and morphology of spinal cord and brainstem</li> <li>3. Ventricles of the brain</li> <li>4. Anatomical organization of auditory and vestibular, visual, olfactory system and taste</li> <li>5. Parotid and retromandibular region</li> <li>6. Orbital and palpebral region</li> <li>7. Anterior facial region</li> <li>8. Infratemporal fossa</li> <li>9. Submandibular triangle</li> <li>10. Carotid triangle</li> <li>11. Oral cavity, pharynx, nasal cavity and paranasal sinuses</li> <li>12. Lateral cervical region</li> <li>13. Jugular fossa</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Meninges</li> <li>2. Organization and morphology of spinal cord and brainstem</li> <li>3. Ventricles of the brain</li> <li>4. Anatomical organization of auditory and vestibular, visual, olfactory system and taste</li> <li>5. Parotid and retromandibular region</li> <li>6. Orbital and palpebral region</li> <li>7. Anterior facial region</li> <li>8. Infratemporal fossa</li> <li>9. Submandibular triangle</li> <li>10. Carotid triangle</li> <li>11. Oral cavity, pharynx, nasal cavity and paranasal sinuses</li> <li>12. Lateral cervical region</li> <li>13. Jugular fossa</li> </ol>
<b>Course leader and associates</b>
<p>Professor Ivan Vinter, MD PhD  Professor Zdravko Petanjek, MD PhD  Professor Vedran Katavić, MD PhD  Assistant Professor Lovorka Grgurević, MD PhD  Ana Hladnik, MD  Ivana Bičanić, MD</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Leonard, Kahle, Platzer: Color atlas and textbook of human anatomy in 3 volumes, 2006</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Krmpotić Nemančić J. et al: Human anatomy, JUMENA, 1982.</li> <li>2. Waldeyer: Human anatomy. Zagreb: Golden marketing, 2009.</li> </ol>

3. Netter F. Atlas of human anatomy. Zagreb: Golden Marketing, 2003.
4. Sobotta: Atlas of human anatomy. Jastrebarsko: Naklada SLAP, 2000.
5. Sinelnikov RD: Atlas of human anatomy. Moskva: Medicina, 1978.
6. Pernkopf: Atlas of Topographical and Applied Anatomy. Munchen: Urban und Schwartzberg, 1980.
7. Told Hochsteter: Atlas of human anatomy, JUMENA, Zagreb , 1982.

#### Required knowledge

Systemic and topographical anatomy, especially head and neck regions.

#### Required skills

Orientation on cadaver and plastic models. Recognition of anatomical structures and their relationships.

#### Exam questions

1

1. Tongue
2. Larynx
3. Infrahyoid muscles
4. Lymph nodes of head and the neck
5. Femoral artery
6. Accessory nerve
7. Pancreas
8. Urethra
9. Caecum
10. Female urethra
11. Bony or osseous labyrinth

2

1. Nasal cavity
2. Oral vestibule
3. Pharynx
4. Internal jugular vein
5. Thoracic aorta
6. N. petrosus major
7. Gaster
8. Auditory path
9. Renal sheaths
10. Penis
11. Tunica vasculosa bulbi

3

1. Skeletal tissues of nasal cavity
2. Hypoglossal nerve
3. Superior v. cava
4. Muscles of the tongue
5. Lungs
6. Cardiac muscles
7. Retroperitoneal region
8. Spleen
9. Rectum

10. Renal excretory system
11. Camera bulbi anterior

4

1. Soft palate
2. Infrahyoid muscles
3. Laryngeal cavity
4. Parotid gland
5. Pleura
6. Cardiac muscles
7. Urethra
8. Caecum
9. Duodenum
10. Trigeminal lemniscus
11. Membrane labyrinth

5

1. Oral cavity proper
2. Pharyngotympanic tube
3. Trachea
4. Oesophagus
5. Thyroid gland
6. Morphology of lungs
7. Urinary vesicle
8. Liver
9. Duodenum
10. Cornea
11. Extraparamidal motor system

6

1. Nostrils
2. Teeth
3. Oculomotor nerve
4. Thymus
5. Right atrium – morphology
6. Lung vascularisation
7. Renal apparatus
8. Corpus callosum
9. Vesica felea
10. Utriculus et saculus
11. Somatosensory system

7

1. Nasal part of the pharynx
2. Hard palate – oral diaphragm
3. Glossopharyngeal nerve
4. Laryngeal muscles. Function and innervation.
5. Pericardium
6. Mediastinum
7. Renal vascularisation
8. Abdominal aorta
9. Lien

10. Caecum
  11. Corpus vitreum
- 
- 8
  1. Cheeks
  2. Laryngeal cartilage
  3. Trochlear nerve
  4. Vascularisation of the heart
  5. Oesophagus
  6. Thoracic part of the sympathetic system
  7. Inferior v. cava
  8. Inferior mesenteric artery
  9. Pancreas
  10. Femoral artery
  11. Dioptric system of the eye.
- 
- 9
  1. Palpebrae
  2. Laryngeal cavity
  3. Lingual nerve
  4. Internal jugular vein
  5. Bronchial branching
  6. Internal a. carotis
  7. Spleen
  8. Liver
  9. Kidney
  10. Iris
  11. Cochlea
- 
- 10
  1. Cervical muscles – division, innervation
  2. Pharynx
  3. Mandibular nerve
  4. Superior v. cava
  5. Liver
  6. Urogenital diaphragm
  7. Cephalic vein
  8. Lens
  9. Lateral spinothalamic tract
  10. Lumbar plexus
  11. The middle ear
- 
- 11
  1. Right lymphatic duct
  2. Ventricle III
  3. Ophthalmic path
  4. Vagina
  5. Coeliac plexus
  6. Thoracic duct
  7. Pancreas
  8. Superior mesenteric artery
  9. Penis

10. Otic ganglion
  11. Vascularization of the oral cavity
- 12
1. Lymph of the lower extremities
  2. Rhomboidal fossa
  3. Sensitive paths
  4. Uterine tube
  5. Pterygopalatinal ganglion
  6. Median nerve
  7. Tympanic membrane
  8. Cervical plexus
  9. Cerebellum
  10. Deferent duct
  11. Nasal vascularization and innervation
- 13
1. Infratemporal fossa. Masticatory muscles
  2. Vestibular glands
  3. Middle ear
  4. Ischiadic nerve
  5. Diencephalon
  6. Trigeminal lemniscus
  7. Prostate
  8. Brachial plexus
  9. Vagina
  10. Testes
  11. Mesencephalon
- 14
1. Tympanic chord
  2. Masticatory muscles
  3. Laryngeal cavity
  4. Cervical fascia
  5. Durae matris sinuses
  6. Lien
  7. Vermiform appendix
  8. Abdominal aorta
  9. Urinary vesicle
  10. External ear
  11. Sensory paths
- 15
1. Otic ganglion
  2. N. V/II
  3. Cheeks
  4. Infrahyoideal muscles
  5. Pleura
  6. V. portae and communications with other systems
  7. Kidney
  8. Cochlea
  9. Hypothalamus

10. Brodman's fields
  11. Corticonuclear system
- 16
1. N V/I
  2. Internal carotid artery
  3. Internal jugular vein
  4. Scalenic muscles
  5. Esophagus
  6. Suprarenal glands
  7. Sigmoidal colon
  8. Inferior v. cava
  9. Utricle and sac
  10. Internal capsule
  11. Pelvic and urogenital diaphragm
- 17
1. Hypoglossal nerve
  2. Head and neck sympathetic
  3. Skeletal rims of the lower orbit
  4. Superior mesenteric artery
  5. Duodenum
  6. Vesica felea
  7. Prostate
  8. Male urethra
  9. Ventricle IV
  10. Nuclei of the cerebellum
  11. Mechanism of eye accommodation
- 18
1. Nasociliar nerve
  2. Innervation of the nose and nasal cavity
  3. Muscles of facial expression
  4. Anterior jugular vein
  5. Submandibular gland
  6. Jejunum and ileum
  7. Sacral plexus
  8. Cochlea
  9. Auditory path
  10. Male reproductive system
  11. Muscles of the foot
- 19
1. Oral vestibule
  2. N. X
  3. Pharyngobasial membrane
  4. Innervation of the tongue
  5. Innervation of the intestines
  6. Femoral nerve
  7. Pelvic muscles
  8. Deferent duct
  9. Visual path

10. Coroidea
  11. Inferior v. cava
- 20
1. Laryngeal muscles
  2. Lingual nerve
  3. Skeletal rim of the nasal cavity roof
  4. Paranasal sinuses
  5. V. asygos
  6. Pericardium
  7. Urethra
  8. Transverse colon
  9. Lateral cerebral ventricle
  10. Tympanic cavity
  11. Third cerebral ventricle
- 21
1. Mesopharynx
  2. Choanae
  3. Otic ganglion
  4. Phrenical nerve
  5. Lungs
  6. Heptoduodenal lig.
  7. Coeliac trunc
  8. Tibial nerve
  9. Muscles of the hand
  10. Pyramid path
  11. Tympanic membrane
- 22
1. Hard palate
  2. Oral diaphragm
  3. Ciliary ganglion
  4. Infratemporal fossa
  5. Scalene orifices
  6. Pancreas
  7. Inferior mesenteric artery
  8. Pelvic diaphragm
  9. Right lymphatic duct
  10. Medial lemniscus
  11. Eye chamber. Eye fluid circulation.
- 23
1. Lacrimal gland
  2. Minor petrosus nerve
  3. Cervical plexus
  4. Vertebral artery
  5. Infraglottic cavity
  6. Intercostal muscles
  7. Mesenteric radix
  8. Duglas cavity
  9. Vagina

- |     |                         |
|-----|-------------------------|
| 10. | Coeliac plexus.         |
| 11. | Temporomandibular joint |

### 3.2.2 Anesthesiology and Reanimatology

Basic information about the course					
Title	Anesthesiology and reanimatology				
Code	71275	Abbreviation	411OANES		
Total ECTS points	1	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Anesthesiology and Reanimatology				
Course leader	Professor Ino Husedžinović, PhD				
Course load					
	1		Total		
Lectures	9		9		
Preclinical practicals	6		6		
ECTS			1		
Course description					
The aim of the course is to enable students to acquire practical and theoretical knowledge in the field of reanimatology and local and general anesthesia.					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
After accomplishing all the tasks in the practical part of the course, the student takes the exam consisting of practical and theoretical part.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. The use of general anesthesia in dental medicine (definition, theories, types of indications, complications)					
2. Local anesthetics (definition, chemical structure, groups, contraindications, vasoconstrictors, premedication)					
3. Acute heart failure (definition, types, clinical picture, procedures, oxygenation, complications, follow up)					
4. Drugs used in reanimation (ways of administration, types, contraindications, complications, clinical follow up)					
Preclinical practicals topics:					
1. Practicing on models (passable airways, opening and stabilizing the airways, exterior heart massage)					

<ol style="list-style-type: none"> <li>2. Operation theater (anesthesia, intubation, peripheral venous route, mechanical ventilation)</li> <li>3. Intensive care unit (ECG significance and diagnostics of arrest, noninvasive pacing, defibrillation, clinical monitoring of oxygenation, drugs, solutions, central venous route)</li> </ol>
<b>Course leader and associates</b>
Professor Ino Husedžinović, PhD
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Reanimacija: European Resuscitation Council 4 th Edition 2001.</li> <li>2. Husedžinović I. Klinička anesteziologija 2005.</li> <li>3. Miše I. Oralna kirurgija 1991.</li> <li>4. Kiseljak V. Anestezija i reanimacija 1996.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Reader: Reanimatologija i lokalni anestetici (Prof.dr.sc. I Husedžinović, Doc.dr.sc. S. Gašparović)</li> </ol>
<b>Required knowledge</b>
Students are expected to acquire knowledge from the field of reanimatology: identification; treatment; monitoring patients with heart arrest; the importance of electrocardiogram in recognizing types of heart arrest; noninvasive pacing. In addition, knowledge related to patient's oxygenation as well as clinical monitoring (pulse oxymeter) should be acquired; knowledge related to stabilizing of central venous route; knowledge of treating complications related to the reanimation procedures; knowledge from the field of local and general anesthesia, particularly those related to local anesthetics and local anesthesia; mechanisms of the effects of local anesthetics; their chemical structures; contraindications; choice of vasoconstrictors. Students should master treatment of complications in the use of local anesthetics, particularly of anaphylactic shock.
<b>Required skills</b>
Assessing the breathing; opening the airways, airway management with or without mechanical aids (nasopharyngeal tube, oropharyngeal tube); endotracheal intubation (endotracheal tube, laryngeal mask, combitube); using the patient's position to prevent regurgitation of the stomach contents; Heimlich maneuver, Sellick's maneuver (pressure on the cricoid cartilage); artificial breathing (mouth to mouth, mouth to nose, mouth to ventilation mask, use of bag valve mask), oral cavity aspiration; ECG monitoring methods; insertion of peripheral venous catheter; defibrillation; synchronized cardioversion; noninvasive pacing; conicotomy; exterior heart massage (compression site, compression time, compression force, frequency; placing of pulse oxymeter; palpation of compression pulse on large blood vessels).
<b>Exam questions</b>
Definition and clinical picture of heart arrest; types of heart arrest; importance of ECG in making a diagnosis; diagnosis of acute heart arrest; reanimation procedures; causes of acute heart arrest; airways management; opening the airways; respiratory equipment; types of artificial breathing; endotracheal intubation (endotracheal tube, laryngeal mask, combitube); conicotomy; methods of ECG monitoring; noninvasive pacing; oxygenation; clinical options and follow up; defibrillation; (external, synchronized cardioversion); defibrillation algorithm; ways of drug administration in cardiopulmonary reanimation; intravenous route (peripheral, central, advantages and complications); pneumothorax (mechanism of development, treatment); drugs used in treatment

of heart arrest (catecholamine, noncatecholamine, antiarrhythmics); anaphylaxis; acute asthma (identification, treatment, reanimation); post-reanimation monitoring; external heart massage; ethical aspects of reanimation; reanimation efficiency assessment; complications in reanimation; neurological consequences of acute heart arrest; significance of time factor in reanimation; mechanism of local anesthetics effects; types of local anesthetics; side-effects of local anesthesia; factors affecting the frequency of side-effects; local anesthesia and anticoagulant therapy; selection of vasoconstrictors in local anesthesia; contraindications of local anesthetics; use of local anesthetics in pregnancy; anaphylaxis; vasovagal reaction; prevention and treatment of toxic reactions; definitions and theories of general anesthesia; indications for the use of general anesthesia in dental medicine; premedication; postoperative complications and patient monitoring.

### 3.2.3 Biochemistry

Basic information about the course					
Title	Biochemistry				
Code	71276	Abbreviation	121OBIOK		
Total ECTS points	8	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Biochemistry				
Course leader	Professor Jasna Lovrić, PhD				
Course load					
	1		Total		
Lectures	30		30		
Seminars	15		15		
Laboratory practicals	30		30		
ECTS			8		
Course description					
<p>The aim of studying preclinical courses in dental medicine is becoming familiar with structures and function of a healthy human organism. Due to that, the study program in biochemistry is structured in such a way to enable acquiring knowledge on chemical components, chemical and energy changes, course and regulation of metabolic processes in a healthy human body. Such a study program in biochemistry is the basis for acquiring the principles of physiology and pharmacology, and together they form basic knowledge which is needed for understanding of pathological biochemical processes of many diseases.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					

In order to successfully and thoroughly master the topics, students' work is continually evaluated in seminars and practicals in Biochemistry, and their laboratory work is also graded. The obtained points are added to those obtained on the written part of the Biochemistry exam. Continuous evaluation of knowledge is carried out by three minor preliminary optional exams. Each consists of 20 questions (60 questions in total) which are used to assess knowledge of topics covered by lectures, seminars and practicals, along with the topics from the required textbook and from the handouts given in classes. Successfully passed optional preliminary exams ( $\geq 33$  points), wherein students have to score at least 8 points, are considered to be a passed written exam in Biochemistry. Students who miss one preliminary exam (justified excuse) will be able to subsequently take this exam.

Biochemistry exam consists of a written and oral part. The written part consists of a test (60 questions) and it includes topics discussed in lectures, seminars and practicals as well as those which were not discussed in classes but can be found in the required literature and handouts. The final grade in Biochemistry is the combination of grades obtained on the written test and oral exam.

### Weekly teaching plan

#### 1. component

##### Lecture topics:

1. Introduction; from amino acids to proteins
2. Enzymes: mechanisms of enzyme catalysis; structure and classification of coenzymes and prosthetic groups
3. Biological oxidations and energetic, respiration chain, oxidative phosphorylation
4. Oxidative decarboxylation and citric acid cycle
5. Metabolism of proteins: review, digestion, metabolism of amino acids nitrogen
6. Metabolism of proteins: metabolism of amino acids carbohydrogen residues
7. Metabolism purine and pyrimidine bases, nucleic acids
8. Metabolism of carbohydrates: review, digestion, glycolysis, gluconeogenesis
9. Pentose phosphate pathway; metabolism of disaccharides, oligo- and polysaccharides
10. Metabolism of lipids: review, digestion, lipoproteins
11. Metabolism of fatty acids and simple lipids
12. Metabolism of complex lipids
13. Hormones: review and mechanisms of function, other factors
14. Diet and digestion; vitamins
15. Water and minerals

##### Seminar topics:

1. Experimental methods in biochemistry
2. Proteins
3. Enzymes
4. Nuclein acids
5. Metabolism of hemoglobin
6. Degradation products of metabolism
7. Carbohydrates
8. Lipides
9. Characteristics and composition of urine
10. Acido-basal and mineral status of organisms

##### Laboratory practicals topics:

1. Methods in analysis of biological materials
2. Proteins

3. Kinetics of enzyme reaction
4. Nucleic acids
5. Porphyrins and bile pigments
6. Degradation products of metabolism
7. Carbohydrates
8. Lipids
9. Analysis of urine
13. Acido-basal and mineral status of the organism

#### Course leader and associates

Professor Ivančica Delaš, PhD  
 Professor Marko Mesarić, PhD  
 Assistant Professor Daria Pašalić, PhD  
 Assistant Professor Slavica Potočki, PhD  
 Melita Čačić – Hribljan, PhD  
 Lana Feher – Turković, engineer

#### Literature

##### Required literature:

1. Peter Karlson: Biokemija za studente kemije i medicine, Školska knjiga, Zagreb, 1993.
2. Grupa autora: Vježbe iz biokemije za studente stomatologije, Medicinska naklada, Zagreb, 2010

##### Recommended literature:

1. R.A.D.Williams, J.C.Elliot: Basic and Applied Dental Biochemistry, Churchill Livinstone, 1989.
2. B. Štraus: Medicinska biokemija, Medicinska naklada, Zagreb, 1992.
3. L. Stryer: Biochemistry, W. H. Freeman, New York, 2006.
4. R. K. Murray, D. K. Granner, P. A. Mayes, V. W. Rodwel: Harper's Biochemistry, Appleton & Lange, Norwalk, 2009.
5. R. Montgomery, T. W. Conway, A. A. Spector: Biochemistry, a Case-Oriented Approach, C. V. Mosby Company, St. Louis, 1996.
6. T.E. Devlin: Text Book of Biochemistry with Clinical Correlations, John Wiley and Sons Inc. 2002.

#### Required knowledge

- Knowledge of structure and classification of amino acids, common and specific properties, and typical reactions
- Knowledge of protein structure: primary, secondary, tertiary and quaternary; examples of structures and bonds stabilizing them; explaining how structure determines protein function: native structure, denaturation; explaining structure and function of hemoglobin, mechanism of attracting and releasing oxygen.
- Knowledge of structure, nomenclature and classification of enzymes, cofactors; knowledge of characteristics and energy profile of enzyme catalysis; understanding of kinetics of enzyme reactions; knowledge of effects of various factors on speed of enzyme reactions; knowledge of mechanisms of enzyme catalysis and regulation of enzyme activity.
- Knowledge of structure of nucleic acids: bases, nucleosides, nucleotides; Watson-Crick's model of DNA: structural features, pairing of bases, denaturation and renaturation of DNA; understanding of the course of genetic information: mRNA, tRNA and rRNA, replication, transcription, translation, genetic code, gene expression, introns and exons.

- Understanding the energy supply of biological systems; explaining the related reactions; energy-rich compounds, role of ATP. Defining the concept of biological oxidations; recognizing the site and mechanism of respiratory chain and oxidative phosphorylation; state and give characteristics of enzyme systems; explaining energy aspects; explain regulation principles.
- Detailed knowledge of oxidative decarboxylation, all enzymes, co-enzymes and co-factors, energy balance sheet and process regulation.
- State the basic role of citric acid cycle; depict the cycle, explain all reactions together with corresponding enzymes and co-enzymes; knowledge of regulation mechanisms and explain the energy balance sheet of the cycle; understand the role of the citric acid cycle as a turning point of metabolism.
- Explain enzyme degradation of protein in the digestive tract and absorption of amino acids from the lumen of small intestine; define essential and nonessential as well as glucogenic and ketogenic amino acids; be able to explain basic pathways of enzyme degradation of amino acids (transamination, deamination, decarboxylation), state enzymes and co-enzymes; explain formation of ammonia, depict and explain the cycle of urea with all by-products, explain the ATP consumption; explain the metabolism of carbohydrate residue of amino acids.
- Knowledge of porphyrin system, state basic structural characteristics as well as function of porphyrin protein/enzyme; state pathways of hemoglobin and porphyrin degradation, obtaining bile and urine pigments.
- State the changes in nucleoproteins and nucleic acids in digestive processes; explain biosynthesis and degradation of purines and pyrimidines; explain the chemical nature of disorders in their metabolism; understanding structure and role of nucleic acids.
- Have knowledge of nomenclature, significance, classification, structure and characteristics of glycoproteins, glycolipids and proteoglycans. Explain enzyme degradation of carbohydrates in the digestive tract and absorption of monosaccharides from the lumen of small intestine; depict initial phosphorylation of glucose; depict conversion of galactose, manose and fructose into glucose, explain chemical nature of disorders in galactose and fructose metabolisms. Explain the course of glycolysis under anaerobic and aerobic conditions, state enzymes and co-enzymes and the end products of these reactions; create ATP balance sheet, state glycolysis reactions determining the direction of the process. Define and explain the course of gluconeogenesis, explain the origin of glucose and glycogen from proteins and lipids; state the enzymes participating in the regulation of gluconeogenesis. Understand creation of glycogen from glucose and degradation of glycogen into glucose-P as well as hormone regulation of the process; explain chemical nature of disorder in the metabolism of glycogen. Understand the course of pentose phosphate pathway – creation of  $\text{NADPH}^+$   $\text{H}^+$  and ribose and their role in metabolism.
- Define the concept of lipids and explain the division according to the structure and role, essential and nonessential fatty acids. Explain the enzyme degradation of lipids in the digestive system and the absorption of degradation products from the lumen of the small intestine; define lipoproteins, name basic types and state their chemical composition and their role in transportation of endogenous and exogenous lipids; explain the role of triacylglycerols in adipose tissue; explain where and how the catabolism of fatty acids in the cell occurs; calculate the energy balance sheet in degradation of fatty acids; explain biosynthesis of fatty acids; discuss the metabolism of triacylglycerol and complex lipids (glycerophospholipids and sphingolipids); explain chemical nature of lipid metabolism disorders; describe and explain structure and biological role of eicosanoids metabolism; explain biosynthesis of cholesterol; explain biosynthesis of ketone bodies (ketogenesis) and ways of their degradation in extrahepatic tissues; explain the development of bile acids.

- Understand the structure and characteristics of biological membranes; explain active and passive transportation of molecules through membrane; be familiar with the structure and function of ion channels.
- Define hormones and hormone-like substances; state the principles of hormone regulation; explain mechanisms of steroidal, peptide and proteohormones; hormones in regulation of certain metabolic processes.
- Explain the importance of diet in health maintenance; explain specific features of diet in certain conditions (pregnancy, obesity, intensive sports activities, diabetes); the role of diet in maintaining dental health; explain metabolism in state of hunger; explain the biologic role of vitamins in diet; state the basic data on potassium, sodium and chlorides metabolism; explain the metabolic role of calcium and phosphates; explain the metabolic role of iron and zinc.
- Understand and explain metabolism of physiologically significant buffer systems in the human body; explain and define the concept and the role of acid-base balance as well as mechanism of regulation in the human body.
- Explain the origin, the effects and mechanisms of elimination of free radicals. Explain metabolism and mechanisms of xenobiotics elimination.

#### Required skills

- The ability to approach critically the primary sources of literature.
- Good 'quantitative' skills, for example the ability to accurately prepare the reagent and to reproduce the experiment.
- The ability to analyze the key characteristics of a problem.
- The ability to plan the experiment and understand the range and limitations of the chosen experimental approach.
- The ability to interpret results of experiment and to determine whether the results comply with the hypothesis.
- The ability to work safely and efficiently in the laboratory.
- The ability of integrated thinking and observing the problem from different points of view.

#### Exam questions

1. Peptides and proteins, structure and role; hemoglobin.
2. Enzymes,  $K_m$  and  $v_{max}$  - significance, experimental identification; the influence of pH and temperature on the speed of enzyme reactions.
3. Biological oxidations: energetics, principle and components of respiration chain, oxidative phosphorylation; regulation
4. Pyrimidine bases: structure, metabolism, disorders.
5. Purine bases: structure, metabolism, disorders.
6. Digestion of proteins: enzymes, reaction, regulation.
7. Transamination and desamination of amino acids.
8. Decarboxylation of amino acids, role of the products in metabolism, inactivation.
9. Removing ammonia from the body: localisation, reactions, and disorders.
10. Metabolism of carboxyhydrogen residue of amino acids; amino acids as predecessors in synthesis of nitrogen compounds.
11. Porphyrins: structure, metabolism, regulation, biological role of tetrapyrrole.
12. Oxidative decarboxylation: localisation, role, reactions, regulation, energy use.
13. Citric acid cycle: localization, role, reactions, regulation, use of energy.
14. CAC as a turning point of metabolism; glyoxylate cycle.
15. The role of acetyl~SCoA in metabolism.
16. Digestion of carbohydrates: enzymes, reactions, disorders.

17. Biologically significant carbohydrates; general reactions of monosaccharides; mutual transformations of monosaccharides.
18. Pentose phosphate pathway: localization, reactions, enzymes, regulation, role.
19. Metabolism of galactose and fructose: enzymes, reactions, disorders.
20. Glycolysis: localization, significance, reactions, regulation, use of energy.
21. Gluconeogenesis: localization, reactions, regulation; cori and alanine cycle.
22. Diabetes: changes in metabolism, glycated hemoglobin.
23. Disaccharides and oligosaccharides: structure, lactose synthesis, creation of glucuronides; polysaccharides.
24. Glycogen: structure, role, metabolism, regulations, disorders.
25. Glycoproteins: structure, classification, metabolism, significance.
26. Structure and digestion of lipids: enzymes, reactions, disorders.
27. Lipoproteins: structure, classification, role, metabolism, disorders.
28. Degradation of fatty acids: localization, significance, reactions, enzymes, use of energy; metabolism of branched fatty acids.
29. Ketogenesis: localization, significance, reactions, enzymes, use of energy.
30. Synthesis of fatty acids: localization, reactions, enzymes, regulation.
31. Metabolism of adipose tissue; storing energy; brown adipose tissue.
32. Glycerophospholipids: structure, role, metabolism.
33. Sphingolipids: structure; role, metabolism, disorders.
34. Unsaturated fatty acids: structure, significance, metabolism, disorders; eicosanoids: structure, role, metabolism, disorders.
35. Cholesterol: structure, role, metabolism, regulation, disorders.
36. Biological membranes: structure, transportation through the membrane, membrane receptors.
37. Diet: energy value and use of ATP, important food ingredients; diet in health and illness.
38. Metabolism in hunger state.
39. Macrominerals: review, role, regulation, disorders.
40. Trace elements: review, role, regulation, disorders.
41. Vitamins soluble in water: review, structure, role, disorders.
42. Vitamins soluble in oils: review, structure, role, disorders.
43. Steroidal hormones: structure, metabolism, regulation, mechanism of function.
44. Peptide and proteohormones: review, metabolism, regulation, mechanism of function.
45. Mediators: review, biological action of certain mediators.
46. Principles of metabolism regulation; localization of process according to organs and cell compartments, selectivity of membranes.
47. Regulations of metabolism: enzymes for maintaining the rhythm, regulation by limiting metabolites, regulation by Michaelis kinetics.
48. Regulation of metabolism: cooperation, allosteric control, feed-back.
49. Superior regulation of enzyme activity; enzyme induction and enzyme degradation.
50. Hormone regulation of important metabolic chains: glycolysis, gluconeogenesis, glycogenesis, glycogenolysis, lipolysis, lipogenesis, synthesis and degradation of proteins.
51. Proteins of extracellular matrix – structural proteins and proteins with special functions: structure, significance, metabolism, disorders.
52. Proteoglycans and glycosaminoglycans: structure, significance, metabolism, disorders.
53. Proteins of blood plasma: classification, separation methods, biological functions.
54. Specificities in erythrocyte, leukocyte and thrombocyte metabolism, blood clotting, disorders of metabolism.
55. Urine: physical-chemical properties, composition in healthy individuals, clearance; pathological compounds.
56. Acid-base status of the body: organs participating in maintenance; biologically significant buffers.

57. Metabolism of xenobiotics in the body; free radicals.

58. Development, differentiation and malignant transformation; growth factors.

### 3.2.4 Pain

Basic information about the course					
Title	Pain				
Code	71277	Abbreviation	421IBOL		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Neurology				
Course leader	Associate Prof Vanja Bašić Kes				
Course load					
	1		Total		
Lectures	10		10		
Seminars	5		5		
ECTS			1.5		
Course description					
<p>The purpose of the course "Pain" is the students familiar with the basics of pathophysiology, diagnosis and treatment of various forms of acute and chronic pain. During the clinically oriented lectures and seminars, students will acquire acquired knowledge.</p> <p>Special attention will be devoted to diagnostic and treatment guidelines of pain in the head and neck.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Knowledge test will be written and oral exams					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div><div>Pathophysiology and routes of transmission of pain - lecture</div></div> <div><div>2.</div><div>Diagnostic evaluation of patients with pain - seminar</div></div> <div><div>3.</div><div>Migraine headache - lecture</div></div> <div><div>4.</div><div>Tension headache-lecture</div></div> <div><div>5.</div><div>Neurological causes of headaches - lecture</div></div> <div><div>6.</div><div>Craniofacial neuralgia - a lecture</div></div> <div><div>7.</div><div>Pain in the temporomandibular joint - a lecture</div></div> <div><div>8.</div><div>Migraine and TMP - lecture</div></div> <div><div>9.</div><div>Neuropathic pain - lecture</div></div> <div><div>10.</div><div>Medicament forms of treatment of chronic pain-lecture</div></div>					

11. Acupuncture - lecture 12. TENS, laser, ultrasound in treating pain - Seminar 13. Sex difference and pain - seminar 14. Invasive methods of treating pain-seminar 15. The impact of chronic pain on the psyche - seminar
<b>Seminar topics:</b>
Diagnostic evaluation of patients with pain, TENS, laser, ultrasound in the treatment of pain; Gender differences and pain; invasive method of treatment of pain; Effect of chronic pain on the psyche
<b>Course leader and associates</b>
Ass Prof Vanja Bašić Kes
<b>Literature</b>
<b>Required literature:</b>
1. Bašić-Kes V, Zavoreo I, Bosnar-Puretić M, Ivanković M, Bitunjac M, Govori V, Demarin V. Neuropathic pain.< <a href="http://www.ncbi.nlm.nih.gov/pubmed/20055264">http://www.ncbi.nlm.nih.gov/pubmed/20055264</a> >Acta Clin Croat. 2009 Sep;48(3):359-65. 2. Valentić-Peruzović M, Jerloimov V. I suradnici. Tempoomandibularni poremećaj. Zagreb, 2007. 3. Demarin V, Vuković V, Lovrenčić-Huzjan A, Lusić I, Janculjak D, Wilhelm K, Zurak N. Evidence based guidelines for the treatment of primary headaches. Acta Med Croatica. 2008 May;62(2):99-136.
<b>Recommended literature:</b>
1. Demarin V, Basić-Kes V, Zavoreo I, Bosnar-Puretić M, Rotim K, Lupret V, Perić M, Ivanec Z, Fumić L, Lusić I, Aleksić-Shihabis A, Kovac B, Ivanković M, Skobić H, Maslov B, Bornstein N, Niederkorn K, Sinanović O, Rundek T; Ad hoc Committee of the Croatian Society for Neurovascular Disorders; Croatian Medical Association. Recommendations for neuropathic pain treatment. < <a href="http://www.ncbi.nlm.nih.gov/pubmed/19175069">http://www.ncbi.nlm.nih.gov/pubmed/19175069</a> > Acta Clin Croat. 2008 Sep;47(3):181-91. 2. Bašić Kes V, Demarin V. Recommendations for treatment of neuropathic pain < <a href="http://www.ncbi.nlm.nih.gov/pubmed/18710091">http://www.ncbi.nlm.nih.gov/pubmed/18710091</a> >. Acta Med Croatica. 2008 May;62(2):237-40.
<b>Required knowledge</b>
During the teaching of the subject PAIN students will acquire knowledge about pathophysiology, diagnosis and treatment of acute and chronic pain (primarily in the orofacial region).
<b>Required skills</b>
During the seminar, students will learn the basics of TENS, laser, ultrasound in the treatment of pain.
<b>Exam questions</b>
What is VAS scale?, Symptoms of neuropathic pain;, Specific Therapy OF migraine;, Prophylaxis of migraine headache, tension type headache treatment methods, mechanism of acupuncture, laser in the treatment of pain, Unmedical methods of treating pain



### 3.2.5 Cervicofacial Pathology

Basic information about the course					
Title	Cervicofacial pathology				
Code	86999	Abbreviation	521ICERV		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Otorhinolaryngology				
Course leader	Professor Davor Vagić, PhD				
Course load					
	1		Total		
Lectures	5		5		
Seminars	5		5		
Clinical practicals	3		3		
Auditory practicals	2		2		
ECTS			1.5		
Course description					
<p>Cervicofacial pathology course includes an overall study of pathological changes in the head and neck region; defects of hearing and balance, tinnitus, temporomandibular joint syndrome, oroantral fistulas, malignant changes in the oral cavity, node on the neck, dysphonias, respiratory insufficiency and differential diagnostic procedures in pathologic changes in the head and neck region.</p> <p>Teaching is held at the Clinic of Otorhinolaryngology and Head and Neck Surgery at the Clinical Hospital Center ‘Sestre Milosrdnice’ in Zagreb, Vinogradska street 29 – at the Center for Hearing and Balance, ORL outpatient clinics, ORL operation theaters, at the ORL clinical ward and the seminar room for students on the 2nd floor of the clinic.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	
Rules of grading and additional information					
<p>Students are evaluated based on the seminar paper and an active discussion with other participants, a minor preliminary exam during the practical part of the course and a written exam in an essay format at the end of the course.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div><div>Audio-vestibular diagnostics</div></div> <div><div>2.</div><div>Paranasal sinuses – diagnostics and treatment of pathological changes</div></div> <div><div>3.</div><div>Tonsillar problem</div></div>					

<ol style="list-style-type: none"> <li>4. Pharyngeal- Laryngeal pathology</li> <li>5. Tumors of the head and neck – modern approach</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Tinnitus</li> <li>2. Maxillary sinus – bordering dental and ORL pathology</li> <li>3. Syndrome of temporomandibular joint</li> <li>4. Neck node</li> <li>5. Dysphonia</li> </ol>
<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Tonsilectomy</li> <li>2. Conicotomy and tracheotomy</li> <li>3. Pharyngeal-laryngeal surgery</li> </ol>
<b>Auditory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Liminal and supraliminal audiometry</li> <li>2. Vestibulometric investigation of the inner ear</li> </ol>
<b>Course leader and associates</b>
Professor Robert Trotić, PhD Assistant Professor Davor Vagić, PhD Goran Geber, PhD
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Bumber, Katić, Nikšić-Ivančić, Pegan, Petric, Šprem i suradnici: Otorinolaringologija</li> <li>2. Kalogjera, Trotić, Ivkić: Skripta iz otorinolaringologije za studente stomatologije</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Ballenger, Snow: Otorhinolaryngology Head and Neck Surgery</li> <li>2. Bailey: Head and Neck Surgery – Otolaryngology</li> <li>3. Cummings: Otolaryngology – Head and Neck Surgery</li> <li>4. Goldenberg, Goldstein: Handbook of Otolaryngology – Head and Neck Surgery</li> <li>5. Stewart, Selesnick: Differential Diagnosis in Otolaryngology: Head and Neck Surgery</li> <li>6. Shin, Hartnick, Randolph: Evidence – Based Otolaryngology</li> <li>7. Duncavage, Becker: The Maxillary Sinus – Medical and Surgical Menagement</li> <li>8. Barnes, Seethala, Chiosea: Head and Neck Pathology</li> <li>9. Pensak: Otolaryngology Cases</li> <li>10. Onerci: Diagnosis in Otorhinolaryngology</li> </ol>
<b>Required knowledge</b>
<p>Students should acquire knowledge of otorhinolaryngological pathology which is a contact point between dentists and otorhinolaryngologists. In this course, the stress is placed on pathological changes in the head and neck region, which should be recognized by dentists in their practice in order to solve the problem together with otorhinolaryngologists.</p> <p>The acquired knowledge are a step further from the basics, which dental students acquire during their regular undergraduate classes and they represent additional skills in their future practice as dentists.</p>
<b>Required skills</b>

- Recognizing hearing loss and causes
- Recognizing damage to the centre for balance in the inner ear
- Recognizing vertigo related to the center for balance in the inner ear
- Determine if there is hearing impairment or tinnitus as a result of dental procedures
- Recognize pathologic changes on the mucosa of the oral cavity
- Recognize initial malignant tumors in the head and neck region
- Determine indications for tonsillectomy and adenoidectomy
- Recognize initial symptoms of pharyngeal-laryngeal pathology
- Clear the alternative airway in respiratory insufficiency
- Insert the nasogastric tube
- Insert the tracheal tube

#### Exam questions

1. Liminal and supraliminal audiometry
2. Examination of vestibular sense by electronystamography
3. Tinnitus
4. Diagnostics of the paranasal sinuses region
5. Oroantral fistulas
6. Temporomandibular joint syndrome
7. Pain in the maxilla and the mandible – differential diagnostics and treatment
8. Indications for tonsillectomy and adenoidectomy
9. Suspect changes of the oral mucosa
10. Tumors of the pharyngeal region
11. Neck regions relevant to metastases of the head and neck tumors
12. Dysphonia
13. Respiratory insufficiency and its urgent treatment
14. Pharyngocutaneous fistulas
15. Nasogastric tube and tracheal tube

### 3.2.6 Dental Pharmacology

Basic information about the course					
Title	Dental pharmacology				
Code	71278	Abbreviation	311ODFAR		
Total ECTS points	3.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Pharmacology				
Course leader	Associate Professor Kata Rošin-Grget, DDS, PhD				
Course load					
	1		Total		
Lectures	15		15		
Seminars	15		15		
Laboratory practicals	15		15		
ECTS			3.5		
Course description					
<p>The purpose of the course is to familiarize students with the pharmacodynamic drug groups that a student begins to use during the studies in the work with the patient: disinfectants to prevent the spread of infection in the workplace, antiseptics for soft and hard tissues of the oral cavity, antiinfectives for the prevention and treatment of infections in the oral cavity, drugs (topic) which are used in endodontics and on the oral mucosa, and those who make the teeth more resistant to decay. Also, students will become familiar with drugs that will be used every day in their future work: local anesthetics, sympathomimetics, antimuscarinic drugs, general anesthetics, anxiolytics, antihistamines, corticosteroids and hemostyptics. For pharmacotherapeutic groups of drugs which doctor of dental medicine don't use in his work the student meets pharmacodynamic and therapeutic features of each group, and their side effects, which can manifest in the orofacial region. Also, they will be acquaint with the interactions that can occur between these drugs and those applied by a doctor of dental medicine. As the prevention should be significantly represented in the work of a doctor of dental medicine, students will become familiar with preparations for oral hygiene and therapeutic additives which are added to these preparations. Parts of the teaching process are seminars and practicals, thus facilitating students learning. Some of the practicals are related to solving and analyzing the results of experiments in experimental animals, and some on resolving of the simulated therapeutic problems.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>During the teaching a validation is performed with several short written tests. At the end of classes (end of fifth semester), final exam consists of two parts: a written part (test paper with 60 questions) and oral examination. During an oral exam in a conversation with the candidate, the examiner seeks to gain an understanding of their learning, connect learning to the whole, which</p>					

will allow rational selection of therapeutic agents for which it is assumed that the most help to patients with minimal damage.

## Weekly teaching plan

### 1. component

#### Lecture topics:

1. CNS Depressants: general anaesthetic agents-inhalation anaesthetics
2. Intravenous anaesthetic agents, Neuroleptanalgesia
3. Hypnotic drugs, Benzodiazepines
4. Anticonvulsants, Drugs used in Parkinson's disease
5. Opioid analgesics
6. Toxicity and dependence of opioid analgesics
7. Non-steroidal antiinflammatory drugs (NSAIDs)
8. Local anaesthetics
9. Adverse drug reactions to local anaesthetics
10. Psychopharmaceutics and central nervous system stimulants
11. Autonomic nervous system: cholinergic agonists and cholinergic antagonists
12. Adrenoreceptor agonists and adrenoreceptor antagonists
13. Pharmacology of cardiovascular system
14. Corticosteroids, antineoplastic drugs and antihistamines
15. Anticoagulants and haemostatic agents

#### Seminar topics:

1. Antiseptics and disinfectants
2. Oxidizing antiseptics
3. Halogens and their derivatives
4. Alcohols, aldehydes, phenols
5. Essential oils, organic dyes
6. Surface-acting agents
7. Disinfection and sterilization
8. Antiinfectives, sulphonamides
9. Beta-lactam antibiotics
10. Aminoglycosides and tetracyclines
11. Macrolides and macrolides-like antibiotics
12. Metronidazole, polypeptide, antifungal drugs, antiviral drugs, antituberculosis drugs
13. Topics for the oral cavity (astringents, resins, mucilage)
14. Fluoride and dental caries, methods of fluoridation and fluoride toxicity
15. Preparations for oral hygiene

#### Laboratory practicals topics:

1. The selection of appropriate antiseptics and disinfectants to prevent the transmission of infection in dentistry. Problem statement: approach and resolve.
2. Antiseptics in endodontics. Problem statement: approach and resolve.
3. Selecting an appropriate antimicrobial drug in the treatment of odontogenic infections. Problem statement: approach and resolve
4. The selection of antimicrobial drugs in the treatment of pregnant women and nursing mothers. Problem statement: approach and resolve.
5. Prophylactic use of antimicrobial drugs. Problem statement: approach and resolve.
6. Drugs for the treatment of allergic reactions. Problem statement: approach and resolve
7. Drugs for the treatment of fungal infections of the oral cavity. Problem statement: approach and resolve

8. Drugs for the treatment of viral infections. Problem statement: approach and resolve 9. Antimicrobial drugs as a cause of adverse reactions in the orodental area. Problem statement: approach and resolve 10. Important interactions of antimicrobials. Problem statement: approach and resolve 11. Topics for the oral cavity. Problem statement: approach and resolve 12. Determination of the dose of fluoride tablets. Calculation of the appropriate amount of fluoride in toothpastes, gels and mouthwashes. Problem statement: approach and resolve 13. Risk factors for dental fluorosis. Problem statement: approach and resolve 14. Autonomic nervous system: analysis of the results obtained in experimental animals 15. Effects of drugs on the cardiovascular system of experimental animals
<b>Course leader and associates</b> Kata Rošin-Grget, DDS; PhD, Associate Professor Kristina Peroš, DDS, PhD, Senior Research Fellow Ivana Šutej, DDS, PhD, Senior Research Fellow Krešimir Bašić, DDS, Research Fellow
<b>Literature</b> <b>Required literature:</b> <ol style="list-style-type: none"> <li>1. Ileana Linčir et all. Pharmacology for dentistry, 3rd. ed. Zagreb: Medicinska naklada; 2011.</li> </ol>
<b>Recommended literature:</b> <ol style="list-style-type: none"> <li>1. Katzung BG, Masters SB, Trevor AJ. Basic and Clinical pharmacology, 11th ed. Trkulja V, Klarica M, Šalković-Petrišić M., eds. Croatian ed. Zagreb: Medicinska naklada; 2011.</li> <li>2. Rang HP, Dale MM, Ritter JM, Moore PK. Pharmacology (1. Croatian ed., Geber J, ed.). Zagreb: Golden marketing-Tehnička knjiga; 2006.</li> <li>3. Yagiela JA, Neidle EA, Dowd FJ: Pharmacology and therapeutics for Dentistry, 5. ed., London: Mosby; 2004.</li> <li>4. Bennett PN, Brown MJ: Clinical Pharmacology, 10.ed. London: Churchill Livingstone; 2008.</li> </ol>
<b>Required knowledge</b> Students should learn how to implement a rational pharmacotherapy. They also need to assess the risk / benefit ratio. Upon completion of the course the student should be familiar with pharmacodynamic groups of drugs that are used in dental practice; the students should know the procedure for selection of drugs in emergencies which can occur during dental procedures; know critically assess possible interactions between drugs used by the patient and the medications given or prescribed by a doctor of dental medicine; know risks of using certain drugs to women during pregnancy and lactation and to elderly people.
<b>Required skills</b> Student must be able to: <ol style="list-style-type: none"> <li>1. Determine and choose a drug therapy based on the diagnosis of disease and the patient's health status</li> <li>2. Assess the risk / benefit ratio which must always be in favor of the patients on the basis of knowledge of pharmacodynamic and therapeutic features of certain classes of drugs</li> <li>3. Identify the possible side effects of therapy and take measures to make their outcome be less: <ul style="list-style-type: none"> <li>- Discontinue treatment or not</li> <li>- Change the dose</li> <li>- Change the medicine</li> </ul> </li> </ol>

4. Based on the histories of treatment at the time of arrival of patients to the dental clinic to assess whether the possible interactions between drugs that will apply doctor of dental medicine and therapies under the influence of the patient at the time
5. Assess possible effects of interactions and know how to react to them
6. Take special precautions when applying the medication:
  - a. Women in pregnancy and lactation
  - b. Elderly patients
7. Choose medicines and procedures in preventing the transmission of infectious diseases (between patients) and for personal protection.
8. In emergency situations use proper medications

### Exam questions

#### Antiseptics and disinfectants

1. The mechanism of action of antiseptics
2. Classification of antiseptics regarding administration site
3. Antiseptics in dental medicine
4. Oxidizing antiseptics
5. Chlorine and its derivatives
6. Iodine and its derivatives
7. Mercury and chronic mercury poisoning
8. Alcohols as antiseptics
9. Aldehydes
10. Aromatic row antiseptics
11. Essential oils
12. Aromatic acids
13. Organic dyes as antiseptics
14. Surface-active agents
15. Hand disinfection and sterilization

#### Antiinfectives

1. Antibacterial agents
2. Sulfonamides
3. Penicillin
4. Semi-synthetic penicillins
5. Cephalosporins
6. Monobactams and penemi
7. Aminoglycoside antibiotics
8. Tetracyclines
9. Chloramphenicol
10. Macrolides and macrolides-like antibiotics
11. Metronidazole
12. Polypeptide antibiotics
13. Antifungal drugs
14. Antiviral drugs
15. Antituberculosis drugs

#### Pharmacology of the central nervous system

1. CNS depressants
2. General anesthetics: Inhaled and Intravenous anaesthetic agents
3. Neuroleptanalgesia
4. Preanesthetic medication
5. Hypnotics and anxiolytics
6. Anticonvulsants
7. Opioid analgesics
8. Analgesics-antipyretics
9. Psychopharmaceutics - psychotropic medications
10. Central nervous system stimulants

#### Neurotransmitters in autonomic (vegetative) nervous system

1. Cholinergic receptor agonists (parasympathomimetics)
2. Cholinergic receptor antagonist (antimuscarinic substances)
3. Adrenergic receptor agonists
4. Adrenaline
5. Adrenergic receptor antagonists
6. The mechanism of action of local anesthetics
7. Method of administration of local anesthetics
8. Local anesthetics in dentistry
9. Adverse reactions to local anesthetics, treatment of these reactions and precautions
10. Interaction of local anesthetics and dosage of local anesthetic

#### Drugs acting on the cardiovascular, respiratory, digestive system and kidneys

1. Cardiotonic
2. Antiarrhythmic drugs and pharmaceuticals for the treatment of angina pectoris
3. Antihypertensive drugs
4. Diuretics
5. Expectorants
6. Bronchodilators
7. Antitussives
8. Stomachic drugs and digestives
9. Antacids and drugs to treat ulcers
10. Laxatives
11. Antidiarrheal agents
12. Emetics and antiemetics

#### Drugs that act on the blood, antineoplastics, antihistamines, vitamins, hormones and other

1. Antianemic drugs
2. Anticoagulants
3. Hemostatic drugs
4. Agents for replenishing blood
5. Drugs to treat neoplasms and immunomodulators
6. Antihistamines
7. Vitamins
8. Thyroid hormones
9. Hormones of the pancreas
10. Hormones of the adrenal cortex

Topics for the oral cavity and the means to protect teeth from decay

1. First calcium hydroxide
  2. Arsenic
  3. Astringents
  4. Resins and medicinal slime
  5. Fluorine and dental caries
  6. The mechanism of anticaries effect of fluoride
  7. Endogenous (apsorptive) application of fluoride
  8. Local (topical) application of fluoride
  9. Acute fluoride poisoning
  10. Chronic fluoride poisoning
- Preparations for oral hygiene

### 3.2.7 Dental Photography

Basic information about the course					
Title		Dental photography			
Code		71279	Abbreviation		411IDFOT
Total ECTS points		1.5	Status		Elective
Exam		Yes	Calculated in grade average		Yes
Language of teaching		Croatian	e-learning		No
Department		Department of Orthodontics			
Course leader		Professor Marina Lapter Varga, PhD			
Course load					
		1			Total
Seminars		5			5
Laboratory practicals		10			10
ECTS					1.5
Course description					
<p>The main objective of the program is to educate future doctors of dental medicine who have broad academic education and clinical experience in performing various polyvalent procedures in clinical practice, in an area that is increasingly a legal requirement in Europe and the U.S. Namely, the documentation in dental medicine besides usual procedures such as dental charts and radiograms, nowadays as a standard includes a basic set of photographs, both at the beginning, during and at the end of therapy.</p> <p>In restorative dentistry and prosthodontics photographing mostly involves macro techniques of individual teeth or parts of the dental arches and occlusion.</p> <p>In oral surgery photographs are focused on pathological conditions, progress of surgical procedures and the outcome of therapy.</p> <p>The photographs in oral medicine register pathological conditions of mucosa and gums, but also changes on the hard tissues.</p> <p>In orthodontics we used sets of intraoral and extraoral photos, which are standardized and are considered mandatory diagnostic procedure at the beginning, during and at the end of orthodontic treatment.</p> <p>In forensic dentistry photographic procedures are an inevitable part of any forensic analysis, and photographs represent the main part of the documentation.</p> <p>In the esthetic dentistry, worldwide but also more and more often in our country, the doctors use photos as registration of the patient condition before and after therapeutic intervention, as well as mandatory documents, but more as a marketing tool in communicating with future or current patients to whom they present comparisons based on the model "Before-after".</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					

This course is performed during the tenth semester and continues through 5 weeks of education in the form of 5 hours of seminars and 10 hours of practice (total 15 hours).

During the semester, continued verification of participation, knowledge and skills acquired in theoretical part and practical work is performed. At the end of the semester knowledge acquired during the semester is tested in an exam.

Exam contains topics of all the seminars and exercises included in the course. Exam is both written and practical.

### **Weekly teaching plan**

#### **1. component**

##### **Seminar topics:**

1. The implementation of photography in everyday clinical practice, the importance and benefit to the doctor, office and patient, photography as a communication tool, photography in the treatment planning, education and motivation of the patient, documentation and legal obligations
2. The difference between digital and conventional camera, the benefits of digital photography, the basics of digital photography, basic principles of intraoral and extraoral photography, photographing standards, focal length, depth of field, lighting, common errors when shooting
3. Extraoral photography - profile and en face, the standards of extraoral photography, symmetry of the face, photogrammetry, standard landmarks and other variables in the photogrammetry, smile analysis, teeth and lips relations, visibility of teeth, color of teeth and other structures
4. Intraoral photography: standard sets and principles of photographs, macro photography, photography of teeth restorations, dentures, pathological changes in the soft and hard tissues, anatomical formations and photographing during dental and surgical procedures
5. Transferring images to the computer, the basics of storing and processing images on the computer. Organization of the photos, backup, sharing and sending to outlying computers, photo presentation.

##### **Laboratory practicals topics:**

1. Understanding the principles of the camera, accessories and basics of handling with digital camera, automatic and manual exposure modes, ring flash, working with cameras from different manufacturers and basic orientation
2. Practice shooting at the test objects, shooting off into the distance, macro photography, examples of work without flash, with various focus settings, work with exposure correction, work with hand or auto adjusted focus, identifying and correcting basic errors
3. Extraoral photography -profile and en face, sets of photos and principles, to determine the distance of photographing, the effect of "spies", zoom, capture with the scale, the proper head orientation, the analysis of photography, introduction to basic photogrammetry landmarks, lines and angles
4. Intraoral photography- sets photos and principles, lighting, focus settings, the importance of depth of field, taking photos with clinical mirrors, spotting errors photographing
5. Transferring images to the computer, the basics of storing and processing images on the computer, organization of photos, backing up, sharing and sending to remote P

### **Course leader and associates**

Prof. dr. sc. Marina Lapter Varga

Prof.dr.sc. Mladen Šlaj

Prof.dr.sc. Senka Meštrović

Doc.dr.sc. Sandra Anić Milošević

Doc.dr.sc. Martina Šljaj  
Doc.dr.sc. Mihovil Strujić

## Literature

### Required literature:

1. Dental photography - script

### Recommended literature:

1. First Bengel W. Mastering Digital Dental Photography. First ed Quintessence Publishing (IL); 2006.45
2. Second Harcourt Davies P. The Complete Guide to Close Up & Macro Photography. David & Charles

## Required knowledge

- The purpose of dental photography
- Advantages of dental photography in medical documentation
- Flash units and their selection
- The importance of length and exposure correction
- Aperture and depth of field
- Zoom / magnification of the object
- Focus (manual and automatic, type)
- The application of photography in dental medicine
- Realistic display of colors in images
- Intraoral photographs (standards)
- Additional accessories for intraoral photography (cheek retractors and mirrors)
- Extraoral photographs (standards)
- Basic photogrammetric landmarks
- Basic photogrammetric variables (angles and linear measures)
- Analysis of en-face images
- Analysis of the profile images
- Importance of photogrammetry in dental medicine
- Correct handling of the camera
- Select appropriate lighting considering selecting object
- Properly determine the aperture and depth of field due to the object
- Macro mode, using zoom, magnification of the object
- Focusing technique
- Standard set of intraoral photos
- Extraoral photos
- Basics of extraoral photos analysis
- Transferring photos to your computer
- Fundamentals of computer image processing and archiving
- Sharing and sending photos to distant computers

## Required skills

- General principles for correct handling of the camera
- Select appropriate lighting considering the selected object
- Correctly specify aperture and depth of field regarding the object
- Macro mode imaging, using zoom, magnification of the object
- Focus settings
- Standard set of intraoral photos

- Extraoral photos
- Basics of analyzing extraoral photos
- Transferring recordings to the computer
- Basic computer image processing and archiving photos
- Sharing of photos and send them to remote computers

#### Exam questions

1. The purpose of dental photography
2. Advantages of dental photography in medical documentation
3. Flash units and their selection
4. The importance of length and exposure correction
5. Aperture and depth of field
6. Zoom / magnification of the object
7. Focus (manual and automatic, type)
8. The application of photography in dental medicine
9. Realistic display of colors in images
10. Intraoral photographs (standards)
11. Additional accessories for intraoral photography (cheek retractors and mirrors)
12. Extraoral photographs (standards)
13. Basic photogrammetric landmarks
14. Basic photogrammetric variables (angles and linear measures)
15. Analysis of en-face images
16. Analysis of the profile images
17. Importance of photogrammetry in dental medicine
18. Correct handling of the camera
19. Select appropriate lighting considering selecting object
20. Properly determine the aperture and depth of field due to the object
21. Macro mode, using zoom, magnification of the object
22. Focusing technique
23. Standard set of intraoral photos
24. Extraoral photos
25. Basics of extraoral photos analysis
26. Transferring photos to your computer
27. Fundamentals of computer image processing and archiving
28. Sharing and sending photos to distant computers

### 3.2.8 Dental Implantology

Basic information about the course					
Title	Dental implantology				
Code	71280	Abbreviation	611IDIMP		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Oral Surgery				
Course leader	Associate Professor Berislav Perić, PhD				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
The aim of the course is to teach students the history and basics of dental implantology.					
The course acquaints students with:					
<ul style="list-style-type: none"><li>the principles of osseointegration</li><li>experimental models in dental implant development</li><li>indications and contraindications for dental implant therapy</li><li>contemporary dental implant systems, materials, necessary instruments and equipment</li><li>basic and advanced surgical procedures in dental implant therapy</li><li>removable and fixed implant retained dental prostheses</li><li>complications with dental implant therapy</li><li>maintenance of dental implant prostheses</li><li>peri-implantitis</li><li>guided tissue regeneration and guided bone regeneration</li></ul>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
At the end of the course students take an oral exam. The exam consists of a theoretical and a practical part, which are comprised of radiograph analysis, comprehensive treatment planning, dental cast analysis, selection of dental implants, guided surgery stents, management of peri-implantitis.					
Weekly teaching plan					

<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. History of dental implantology</li> <li>2. Experimental models in dental implantology</li> <li>3. Indications and contraindications for dental implants</li> <li>4. Contemporary implant systems, equipment and instruments</li> <li>5. Dental implants – design, surface, biological response</li> <li>6. Materials in dental implantology</li> <li>7. Surgery phase planning</li> <li>8. Pre-implant surgical augmentation – guided bone regeneration</li> <li>9. Removable prosthetic appliances retained on dental implants I</li> <li>10. Removable prosthetic appliances retained on dental implants II</li> <li>11. Fixed prosthetic appliances retained on dental implants I</li> <li>12. Fixed prosthetic appliances retained on dental implants II</li> <li>13. Case reports</li> <li>14. Dental implant maintenance</li> <li>15. Peri-implantitis</li> </ol>
<b>Course leader and associates</b>
<p>Professor Jakša Grgurević, PhD  Professor Darko Macan, PhD  Professor Davor Katanec, PhD  Professor Irina Filipović-Zore, PhD  Professor Jasenka Živko Babić, PhD  Professor Darije Plančak, PhD  Associate Professor Nikša Dulčić, PhD</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Knežević G. Osnove dentalne implantologije, Školska knjiga, Zagreb, 2002.</li> <li>2. Lindhe J. Klinička parodontologija i dentalna implantologija, Globus, Zagreb, 2010.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Davarpanah M, Martinez H. Priručnik dentalne implantologije, In Tri, Zagreb, 2006.</li> <li>2. Sethi G, Kaus T. Praktična implantologija. Quintessence books, Media ogled. Zagreb; 2009.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Indications and contraindications for dental implants</li> <li>• Osseointegration and experimental models</li> <li>• Contemporary dental implant systems</li> <li>• Equipment and instruments needed for dental implantology</li> <li>• Materials in dental implantology</li> <li>• Types of prostheses retained on dental implants</li> <li>• Principles of occlusion on dental implant retained restorations</li> <li>• Complications during and after surgical procedures</li> <li>• Dental implant maintenance, recall</li> <li>• Peri-implantitis</li> <li>• Guided bone regeneration</li> <li>• Hard and soft tissue augmentation</li> </ul>
<b>Required skills</b>

It is our opinion that specific knowledge and training are needed for surgical procedures in the field of dental implantology. Students need not master dental implantology surgical techniques, because the undergraduate program does not provide students with enough knowledge and skill to independently perform such procedures, especially with regard to dealing with all the possible complications during and after dental implant surgery. The aim of the course is to give students a basic knowledge of dental implantology for their further theoretical and practical education in the field.

#### **Exam questions**

History of dental implantology, glossary of dental implantology terms, osseointegration of dental implants, types of dental implants, contemporary dental implantology systems, indications and contraindications for dental implants (local and system), equipment needed for dental implantology, experimental models in dental implantology, surgical procedures (basic, intermediate and advanced), materials in dental implantology, occlusion and dental implantology, removable and fixed restorations (cement and screw retained), dental implant maintenance, peri-implantitis, management of peri-implantitis, guided bone regeneration.

### 3.2.9 Dental Medicine for the Elderly

Basic information about the course					
Title	Dental medicine for the elderly				
Code	71281	Abbreviation	611IDMSZ		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Fixed Prosthodontics				
Course leader	Professor Adnan Ćatović, DMD;M.Sc.,Ph.D.				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
Program of Study in Geriatric Dentistry Teaches Students About the Physiology of Aging, Prevention and Treatment Modalities in Various Branches of Dental and General Medicine that are Mutually Acting in the Preservation of Oral and General Health of Elderly.					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
The exam in geriatric dentistry is verbal.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction to Geriatric Dentistry					
2. Physiology of Aging.					
3. Nutrition in the Elderly					
4. Bone and Joint Diseases in the Elderly					
5. Cardiovascular Disease in the Elderly					
6. Neurological Disease in the Elerly					
7. Psychiatric Disease in the Elderly					
8. Local Anesthesia in the Elderly					
9. Oral Diseases and Therapy in the Elderly					
10. Oral Medicine in the Elderly					
11. Treatment of Periodontal Diseases in the Elderly					
12. Changes of the Hard Dental Tissues and Endodontic Therapy in the Elderly					
13. Fixed Prosthetic Treatment in the Elderly					
14. Removable Prosthetic Treatment in the Elderly					

15. A guide for the Prevention and Treatment of Gerontologic and Geriatric Patient in Dentistry
<b>Course leader and associates</b>
Professor Adnan Ćatović , DMD,M.Sc.,Ph.D.,Chairman ., Professor Jagoda Rosa,MD,Ph.D., Professor Irena Colic Baric,E.Bio.Teh.,Ph.D., Professor Ino Husedzinovic,MD.,Ph.D., Associate Professor Kata Rosin Grget,DMD,Ph.D.,Professor Danijel Buljan,MD.,Ph.D., Professor Zlatko Trkanjec,MD,Ph.D., Assistant Professor Hrvoje Pinaric,MD.,Ph.D., Associate Professor Sanja Šegović,DMD.,Ph.D.,Associate Professor Irina Filipovic Zore.,DMD.,Ph.D.,Professor Marinka Mravak Stipetic,DMD.,Ph.D., Associate Professor Andrej Aurer,DMD.,Ph.D.
<b>Literature</b>
<b>Required literature:</b>
1. Catovic A. et al.Gerodontology,Medicinska naklada, Zagreb, 2010.
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. First Holm-Pedersen P, Loe H. Textbook of Geriatric Dentistry, Munksgaard, Copenhagen, 1996.</li> <li>2. BUDTZ-Jorgensen E. Prosthodontics for the Elderly. Quintessence, Chicago, 1999.</li> <li>3. Durakovic et al. Geriatrics – Medicine of Elderly. C.T.Poslovne information, Zagreb, 2007.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Become familiar with the specifics of prevention and treatment of dental medicine disciplines in treating of oral and dental health of elderly</li> <li>• Become familiar with multidisciplinary approach / medical and dental specialistic disciplines / in the prevention and treatment of stomatognathic system of elderly</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• Conduct independent simple diagnostic and therapeutic procedures in the field of dental treatments of elderly / especially institutionalized and disabled /</li> <li>• Carry out preliminary activities for certain specialized dental procedures for the elderly with the cooperation of various specialists in a general medicine</li> </ul>
<b>Exam questions</b>
Epidemiology of Aging, Influential Factors on Oral Health in the Elderly, Morphological and Functional Changes in the Aging , Metabolism and Thermoregulation, Mechanisms of Aging, Telomeres, Characteristics of Eating Due to Oral Health, Recommendations of Nutrition for Elderly, Macronutrients, Micronutrients, Pyramid of Proper Nutrition for People Older than 70 Years, The Particular Diet for People with Dentures, The Most Important Mechanisms of Chronic Bone and Joint Diseases, Chronic Bone and Joint Diseases in Dental Practice, Chronic Heart Failure, Defect Heart Rhythm and Conduction, Valvular Heart Disease and Prevention of Endocarditis During Dental Procedures in Elderly, Dementia, Stroke, Parkinson's Disease and Dental Procedures, Delirium and Dental Treatment, Abuse and Dependence on Psychoactive Substances, Adverse Effects of Local Anesthetics, Anaphylactic Reactions in the Elderly, Surgery on Soft Tissues and Bone of the Upper and Lower Jaw ,Surgery in the Upper Jaw, Surgical Methods in the Lower Jaw, Implant Rehabilitation of Atrophic Maxilla, Clinical and Histological Changes in the Oral Mucosa in the Elderly, Pathological Changes in the Oral Mucosa of Elderly ,Color changes of the Soft Tissue, Changes in Salivation, Changes of Taste and Odor, Changes in Chewing and Swallowing, Orofacial Pain, Oral Mucosal Diseases in the Elderly, Injuries of Oral Mucosa, Bacterial and Viral Infections, Immune defects, Oral Precancerous Lesions, Prevention and Oral Medicine Treatment of Diseases and Lesions of the mouth in the Elderly, Sensory Defect Flavors and Fragrances, Influence of Aging

on Periodontal Tissues, Periodontal Therapy and Prophylaxis in the Elderly, Caries in the Elderly, Teeth Colour of the Elderly , Changes of the Pulp and Dentin Complex in the Elderly, Secondary and Tertiary Dentin Deposits, Fausse Route in the Endodontic Treatment in Elderly Patients, Factors Influencing the Supply of Prosthetic Elderly Patient, Fixed Prosthetic Therapy in Older Patients, Conditions that Obstructs Fixed Prosthetic Treatment in Elderly Patients, Indications and Contraindications for the Crowns in the Elderly, Characteristics of Elderly Tooth Preparation, Dental Prosthetic Treatment Plan by Ettinger and Berkey, Abrasion as a Fixed Prosthetic Problem in the Elderly, Effect of Aging on the Removable Prosthetic Therapy, The Main Problems with the Removable Prosthesis in the Elderly Patients, A Guide of the Prevention and Treatment Plan for Gerodontic and Geriatric Patient in Dentistry.

### 3.2.10 Dental Radiology

Basic information about the course					
Title	Dental radiology				
Code	71282	Abbreviation	321ODRAD		
Total ECTS points	2.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of General and Dental Radiology				
Course leader	Assistant Prof Dijana Zadavec				
Course load					
	1		Total		
Lectures	15		15		
Seminars	3		3		
Clinical practicals	12		12		
ECTS			2.5		
Course description					
Learning about radiological procedures and equipment. Importance of indications for radiological diagnostics and selection of the right algorithm.					
Analysis and recognition of normal and pathological processes on the analogue and digital display associating it with the clinical status of the patient.					
Acquiring the necessary knowledge for analysis of radiological images which is necessary for everyday dental procedures. Learning about harmful effects and protection from ionizing radiation.					
Criteria for taking the course exam					
General Radiology					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
The oral exam consists of a practical and a theoretical part which take place simultaneously. Students have to recognize radiological techniques on a given radiological image as well as analyze the depicted pathomorphological changes and relate them to clinical indicators. The exam includes almost all radiological techniques used in dental radiology together with images of various pathologies.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Intraoral imaging techniques					
2. Extraoral imaging technique					
3. Digital technique, radiation dosages, protection					
4. Normal radiological anatomy					

<ol style="list-style-type: none"> <li>5. Developmental anomalies</li> <li>6. Caries</li> <li>7. Periodontal processes</li> <li>8. Inflammatory diseases of the jaw</li> <li>9. CT and MRI of the jaws</li> <li>10. Tumors of the upper and lower jaw</li> <li>11. Paranasal cavities</li> <li>12. Radiology of the temporomandibular joint</li> <li>13. Head trauma</li> <li>14. Ultrasound of soft tissues of the head and neck, mineral shadows</li> <li>15. Algorithms of radiological methods in dental medicine</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Imaging techniques; Digital methods; Pathological changes in teeth</li> <li>2. Pathology of the jaw; Sinuses; Temporomandibular joint</li> <li>3. Soft-tissue structures of the head; Head trauma</li> </ol>
<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Angiographies ( CTA; MRA; DSA; doppler ) of the head and neck</li> <li>2. Analysis of panoramic radiographs, TMJ</li> <li>3. Analysis of the intraoral images</li> <li>4. Diagnostics of the jaw, sinuses, orbits</li> <li>5. Algorithms in head radiology</li> <li>6. Salivary glands, the thyroid, blood vessels of the neck</li> </ol>
<b>Course leader and associates</b>
<p>Professor Ivan Krolo, PhD</p> <p>Dijana Podoreški , PhD</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Stafne. Oral roentgenographic diagnosis. WB Saunders Company; Philadelphia; London: 2001</li> <li>2. Whites C,Pharoah MJ. Oral Radiology. St.Louis; Mosby: 2004</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Dentalna radiologija. S. Janković, D. Miletić. Medicinski fakultet Split</li> </ol>
<b>Required knowledge</b>
<p>Radiological methods in dental methods.</p> <p>Basic knowledge on radiological dental equipment.</p> <p>Choosing the method of radiological procedure according to the algorithm which is related to the expected response and clinical picture of the patient.</p> <p>Knowledge on normal X-ray anatomy.</p> <p>Recognizing the pathological processes on teeth, maxilla, mandible and temporomandibular joints.</p> <p>The use of radiology in implantology.</p> <p>The use of radiology in clinical treatment of the patient.</p>
<b>Required skills</b>
<p>Selecting the most appropriate radiological methods for analysis of pathological process.</p> <p>Knowledge of algorithms in dental radiological methods.</p>

Recognizing pathological changes on the X-ray image and their use in clinical work.  
Protection of patients and medical staff from unnecessary X-ray radiation.  
Allowed doses in radiological procedure.  
Indications for radiological procedure.

### Exam questions

Extraoral and intraoral images  
Retroalveolar images  
Bite-wing radiographs  
Axial bite images  
Inclined bite images  
Digital radiography  
Radiovisiography  
Inflammatory changes in dental medicine  
Periapical processes  
Radicular cysts  
Follicular cysts  
Nasopalatine cysts  
Aneurismatic bone cysts  
Ameloblastoma  
Padgett's disease  
Impacted teeth  
Gemination  
Taurodontism  
Hypodontia  
Fractures of alveolar process, alveolus and teeth  
Retained teeth  
X-ray characteristics of a cyst, granuloma and shade intensities  
Changes in crown, neck and root of the tooth  
Supernumerary teeth  
Osteogenesis imperfect  
Dentinogenesis imperfect  
Sialolithiasis  
Sialography  
Panoramic radiographs  
Dental CT, Cone Beam  
Errors in panoramic imaging  
Temporomandibular joints  
Basic anatomic points on a panoramic radiograph  
Positioning of the film for intraoral images  
Angles of inclination – horizontal and vertical  
Parallel technique  
Film holders  
Errors in film development, Quality check  
Protection of patients and staff  
X-ray cassette parts  
Cephalometric radiography  
Digital radiography  
Digital detectors  
Assessment of the jaws for implants  
Localization of foreign bodies

Biological effects of radiation  
Tissue sensitivity to radiation, radiation doses  
Gonadal dose  
Biologic risk of carcinoma in dental radiography  
Dental implant materials on X-ray film  
Traumatic changes in maxillofacial region  
Implants  
Periodontal disease  
Tooth mobility  
Dental calculus  
Periodontal pockets on radiograph  
Destructive periodontitis  
Vertical and horizontal loss of bone  
Hypoplasia of the enamel  
Supernumerary roots  
Erosions  
Dental caries  
Lamellar caries, interproximal caries, initial caries, chronic caries  
Evaluation of the size and progression of caries  
Recurrent caries, root caries  
Odontogenic tumors, neodontogenic tumors  
Cysts of the jaw  
Developmental anomalies  
Legal implications of radiological diagnostics in dental medicine

### 3.2.11 Dental Materials

Basic information about the course					
Title	Dental materials				
Code	71283	Abbreviation	211ODMAT		
Total ECTS points	3	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Fixed Prosthodontics				
Course leader	Professor Ketij Mehulić, D.MD., Ph.D				
Course load					
	1		Total		
Lectures	30		30		
ECTS			3		
Course description					
During the course students are learning about the microstructure, composition, properties and indications of all dental materials. Student’s ability for analyses and selection of the best materials for each technological and clinical situation has been urged. Course includes: microstructure, mechanical, physical, technological, rheological, chemical and biological properties of dental materials, alloys for fixed and removable prostheses, orthodontics wires ceramic materials, polymers and polymerisation, acrylics, cements, impression materials, model and die materials, waxes, thermoplastic baseplates materials, pastes for functional impressions, investment materials, laboratory materials for final procedures and polishing , resin composites materials, enamel-dentin adhesives systems, bleaching materials, pulp covering materials, endodontics materials, dental amalgams, materials in oral, maxilofacial surgery and in parodontology,biocompatibility, sampling and methods for identification of incorporated alloy, analyses of chemical stability and proof of allergy.					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
The exam is written with questions from all lectures.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Basic Scientific Principles, Microstructure and Properties of Metals and Alloys					
2. Laboratory Materials					
3. Polymers and Polymerization					
4. Investment materials					
5. Alloys in Prosthodontics and Orthodontics					

6. Impression materials
7. Facets materials
8. Structure and properties of dental ceramics
9. Cements and Materials for temporary Fillings, Crowns and Bridges
10. Materials in Pedodontics
11. Laboratory Materials for final Procedures and Polishing
12. Corrosion and Biocompatibility of Dental Materials, Testing Methods of Dental Materials
13. Materials in Oral, Maxillofacial Surgery and in Parodontology
14. Resin composites materials, Enamel-dentin adhesives systems, Bleaching materials
15. Pulp Covering Materials, Endodontics Materials, Dental Amalgams

#### **Course leader and associates**

Course leader: Professor Jasenka Živko-Babić

Associates: Professor Sonja Kraljević, Professor Denis Vojvodić, Professor Ketij Mehulić, Professor Dragutin Komar, Professor Domagoj Glavina, Professor Zdravko Schauperl, Professor Jakša Grgurević, Professor Zrinka Tarle, Professor Ivica Anić, Professor Nada Galić and Marko Jakovac.

#### **Literature**

##### **Required literature:**

1. Živko-Babić J, Jerolimov V. Metals in Prosthodontics. Zagreb; Školska knjiga, 2005.
2. Jerolimov V. et al. Fundamentals of Dental materials. Zagreb, 2005.
3. [http://www.sfzg.unizg.hr/\\_download/repository/Osnove\\_stomatoloških\\_materijala.pdf](http://www.sfzg.unizg.hr/_download/repository/Osnove_stomatoloških_materijala.pdf)

##### **Recommended literature:**

1. Stamenković D. Ur. Building Dental Materials. School of Dental Medicine; Beograd Stomatološki fakultet, 2007.
2. Stamenković D. Ur. Dental Materials. School of Dental Medicine; Beograd, 2012.

#### **Required knowledge**

Basic knowledge about the microstructure, mechanical, physical, technological, rheological, chemical and biological properties of dental materials, to know to choose the proper material according the clinical situation, to control all laboratory procedures and failures, to find out the reason of failures, of biodegradation and to recognize the biological reaction on some materials. Not to forget sign in dental card the name and the composition of used alloy, according its mechanical properties.

#### **Required skills**

The skills have been obtained during the practical part of fixed and removable prosthodontics, and dental pathology. Some aspect of skills will be given in courses like orthodontics, pedodontics, parodontology and oral surgery.

#### **Exam questions**

Basic of metal structure; solid solutions; metal and alloy properties, microhardness, microstrength; types of corrosion; the factors of biodegradation; structure and properties of polymers and types of polymerisation; pulp covering materials; endodontics materials; dental amalgams in clinical praxes; resin composites materials- types and application; enamel-dentin adhesives systems; waxes for laboratory and clinical use; laboratory and clinical use of thermoplastic compositions materials; the composition, properties and application of elastomers; the composition, properties and application of hydrocolloids; the advantages and disadvantage of functions paste; types of gypsum and its laboratory and clinical applications; Types, composition and properties of investment materials; cements,- classification, applications and requirements; the selection of

postcore materials; facets materials and the types of their polymerisation, indications; classification, applications and requirements of materials for temporary crowns and bridges; the basic properties of temporary fillings; classification, structure and properties of dental ceramics; Aesthetics, colour and light; polymers and polymerisation in removable prosthodontics; types and selection of materials in orthodontics; in pedodontics; in parodontology; in oral surgery; surface preparations, laboratory materials for final procedures and polishing; desirable and negative interaction between materials and surrounding tissue; the analyses and methods for detecting the reasons. ii interactions in retentions.

### 3.2.12 Dermatovenereology

Basic information about the course			
Title	Dermatovenereology		
Code	71284	Abbreviation	421ODERM
Total ECTS points	3.5	Status	Obligatory
Exam	Yes	Calculated in grade average	Yes
Language of teaching	Croatian	e-learning	No
Department	Chair of Dermatovenereology		
Course leader	Prof. Mirna Šitum, M.D., Ph.D.		
Course load			
	1		Total
Lectures	15		15
Clinical practicals	30		30
ECTS			3.5
Course description			
<p>During the Dermatovenereology lessons, students will learn about various skin diseases and sexually transmitted diseases (STD).</p> <p>First, they will learn about the development, structure and function of the skin and visible mucous surfaces. Students will be educated how to use special “dermatological vocabulary” regarding the system of skin changes and how to make dermatological status of the patient.</p> <p>At the beginning, students will learn about infective skin diseases of various etiology (viral, bacterial, fungal, parasitoses etc.). The most important viral skin diseases will be explained (verruca vulgaris, herpes simplex, herpes zoster, molluscum contagiosum, AIDS), then bacterial skin diseases (epidermal and follicular pyoderma, bacterial skin diseases of specific course (erysipelas, phlegmona, erythrasma), chronic pyoderma (pyoderma vegetans), infective granulomatous skin diseases (skin TBC) and Lyme borreliosis.</p> <p>Students will also learn about fungal infections of skin and mucous membranes – dermatomycoses (trichophytosis, microsporosis, epidermophytosis, candidosis), and pityriasis versicolor. Additionally, mycological analysis will be explained and demonstrated to the students.</p> <p>They will learn about the most common skin parasitoses (pediculosis, scabies, larva migrans). The next educational unit will cover the allergic skin diseases (urticaria, oedema Quinque, atopic dermatitis, dermatitis eczematoides, contact dermatitis- allergic and irritative) with the special emphasis on allergic manifestations in the oral cavity.</p> <p>Since psoriasis has a special place in dermatology, students will learn about psoriasis - a major entity from the papulosquamous skin disorders, along with the other entities from this group of dermatoses (pityriasis rubra pilaris, parapsoriasis, erythrodermia). They will also get acquainted with lichen planus which is one of the most important skin diseases (from the group of papular dermatoses).</p> <p>Due to possible manifestations on the oral mucosa, students will get acquainted with bullous dermatoses (pemphigus, pemphigoid, herpetiform dermatitis, hereditary epidermolyses).</p> <p>The next educational unit consists of connective tissue diseases (disorders of collagen - scleroderma, lupus erythematosus, dermatomyositis). Students will also learn about granulomatous skin disorders of unknown etiology (granuloma anulare, necrobiosis lipoidica, sarcoidosis), as well as diseases of adnexal structures (acne vulgaris, seborrhoea, seborrhoic dermatitis, rosacea, steroid dermatitis).</p> <p>Special attention will be given to the group of diseases of the lips, tongue and oral cavity mucosa (Mb. Fordyce, cheilitis e contactu, angulus infectiosus oris, cheilitis exfoliativa, cheilitis glandularis,</p>			

cheilitis granulomatosa, cheilitis actinica, lingua plicata, macroglossia, glositis mediana rhombica, lingua villosa nigra, lingua geographica, gingivitis hyperplastica, epulis, aphtae, mb. Behcet).

Other educational units include erythematous dermatoses (erythema exsudativum multiforme, erythema nodosum, pityriasis rosea); vascular diseases and disorders of hemostasis (diseases of veins and lymphatics, vasculitis, ulcus cruris), as well as psychodermatological diseases (pruritus, prurigo, artefact dermatitis).

Another group of diseases that will be covered through the lessons is diseases of hair and scalp (non-scarring and scarring alopecia) and nail diseases (nail diseases as a sign of internal or skin disease).

Dermatooncology unit will cover the most important benign skin tumours (cysts, nevi, keratosis seborrhoica, keloid, fibroma, histiocytoma, haemangioma); precancerous lesions (actinic keratosis, precancerous cheilitis, cornu cutaneum, leukoplakia) and malignant skin tumours (basal cell carcinoma, squamous cell carcinoma, Mb. Bowen, Mb. Paget, melanoma, cutaneous lymphomas), as well as paraneoplastic dermatoses (obligatory and facultative paraneoplastic dermatoses).

A special educational unit will be dedicated to the venereal and sexually transmitted diseases (syphilis, gonorrhoea, ulcus molle, genital warts, non specific urethritis, herpes genitalis).

#### Criteria for taking the course exam

#### What is graded

Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	

#### Rules of grading and additional information

The final dermatovenereology exam will be oral, including practical and theoretical part. Generally, the knowledge grading is based on the knowledge on five given questions and one description of the dermatological status of the patient.

#### Weekly teaching plan

##### 1. component

##### Lecture topics:

1. The system of skin lesions. Dermatological status.
2. Treatment options in dermatovenereology, including psychotherapy
3. Erythematous diseases and papulous dermatoses
4. Disorders of the lips, tongue and oral mucosa
5. Allergic skin diseases
6. Contact dermatitis. Eczema
7. Infective skin diseases
8. Fungal skin diseases
9. Hereditary disorders of keratinization. Psychodermatological diseases
10. Disorders of hair, scalp and nails. Pigmentation disorders
11. Bullous diseases I
12. Bullous diseases II. Connective tissue diseases
13. Sexually transmitted diseases
14. Seborrhoic dermatitis. Acne vulgaris. Rosacea.
15. Benign skin tumours
16. Malignant skin tumours

**Clinical practicals topics:**

- The system of skin lesions. Dermatological status.
- Skin diseases caused by HPV
- Herpes simplex infections, herpes zoster infection
- Dermatophytoses - trichophytosis, microsporosis, epidermophytosis
- Candidosis
- Pediculosis, scabies
- Urticaria, oedema Quincke
- Atopic dermatitis
- Dermatitis eczematoides
- Dermatitis e contactu, allergica et non allergica
- Psoriasis vulgaris
- Parapsoriasis
- Erythrodermia
- Lichen planus
- The group of pemphigus
- The group of pemphigoid
- Scleroderma
- Lupus erythematosus discoides, lupus erythematosus subacutus, lupus erythematosus systemicus
- Granuloma anulare, necrobiosis lipoidica, sarcoidosis
- Acne vulgaris
- Seborrheic dermatitis of the face and scalp
- Rosacea
- Steroid dermatitis
- Contact cheilitis
- Angulus infectiosus oris
- Actinic cheilitis
- Lingua plicata
- Lingua geographica
- Erythema exsudativum multiforme, erythema nodosum
- Pityriasis rosea
- Disorders of veins
- Vasculitis
- Pruritus
- Prurigo
- Artefact dermatitis
- Non-scarring and scarring alopecia
- Pigment nevi
- Benign nonmelanocytic tumours (keratosis seborrhoica, keloid, fibroma, histiocytoma, haemangioma)
- Precancerous lesions (keratosis actinica, cheilitis precancerosa, cornu cutaneum, leukoplakia)
- Basal cell carcinoma, squamous cell carcinoma
- Melanoma
- Obligatory and facultative paraneoplastic dermatoses
- Genital warts

**Course leader and associates**

Prof. Mirna Šitum, M.D., Ph.D.

Asist. Prof. Liborija Lugović Mihić, M.D., Ph.D.  
Marija Buljan, M.D., Ph.D.

## Literature

### Required literature:

1. G. Rassner. Dermatology- Handbook and atlas (transl. and ed. Mirna Šitum), "Slap", 2004.

### Recommended literature:

1. Ivan Dobrić et al. Dermatovenerology, Udžbenici Sveučilišta u Zagrebu, Medicinski fakultet, Grafoplast, Zagreb 2005.

## Required knowledge

Structure and functions of the skin and visible mucous membranes, the system of skin lesions, viral skin diseases (verruca vulgaris, herpes simplex, herpes zoster, molluscum contagiosum, AIDS), bacterial skin diseases (epidermal pyoderma, follicular pyoderma, pyoderma of sweat glands, other bacterial skin diseases with special course- erysipelas, phlegmona, erythrasma), chronic pyodermas (pyoderma vegetans), infective granulomatous skin diseases (skin TBC) and Lyme borreliosis, dermatophytoses (trichophytosis, microsporiasis, epidermophytosis), candidosis, superficial fungal infections (pityriasis versicolor), parasitoses (pediculosis, scabies), hereditary disorders of keratinization (ichthyoses, palmoplantar keratoderma, follicular keratoderma, dyskeratosis), allergic skin diseases (urticaria, oedema Quinque, atopic dermatitis, dermatitis eczematoides, dermatitis e contactu allergica, dermatitis e contactu non allergica), erythematosquamous diseases (psoriasis vulgaris, pityriasis rubra pilaris, parapsoriasis, erythroderma); papulous dermatoses (lichen planus); bullous dermatoses (group of hereditary epidermolyses, group of pemphigus, group of pemphigoid, herpetiform dermatitis), pustulous dermatoses (pustulosis palmaris et plantaris); connective tissue diseases (scleroderma, lupus erythematosus discoides, subacutus et systemicus, dermatomyositis); granulomatous skin diseases of unknown etiology (granuloma anulare, necrobiosis lipoidica, sarcoidosis); disorders of skin adnexa (acne vulgaris, seborrhoea, seborrhoic dermatitis, rosacea); diseases of the lips, tongue and oral cavity mucosa (Mb. Fordyce, cheilitis e contactu, angulus infectiosus oris, cheilitis exfoliativa, cheilitis glandularis, cheilitis granulomatosa, cheilitis actinica, lingua plicata, macroglossia, glositis mediana rhombica, lingua villosa nigra, lingua geographica, gingivitis hyperplastica, epulis, aphtae, Mb. Behcet); erythematous dermatoses (erythema exsudativum multiforme, erythema nodosum, pityriasis rosea); vascular diseases and disorders of hemostasis (diseases of veins and lymphatics, vasculitis, ulcus cruris); psychodermatological diseases (pruritus, prurigo, artefact dermatitis); diseases of hair and scalp (non-scarring and scarring alopecia) and nail diseases (nail diseases as a sign of internal or skin disease); benign skin tumours (cysts, nevi, keratosis seborrhoica, keloid, fibroma, histiocytoma, haemangioma); precancerous lesions (actinic keratosis, precancerous cheilitis, cornu cutaneum, leukoplakia); malignant skin tumours (basal cell carcinoma, squamous cell carcinoma, Mb. Bowen, Mb. Paget, melanoma, cutaneous lymphomas); paraneoplastic dermatoses (obligatory and facultative paraneoplastic dermatoses); venereal and sexually transmitted diseases (syphilis, gonorrhoea, ulcus molle, genital warts, non specific urethritis, herpes genitalis).

## Required skills

During lectures and practice, students are expected to adopt the specificity of the anamnestic approach to the dermatological patient as well as the specificity of dermatological status and certain physical diagnostic procedures used in everyday practice (such as vitropression, sonde test, skin lesion scraping, dermatographism, Nikolsky/ Kobner/ Auspitz phenomenon), skin swab, skin biopsy (for patohistological analysis and direct immunofluorescence), preparation of the specimen for the immunofluorescence.

Certain methods of treatment in dermatovenereology such as application of local therapy (dressings, baths, solutions, powders, ointments, emulsions, creams....) according to the type of action (keratolytic, antipruritic, antibiotic, corticosteroids, antimycotic, antiparasitic, SPF). Certain skills of physical therapy (phototherapy, kriotherapy with liquid nitrogen, excochleation, termocoagulation, electrocoagulation).

### Exam questions

1. structure of the skin and visible mucous membranes
2. the system of skin lesions
3. skin diseases caused by Human Papilloma Virus (HPV)
4. herpes simplex infections
5. herpes zoster infections
6. dermatovenereological manifestations of AIDS
7. epidermal pyoderma
8. follicular pyoderma
9. pyoderma of sweat glands
10. bacterial skin diseases with special course- erysipelas, phlegmona, erythrasma
11. skin TBC
12. dermatophytoses - trichophytosis, microsporosis, epidermophytosis
13. candidosis
14. pediculosis
15. scabies
16. ichthyoses
17. palmoplantar keratodermias
18. follicular keratodermias
19. urticaria, oedema Quinque
20. atopic dermatitis
21. dermatitis eczematoides
22. dermatitis e contactu allergica
23. dermatitis e contactu non allergica
24. psoriasis vulgaris
25. parapsoriasis
26. erythrodermia
27. lichen planus
28. group of hereditary epidermolyses
29. group of pemphigus
30. group of pemphigoid
31. dermatitis herpetiformis
32. pustulosis palmaris et plantaris
33. localized scleroderma (scleroderma circumscripta)
34. systemic scleroderma
35. lupus erythematosus discoides
36. lupus erythematosus subacutus
37. lupus erythematosus systemicus
38. dermatomyositis
39. granulomatous skin diseases of unknown etiology (granuloma anulare, necrobiosis lipoidica, sarcoidosis)
40. acne vulgaris
41. dermatitis seborrhoica faciei et capilitii
42. rosacea
43. dermatitis rosaceiformis steroidica

44. cheilitis e contactu
45. angulus infectiosus oris
46. cheilitis exfoliativa
47. cheilitis glandularis
48. cheilitis granulomatosa
49. cheilitis actinica
50. lingua plicata
51. macroglossia
52. glositis mediana rhombica
53. lingua villosa nigra
54. lingua geographica
55. gingivitis hyperplastica
56. epulis
57. aphtae
58. mb. Behcet
59. erythema exsudativum multiforme
60. erythema nodosum
61. pityriasis rosea
62. diseases of veins
63. vaskulitis
64. pruritus
65. prurigo
66. artefact dermatitis
67. non-scarring alopecia
68. scarring alopecia
69. nail diseases as a sign of internal visceral disease
70. nail diseases as a sign of dermatosis
71. pigment nevi
72. benign non-melanocytic tumours (keratosis seborrhoica, keloid, fibroma, histiocytoma, haemangioma)
73. precancerous lesions (keratosis actinica, cheilitis precancerosa, cornu cutaneum, leukoplakia)
74. carcinoma baseocellulare
75. carcinoma spinocellulare
76. Mb. Bowen and Mb. Paget
77. melanoma
78. obligatory and facultative paraneoplastic dermatoses
79. syphilis
80. gonorrhoea
81. ulcus molle
82. condylomata acuminata
83. nonspecific urethritis
84. herpes genitalis
85. differential diagnosis of erosions in the oral cavity
86. skin diseases caused by the focal process of dental origin

### 3.2.13 Pediatric Dentistry I

Basic information about the course					
Title	Pediatric dentistry I				
Code	145621	Abbreviation	512ODJE1		
Total ECTS points	7	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Paediatric and Preventive Dentistry				
Course leader	Professor Hrvoje Jurić, PhD				
Course load					
	1	2	Total		
Lectures	15	30	45		
Special clinical practicals	15	30	45		
ECTS			6		
Course description					
<p>Pediatric Dentistry is a clinical dental discipline that deals with preventive and therapeutic procedures in order to maintain the oral health in children from their birth to the end of their adolescent period. In addition it embraces the care about people with developmental disorders regardless of their age. The aim of this course is to ensure the acquisition of competences needed for obtaining optimal oral health in a child by the use of a number of different preventive, educational and therapeutical procedures. This includes knowledge of children behavior, knowledge of children’s behavior control methods, knowledge of different methods of caries prevention and knowledge of dentofacial injuries, mastering the diagnostic and therapeutic procedures in deciduous teeth treatment as well as in treatment of teeth with genetic defects. Students should obtain the basic knowledge of oral health care of children with developmental disorders. They are also expected to obtain competences in prosthetic rehabilitation of children with deciduous, mixed and permanent dentition. This includes the knowledge of the most widespread caries prevention measures, follow up of the dentofacial growth by the use of interceptive orthodontic appliances and procedures.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>The grade is obtained according to the number of correct answers (points) obtained on the test. Failing the written exam requires retaking the exam. The final grade is based on the grade obtained on the written test and the oral exam.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					

<ol style="list-style-type: none"> <li>1. Introduction to Pedodontics. First visit to the pediatric dental office.</li> <li>2. Clinical examination of a child: soft tissues, teeth.</li> <li>3. Early orofacial development of a child.</li> <li>4. Deciduous teeth eruption and exfoliation.</li> <li>5. Children's behaviour in the dental office.</li> <li>6. Methods of evaluation of a child's behavior.</li> <li>7. Methods used to control children's behavior.</li> <li>8. Early child caries and preventive measures.</li> <li>9. Interceptive and minimal restorative procedures in children.</li> <li>10. Treatment of deciduous teeth caries.</li> <li>11. Fissure sealing and seal fillings.</li> <li>12. Treatment of the pulp in deciduous teeth.</li> <li>13. Treatment of the pulp in early permanent teeth.</li> <li>14. Local anesthesia in children.</li> <li>15. Tooth extractions and minor oral surgery in children.</li> </ol>
<p><b>Special clinical practicals topics:</b></p> <p>Clinical practicals include management of techniques of communication and procedures used to control children's behavior in dental office; assessment of a child's behavior; procedures to assess oral hygiene and oral microflora, methods of plaque control, prophylactic cleaning and sealing of fissures, various forms of topical fluoridation. Caries treatment of deciduous and early permanent teeth in children and restorative measures. Pain control and anesthesia in children.</p>
<p><b>2. component</b></p>
<p><b>Lecture topics:</b></p> <ol style="list-style-type: none"> <li>1. Epidemiology and prevention of dental decay.</li> <li>2. Dental trauma in children: etiology and classification</li> <li>3. Dental trauma in children: examination and emergency procedures.</li> <li>4. Treatment of special needs children.</li> <li>5. Diseases of oral mucosa and periodontium in children.</li> <li>6. Diet analysis and nutritional counseling of children.</li> <li>7. Local anesthetics and pain management in pediatric dentistry.</li> <li>8. Premedication and sedation in pediatric dentistry.</li> <li>9. Sedation of children by nitrous oxide.</li> <li>10. Topical anti-caries products: effects and use.</li> <li>11. Interceptive orthodontics procedures.</li> <li>12. Treatment of permanent teeth with incomplete root growth.</li> <li>13. Non-cariou dental lesions in children.</li> <li>14. Prosthodontic treatment in children.</li> <li>15. Esthetic restorative procedures in adolescents.</li> </ol>
<p><b>Special clinical practicals topics:</b></p> <p>Practicals are of a clinical type and include oral examination, diagnostics, preventive and different therapeutic procedures which are related to the course of Pediatric Dentistry. Their content depends on a clinical case (status and the patient's needs). Clinical practicals include treatment of caries of deciduous and early permanent teeth in children with cooperative behavior, amalgam fillings in deciduous and permanent teeth, composite, glass ionomer and compomer fillings, vital pulp treatment of deciduous and early permanent teeth, treatment of deciduous and permanent teeth with non-vital pulp, endodontic treatment of deciduous and early permanent teeth. Students should become familiar with treatment and immobilization of</p>

subluxated teeth, principles of tooth replantation, that is, by emergency procedure in tooth avulsion. They should also master the procedure of dentin capping and fabrication of composite band in dental crown fractures and principles of reconstruction of fractured crown.

#### Course leader and associates

Professor Ivana Čuković Bagić, PhD  
 Professor Domagoj Glavina, PhD  
 Professor Hrvoje Jurić, PhD  
 Professor Martina Majstorović, PhD  
 Professor Ilija Škrinjarić, PhD  
 Professor Željko Verzak, PhD  
 Assistant Professor Walter Dukić, PhD  
 Assistant Professor Dubravka Negovetić-Vranić, PhD  
 Kristina Goršeta, PhD  
 Jelka Jukić, PhD  
 Tomislav Škrinjarić, DMD

#### Literature

##### Required literature:

1. McDonald RE, Avery DR, Dean JA: Dentistry for the child and adolescent. Eight edition. St. Louis: Mosby, 2004.
2. Koch G, Poulsen S: Pediatric Dentistry - a clinical approach. Copenhagen: Munksgaard, 2001.
3. Zarevski P, Škrinjarić I, Vranić A: Psihologija za stomatologe. Jastrebarsko: Naklada Slap, 2005.

##### Recommended literature:

1. Van Amerongen E, Lenters M, Marks L, Veerkamp J. Case reports in paediatric dentistry. Berlin: Quintessence Publishing, 2009.
2. Cameron AC, Widmer RP. Handbook of pediatric dentistry. Edimburgh: Mosby, 2003.
3. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.
4. Pinkham JR: Pediatric Dentistry – Infancy Through Adolescence. Philadelphia: W.B. Saunders Co., 1994.

#### Required knowledge

Study program of pediatric dentistry should teach students the specificities of growth and development of dental and orofacial structures, specificities of pathology, pathogenesis and course of treatment of teeth and the oral cavity in children and adolescents. A special task is mastering competences that are required for treatment of children with special needs such as those with developmental disorders, specificity of pathology and treatment of individuals with various forms of body, mental and emotional disabilities. During classes students should master competences that are necessary to take different preventive, educational and therapeutic procedures in children. Knowledge on children's behavior, methods to control behavior, various methods of caries prevention, dentofacial injuries as well as diagnostic and therapeutic procedures used in treatment of deciduous teeth should be acquired. They also become familiar with possibilities of treating the teeth with genetic defects.

#### Required skills

Students should acquire skills of using various procedures used in children's behavior control, diagnostics and treatment, diseases of deciduous and early permanent teeth. The aim of the

course in the 9th and 10th semester is to become familiar with pathology that is typical of children, specific treatment methods. Students are also expected to master procedures for diagnosing and treatment of most common dental trauma in children as well as methods for their prevention.

#### Exam questions

1. Levels of prevention in dentistry.
2. Primary, secondary and tertiary prevention.
3. Examples of primary prevention in dentistry.
4. Examples of tertiary prevention in dentistry.
5. Chemical plaque control.
6. Systemic use of fluorides in caries prevention.
7. Sealing of pits and fissures.
8. Initial enamel lesion.
9. Treatment of initial enamel lesion.
10. Demineralization and remineralization of enamel.
11. Dental plaque and the beginning of an enamel lesion.
12. Initial stage of dental plaque formation.
13. Metabolism of mature dental plaque.
14. Antibacterial and anti-caries agents.
15. Epidemiological instruments for assessing caries in a population.
16. Toothpastes: composition and effects.
17. Therapeutic toothpastes and lead compounds.
18. Oral application of chlorhexidine.
19. Abrasives in toothpastes.
20. Characteristics of prophylactic toothpastes.
21. Topical effects of fluorides.
22. Postnatal growth and development of orofacial structures.
23. Theories on growth and development of the orofacial system.
24. Development and mineralization of teeth.
25. Time and order of deciduous and permanent teeth eruption.
26. Characteristics of primary dentition.
27. Characteristics of type I deciduous dentition by Baume.
28. Early developmental signs of malocclusion of Class II by Angle.
29. Main features of dental pathology in children aged 3-6.
30. Specific oral problems in adolescence.
31. Patients covered by pediatric dental care.
32. Initial treatment of a child on the first visit.
33. Methods to introduce a child to dental treatment on the first visit.
34. Goals of the child's first visit to a pedodontist.
35. Early child caries (baby bottle caries).
36. Frankel scale of child behavior.
37. Child behavior categories by Wright.
38. Children with a lack of cooperative ability.
39. Children with potential non-cooperative behavior.
40. Dental treatment of children with a lack of cooperative ability.
41. Initial dental treatment of a child and behavior control.
42. 'Tell-show-do' method.
43. 'Hand over mouth' technique and working with children.
44. Analgesics for postoperative pain in children.
45. Treatment of the initial enamel lesion ('white spots').

46. Filling materials for deciduous teeth.
47. Indications for the extraction of deciduous tooth.
48. Extractions of deciduous teeth.
49. Surface anesthetics in pedodontics.
50. Anesthetics used for infiltration anesthesia in pedodontics.
51. Eruption cyst and eruption hematoma.
52. ART techniques of fillings in children.
53. Sealing or preventive fillings.
54. Materials for fissure sealing.

### 3.2.14 Pediatric Dentistry II

Basic information about the course					
Title	Pediatric dentistry II				
Code	145864	Abbreviation	612ODJE2		
Total ECTS points	7	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning			
Department	Department of Paediatric and Preventive Dentistry				
Course leader	Professor Hrvoje Jurić, PhD				
Course load					
	1	2	Total		
Special clinical practicals	30	30	60		
ECTS			6		
Course description					
<p>In the second year of teaching Pediatric Dentistry, during the 11th and 12th semester, some more complex treatments of the pulp and the traumatized teeth are performed with the emphasis on clinical procedures .The primary aims are to transfer the previously acquired theoretical knowledge in a clinical setting. Students demonstrate their competences and skills on real patients - children of a preschool age and schoolchildren. They also treat children with developmental disorders The aim is to apply practically methods of treatment to either children with a lack of cooperative abilities or to completely non-cooperative children. These include the diagnostic procedures and the treatment methods of the most common types of dentofacial injuries, diagnostics and treatment of teeth with genetic anomalies. Students are expected to follow the principles of application of a number of different sedation procedures in children. They should also know how to approach the anxious patients: applying premedication as well as sedation to anxious and phobic patients.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>The grade is obtained according to the number of correct answers (points) obtained on the test. Failing the written exam requires retaking the exam. The final grade is based on the grade obtained on the written test and the oral exam.</p>					
Weekly teaching plan					
1. component					
Special clinical practicals topics:					
<p>1. Treatment of early deciduous and early permanent teeth caries. Amalgam, composite and glass ionomer fillings in deciduous and permanent teeth. Treatment of vital pulp in deciduous and early permanent teeth. Treatment of deciduous and permanent teeth with</p>					

non-vital pulp. Apexogenesis and apexification. Treatment and immobilization of subluxated teeth. Learning about the principles of tooth replantation. Dentin capping and composite bandage in coronal fractures. Reconstruction of fractured crowns by composites. Prosthetic rehabilitation in primary dentition. Methods of premedication and sedation of anxious and phobic patients. Methods of topical application of fluorides. Esthetic reconstructions of teeth with genetic and acquired defects. Treatment of oral diseases in children. Interceptive orthodontic procedures.

## 2. component

### Special clinical practicals topics:

1. Special clinical practicals include the following topics: minor oral surgery in children, treatment of pulp in deciduous and early permanent teeth, treatment of periodontal diseases and mouth in children; dental trauma and trauma of orofacial structures, diagnostics and emergency procedures in dental trauma, reconstruction of fractured teeth, treatment of fractured teeth and tooth replantation, clinical approach, diagnostics and treatment of genetic defects of teeth and their oral structures. A part of practicals deals with problem based learning. Within this approach, through clinical work, students will deal with more complex cases starting with the first examination, diagnostics, treatment plan and final treatment.

### Course leader and associates

Professor Ivana Čuković Bagić, PhD  
 Professor Domagoj Glavina, PhD  
 Professor Hrvoje Jurić, PhD  
 Professor Martina Majstorović, PhD  
 Professor Ilija Škrinjarić, PhD  
 Professor Željko Verzak, PhD  
 Assistant Professor Walter Dukić, PhD  
 Assistant Professor Dubravka Negovetić-Vranić, PhD  
 Kristina Goršeta, PhD  
 Jelka Jukić, PhD  
 Tomislav Škrinjarić, DMD

### Literature

#### Required literature:

1. McDonald RE, Avery DR, Dean JA: Dentistry for the child and adolescent. Eight edition. St. Louis: Mosby, 2004.
2. Koch G, Poulsen S: Pediatric Dentistry - a clinical approach. Copenhagen: Munksgaard, 2001.
3. Zarevski P, Škrinjarić I, Vranić A: Psihologija za stomatologe. Jastrebarsko: Naklada Slap, 2005.

#### Recommended literature:

1. Van Amerongen E, Lenters M, Marks L, Veerkamp J. Case reports in paediatric dentistry. Berlin: Quintessence Publishing, 2009.
2. Cameron AC, Widmer RP. Handbook of pediatric dentistry. Edimburgh: Mosby, 2003.
3. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.
4. Pinkham JR: Pediatric Dentistry – Infancy Through Adolescence. Philadelphia: W.B. Saunders Co., 1994.

### Required knowledge

In the course of study, the student should acquire competences needed to perform different procedures in children such as procedures related to prevention, health education and treatment. Students become familiar with children's behavior, methods of behavior control, and different methods of caries prevention as well as prevention from sustaining dentofacial injuries. Also, they should master diagnostic and treatment procedures applied in treatment of deciduous teeth as well as teeth with genetic defects. Students should acquire knowledge on principles of dental treatment in children with developmental disorders, prosthetic rehabilitation in children with deciduous, mixed and permanent dentition. Essential knowledge includes caries prevention procedures, follow up and managing of dentofacial growth by interceptive orthodontic appliances and procedures. The special aim is to acquire knowledge of children's behavior as well as methods of behavior control, diagnoses and treatment of diseases of deciduous and young permanent teeth. Students learn how to master diagnostic procedures, emergency treatment and prevention of the most frequent dental traumas in children.

### Required skills

- Active communication with small children ensuring cooperation and dental treatment
- Ability to assess type of child's behavior in dental office
- Application of the appropriate communication method and dealing with children with cooperative behavior
- Oral clinical examination and prophylactic procedures in children
- Risk assessment of caries in children
- Diet analysis and nutritional counseling
- Assessment of the level of fear from dental treatment by use of Frankl's and Wright's scale
- Assessment of fear of treatment by use of FIS scale
- Sealing of pits and fissures
- Preventive sealing on deciduous and early permanent teeth
- Classic fillings on deciduous and permanent teeth in children
- Modified fillings on deciduous teeth by use adhesive techniques
- Pulpotomies in deciduous teeth (vital)
- Extractions of deciduous and early permanent teeth
- Endodontic treatment of early permanent tooth
- Indirect pulp treatment and direct pulp capping
- Partial pulpotomy by Cvek
- Surface anesthesia in children
- Local infiltration anesthesia and nerve blocks
- Topical application of fluorides (solutions, gels, varnishes)

### Exam questions

1. Forms and agents for topical fluoridation.
2. Use and effects of fluoride varnishes.
3. Mechanisms of topical effects of fluorides.
4. Toothpastes for children and fluoride content.
5. Water fluoridation: advantages and disadvantages.
6. Chronic intoxication by fluorides (fluorosis).
7. Diagnostics and clinical assessment of fluorosis (indices)
8. Premedication and sedation in pedodontics.
9. Sedation by nitrous oxide.
10. Ankylosis of teeth: diagnostics and treatment.
11. Mutilation fear in children.

12. Parts of dental organ in bell stage.
13. Apexogenesis.
14. Function and components of apical odontogenic complex.
15. Methods of pulp treatment and apexogenesis.
16. Apexification and means of apexification.
17. Tunnel technique of tooth preparation.
18. Use of calcium hydroxide in pedodontics.
19. Glass ionomer cements in pedodontics.
20. Principles of adhesion to enamel – etching (classification by Silverstone)
21. Principles of adhesion to dentin.
22. Classification of adhesive systems.
23. Compomer materials – composition, properties, clinical procedure.
24. Chemical methods of caries treatment.
25. Methods of deciduous teeth pulp treatment.
26. Methods of deciduous teeth vital pulpotomy.
27. Means of deciduous teeth vital pulpotomy.
28. Pulpectomy of deciduous teeth.
29. Materials for deciduous teeth root canal filling.
30. Devitalization pastes for deciduous teeth.
31. Partial pulpotomy by Cvek.
32. Indications for devitalization pulpotomy of deciduous tooth.
33. Factors important for a successful tunnel preparation.
34. Jet anesthesia in pedodontics.
35. Type and frequency of deciduous teeth trauma.
36. Characteristics of permanent teeth trauma.
37. Emergency procedure in enamel and dentin fractures.
38. Tooth replantation procedure.
39. Medium for keeping an avulsed tooth.
40. Procedure in luxation injuries of early permanent teeth.
41. Root fractures and treatment.
42. Reconstruction of the fractured crown.
43. Principles of prosthodontics treatment of children.
44. Partial dentures in deciduous dentition.
45. Complete dentures in deciduous dentition.
46. Pulpotomy of deciduous teeth.
47. Multiprofessional approach to a child with special needs.
48. Risk factors for orofacial problems in children with special needs.
49. Children with neuropsychological disorders.
50. Children with sensory disorders.
51. Children with physical disabilities.
52. Debilitating conditions in children.
53. Dental treatment of medically compromised children.
54. Inappropriate habits in children and state of occlusion.
55. The role of pedodontist in prevention of orthodontic anomalies.
56. Interceptive orthodontic procedures in children.
57. Herpetic gingivostomatitis.
58. Aphthous ulcerations in children.
59. Oral candidiasis in children.
60. Lesions related to the most common infectious children's diseases.

### 3.2.15 Endodontics I

Basic information about the course					
Title	Endodontics I				
Code	71287	Abbreviation	512OEND1		
Total ECTS points	7	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Endodontics and Restorative Dentistry				
Course leader	Professor Goranka Prpić-Mehičić, PhD				
Course load					
	1	2	Total		
Lectures	15		15		
Special clinical practicals	45	45	90		
ECTS			7		
Course description					
Endodontics I course teaches students about etiology and treatment of diseases of pulp and periradicular region, teeth and jaw trauma, materials and drugs used in endodontic treatment and endodontic surgery.					
Criteria for taking the course exam					
Passed exam in Preclinical Endodontics.					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
The exam in Endodontics I is taken after the 10th semester in the written form. Students answer the question by marking the offered answers. If the student gives positive answers to 76% of questions or more, the written part of the exam is considered a pass. 76% to 80% - equals sufficient grade (2), 80% to 86% - equals good grade (3), 86% to 92% - equals very good grade (4), 92% to 100% - equals excellent grade (5).					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Working length determination					
2. Pulpotomy and pulpectomy (indications, technique of)					
3. Root canal preparation (mechanical cleaning and shaping, technique of)					
4. Chemical root canal preparation					
5. Materials for temporary and definite root canal fillings					
6. Techniques of root canal obturation					
7. Complications during the endodontic therapy and outcome evaluation of the therapy					
8. Non-surgical retreatment					

<ul style="list-style-type: none"> <li>9. Endodontic treatment of medically compromised patients and antibiotic therapy in endodontics</li> <li>10. Endodontic surgery</li> <li>11. Endodontic treatment of traumatically injured teeth</li> <li>12. Restoration of endodontically treated teeth</li> <li>13. Non-vital bleaching</li> <li>14. Emergencies in endodontics</li> <li>15. Endodontic epidemiology, ethics and patient management</li> </ul>
<b>Special clinical practicals topics:</b>
<ul style="list-style-type: none"> <li>1. History taking, diagnosis and treatment plan of pulp diseases</li> <li>2. Interpretation of panoramic and/or intraoral x-ray images</li> <li>3. Local anesthesia of particular tooth</li> <li>4. Rubber dam placement</li> <li>5. Preservation of dental pulp vitality (direct and indirect pulp capping)</li> <li>6. Access openings of all teeth</li> <li>7. Root canal preparation and filling of one-rooted teeth</li> <li>8. Root canal preparation and filling of multi-rooted teeth</li> <li>9. Non-surgical retreatment</li> <li>10. Drugs prescription</li> <li>11. Abscess incision and drainage</li> <li>12. Techniques for intraoral radiography</li> <li>13. Non-vital tooth bleaching</li> </ul>
<b>2. component</b>
<b>Special clinical practicals topics:</b>
<ul style="list-style-type: none"> <li>1. History taking, diagnosis and treatment plan of pulp diseases</li> <li>2. Interpretation of panoramic and/or intraoral x-ray images</li> <li>3. Local anesthesia of particular tooth</li> <li>4. Rubber dam placement</li> <li>5. Preservation of dental pulp vitality (direct and indirect pulp capping)</li> <li>6. Access openings of all teeth</li> <li>7. Root canal preparation and filling of one-rooted teeth</li> <li>8. Root canal preparation and filling of multi-rooted teeth</li> <li>9. Non-surgical retreatment</li> <li>10. Drugs prescription</li> <li>11. Abscess incision and drainage</li> <li>12. Techniques for intraoral radiography</li> <li>13. Non-vital tooth bleaching</li> </ul>
<b>Course leader and associates</b>
<p>Professor Ivica Anić, PhD  Associate Professor Nada Galić, PhD  Professor Silvana Jukić-Krmek, PhD  Associate Professor Marina Katunarić, PhD  Professor Ivana Miletić, PhD  Professor Goranka Prpić-Mehićić, PhD  Associate Professor Božidar Pavelić, PhD  Associate Professor Katica Prskalo, PhD  Associate Professor Tonči Staničić, PhD  Associate Professor Sanja Šegović, PhD</p>

Professor Zrinka Tarle, PhD  
 Assistant Professor Bernard Janković, PhD  
 Associate Professor Zoran Karlović, PhD  
 Assistant Professor Alena Knežević, PhD  
 Associate Professor Vlatko Pandurić, PhD  
 Associate Professor Paris Simeon, PhD  
 Ivona Bago, DMD  
 Anja Baraba, DMD, PhD  
 Eva Klarić, DMD  
 Jurica Matijević, DMD  
 Danijela Matošević, DMD, PhD

## Literature

### Required literature:

1. Torabinejad M, Walton RE. Endodontics: načela i praksa; Naklada Slap. Zagreb 2010.

### Recommended literature:

1. Andreasen JO, Andreasen FM. Essential of traumatic injuries to the teeth; Munksgaard, Copenhagen 1990.
2. Ingle JI & Bakland LK. Endodontics. BC Decker Inc, Hamilton, London, 2002.
3. Cohen S & Burns RC. Pathways of the pulp. VII ed. CV, Mosby Inc. St. Louis, 2002. Johnson WT. Color atlas of Endodontics. WB Saunders Co.; 2002
4. Arens DE, Torabinejad M, Chivian N, Rubinstein R. Practical lessons in endodontic surgery. Quintessence Publishing Co, Inc. Chicago, Berlin. London Tokyo, 1998.
5. Trope M, Debelian G. Priručnik iz endodoncije za praktičara. Quintessence, Publishin Co, Ltd, Chicago, Berlin. London Tokyo 2009.

## Required knowledge

1. Etiology of pulpal diseases
2. Histology of pulpal diseases
3. Pulp changes with age
4. Physiology of dentinal and pulpal pain
5. Diagnosis and differential diagnosis of pulpal pain
6. Pulpal response to irritations
7. Diagnosis and differential diagnosis of pulpal diseases
8. Preservation of dental pulp vitality (direct and indirect pulp capping)
9. Acute pulpitis
10. Chronic pulpitis
11. Pulp necrosis
12. Therapy of the pulp diseases
13. Pulpectomy and pulpotomy
14. Anesthesia in endodontics
15. Intracanal medicaments
16. Chemo-mechanical preparation of root canals
17. Therapy of the pain in endodontics
18. Root canal irrigants
19. Root canal fillings materials
20. Temporary coronal filling materials
21. Interpretation of panoramic and intraoral x-ray images

## Required skills

1. To take medical and dental history
2. To diagnose pulpal diseases
3. To interpret panoramic and intraoral x-ray images
4. To anesthetize tooth
5. To place rubber dam
6. To preserve vitality of the pulp
7. To determine the therapy of the pulp (IPC, DPC)
8. To prepare and obturate the root canal of one rooted teeth
9. To prepare and obturate multi-rooted teeth
10. To prescribe the drug

#### **Exam questions**

1. Etiology and prevention of pulpal diseases
2. Infection of the endodontic space
3. Histology of pulpal diseases
4. Pulp changes with age
5. Physiology of dentinal and pulpal pain
6. Referred pain
7. Diagnosis and differential diagnosis of pulpal pain
8. Pulp response to acute and chronic irritation
9. Diagnosis and differential diagnosis of pulpal diseases
10. Preservation of dental pulp vitality (direct and indirect pulp capping)
11. Clinical and histological classification of the pulpal diseases
12. Diagnosis of the pulpal diseases
13. Acute pulpitis
14. Chronic pulpitis
15. Pulpal necrosis
16. Therapy of the pulpal diseases
17. Pulpectomy and pulpotomy
18. Anesthesia in endodontics
19. Intracanal medicaments
20. Therapy of the pain in endodontics
21. Chemo-mechanical preparation of root canals
22. Smear layer in dentine
23. Root canal irrigants
24. Root canal filling materials
25. Temporary coronal filling materials
26. Radiological diagnosis in endodontics

### 3.2.16 Endodontics II

Basic information about the course					
Title	Endodontics II				
Code	71288	Abbreviation	611OEND2		
Total ECTS points	6	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Endodontics and Restorative Dentistry				
Course leader	Professor Goranka Prpić-Mehičić, PhD				
Course load					
	1		Total		
Special clinical practicals	60		60		
ECTS			6		
Course description					
Endodontics II course teaches students about etiology and treatment of diseases of pulp and periradicular region, teeth and jaw trauma, materials and drugs used in endodontic treatment and endodontic surgery.					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Students take a practical and oral part of the exam.					
Practical part of the exam: It is carried out at the Department of Endodontics and Restorative Dentistry under the supervision of the examiner and the student has to take the medical history and perform a clinical examination (x-ray if needed), make the diagnosis (state the differential diagnosis) and make the treatment plan. After the examiner approves the treatment plan, the student performs the procedure. After the procedure, the examiner grades the student's practical work and enters the grade into the booklet of attendance.					
Oral part of the exam: At the exam, the student draws papers containing questions.					
Weekly teaching plan					
1. component					
Special clinical practicals topics:					
1. History taking, diagnosis and treatment plan of pulp diseases					
2. Interpretation of panoramic and/or intraoral x-ray images					
3. Local anesthesia of particular tooth					
4. Rubber dam placement					
5. Preservation of dental pulp vitality (direct and indirect pulp capping)					
6. Access openings of all teeth					
7. Root canal preparation and filling of one-rooted teeth					

8. Root canal preparation and filling of multi-rooted teeth 9. Non-surgical retreatment 10. Drugs prescription 11. Abscess incision and drainage 12. Techniques for intraoral radiography 13. Non-vital tooth bleaching
<b>Course leader and associates</b> Professor Ivica Anić, PhD Associate Professor Nada Galić, PhD Professor Silvana Jukić-Krmek, PhD Associate Professor Marina Katunarić, PhD Professor Ivana Miletić, PhD Professor Goranka Prpić-Mehićić, PhD Associate Professor Božidar Pavelić, PhD Associate Professor Katica Prskalo, PhD Associate Professor Tonči Staničić, PhD Associate Professor Sanja Šegović, PhD Professor Zrinka Tarle, PhD Assistant Professor Bernard Janković, PhD Associate Professor Zoran Karlović, PhD Assistant Professor Alena Knežević, PhD Associate Professor Vlatko Pandurić, PhD Associate Professor Paris Simeon, PhD Ivona Bago, DMD Anja Baraba, DMD, PhD Eva Klarić, DMD Jurica Matijević, DMD Danijela Matošević, DMD, PhD
<b>Literature</b> <b>Required literature:</b> 1. Torabinejad M, Walton RE. Endodontics: načela i praksa; Naklada Slap. Zagreb 2010.
<b>Recommended literature:</b> 1. Andreasen JO, Andreasen FM. Essential of traumatic injuries to the teeth; Munksgaard, Copenhagen 1990. 2. Ingle JI & Bakland LK. Endodontics. BC Decker Inc, Hamilton, London, 2002. 3. Cohen S & Burns RC. Pathways of the pulp. VII ed. CV, Mosby Inc. St. Louis, 2002. Johnson, WT. Color atlas of Endodontics. WB Saunders Co.; 2002 4. Arens DE, Torabinejad M, Chivian N, Rubinstein R. Practical lessons in endodontic surgery. Quintessence Publishing Co, Inc. Chicago, Berlin. London Tokyo, 1998. 5. Trope M, Debelian G. Priručnik iz endodoncije za praktičara. Quintessence, Publishin Co, Ltd, Chicago, Berlin. London Tokyo 2009.
<b>Required knowledge</b> Etiology of periradicular diseases Classification of periradicular diseases Histology of periradicular diseases Diagnosis and differential diagnosis of periradicular diseases

Therapy of periradicular diseases  
 Acute apical periodontitis  
 Chronic apical periodontitis  
 Pulp-periodontal diseases  
 Apico-coronal and corono-apical techniques of root canal preparation  
 Rotary techniques of root canal preparation and instruments  
 Thermoplastic techniques of root canal fillings  
 Complications and errors during the endodontic treatment  
 Vertical tooth fracture  
 Traumatic injuries of teeth  
 Root resorption  
 Endodontic surgery  
 Restoration of endodontically treated teeth  
 Apexogenesis and apexification  
 Endodontic treatment of medically compromised patients  
 Non-vital tooth bleaching  
 Healing of periradicular lesions  
 Outcome evaluation of the endodontic treatment  
 Antibiotics and analgesics in endodontics  
 Emergencies in endodontics  
 Diagnosis and differential diagnosis of periradicular pain

#### Required skills

- To diagnose periradicular diseases
- To treat periradicular diseases
- To perform retreatment
- To treat pulp-periodontal diseases
- To incise abscess and enable drainage
- To diagnose vertical root fracture
- To take intraoral x-ray image
- To perform non-vital bleaching
- To endodontically treat traumatically injured tooth
- To place intracanal post
- To restore endodontically treated tooth

#### Exam questions

1. Histology of periradicular tissue
2. Etiology and prevention of periradicular diseases
3. Infection of periradicular area
4. Classification of periradicular diseases
5. Histology of periradicular diseases
6. Diagnosis and differential diagnosis of periradicular diseases
7. Interpretation of panoramic and intraoral x-ray images
8. Acute apical periodontitis
9. Chronic apical periodontitis
10. Pulp-periodontal diseases
11. Therapy of periradicular diseases
12. Healing of periradicular lesions
13. Postoperative pain
14. Apico-coronal and corono-apical technique of root canal preparation
15. Rotary techniques of root canal preparation and instruments

16. Thermoplastic techniques of root canal fillings
17. Complications and errors during the endodontic treatment
18. Vertical tooth fracture
19. Traumatic injuries of teeth
20. Root resorption
21. Endodontic surgery – indications and contraindications
22. Root-end filling
23. Restoration of endodontically treated teeth
24. Apexogenesis and apexification
25. Endodontic treatment of medically compromised patients
26. Non-vital tooth bleaching
27. Outcome evaluation of the endodontic treatment
28. Antibiotics and analgesics in endodontics
29. Emergencies in endodontics
30. Diagnosis and differential diagnosis of periradicular pain

### 3.2.17 English I

Basic information about the course					
Title	English I				
Code	71289	Abbreviation	111IENG1		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	English	e-learning	No		
Department	Chair of General and Social Subjects				
Course leader	Lidija Štefić, MA, senior lecturer				
Course load					
	1		Total		
Lectures	15		15		
Seminars	15		15		
ECTS			1.5		
Course description					
<p>The aims of the course are as follows: to learn and acquire a very specialist vocabulary used in dental medicine; to get familiar with the English word formation in dental medicine, that is, the formation of words by means of suffixes and prefixes that usually come from Greek and Latin; get familiar with structures which are typical of medicine and dental medicine such as collocations, false pairs, complex nominal structures, synonyms, antonyms, homonyms, homophones, medical and dental eponyms; to practice the use of passive and indirect questions by employing functional and semantic communication activities; to learn systemically how to make a power-point presentation; to learn how to write summaries, abstracts and CVs. Presentation of models is included as well as the analysis of their characteristics. Writing skills comprise a guided writing followed by an independent writing of these demanding forms.</p> <p>The aims of the course are also: to develop linguistic skills for a more receptive use of the English language (listening and reading with comprehension) by applying general English to English in dental medicine; to learn how to give presentations by using a very specific dental vocabulary, to practise communication with patients; to develop critical thinking; to develop habits of a more effective use of grammar books, dictionaries and other publications related to dental medicine.</p>					
Criteria for taking the course exam					
<p>The grade includes participation in teaching, regular attendance, presentation of the seminar paper and the assignment.</p>					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Presentation on a given topic has to be delivered prior to taking the written exam. Elements included into the written exam: knowledge of vocabulary specific for dental medicine; knowledge of grammar structures, power point presentations. The final grade is a combination of all the mentioned elements.</p>					
Weekly teaching plan					

<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Basic Word Structure</li> <li>2. Derivation: Suffixes</li> <li>3. Prefixes</li> <li>4. Anatomy</li> <li>5. The Musculoskeletal System</li> <li>6. Bones</li> <li>7. Cranial Bones</li> <li>8. Facial Bones, The Mandible, The Maxilla</li> <li>9. Muscles</li> <li>10. Masticatory Muscles</li> <li>11. The Nervous System</li> <li>12. Cranial Nerves</li> <li>13. The Circulatory System</li> <li>14. The Digestive System</li> <li>15. The Tongue</li> </ol>
<b>Seminar topics:</b>
Related to the above mentioned topics of lectures.
<b>Course leader and associates</b>
Lidija Štefić, MA, senior lecturer
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. L.Štefić: English in Dentistry I, Stomatološki fakultet, Zagreb 1998.</li> <li>2. L. Štefić: Glossary, Stomatološki fakultet, Zagreb 1996.</li> <li>3. E.Glendinning, R. Howard: Professional English in Use, Cambridge University Press, Cambridge 2007.</li> <li>4. C.M. Dofka: Dental terminology,Thomson publishing (Delmar), 2000.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>a. L. Štefić: Jezik stomatologije:englesko-hrvatska kontrastivna analiza, magistarski rad, Zagreb 2001.</li> <li>b. M. Vodanović: Stomatološki trojezični rječnik, Školska knjiga, Zagreb 2005</li> <li>c. Contemporary monolingual dictionaries: Oxford, Webster, Longman, Cobuild etc.</li> <li>d. Medical dictionaries</li> </ol>
<b>Required knowledge</b>
Structures which are typical of medicine and dental medicine such as collocations, false pairs, complex nominal structures, synonyms, antonyms, homonyms, homophones, medical and dental eponyms; passive and indirect questions; power-point presentations, summaries, abstracts and CVs; communication with patients.
<b>Required skills</b>
Listening and comprehension, reading and comprehension, speech and writing.
<b>Exam questions</b>
1. Discuss the Word Formation in English in Dentistry!

2. Discuss the surgical procedures suffixes!
3. Discuss the prefixes of direction!
4. Discuss the prefixes of position!
5. Discuss the prefixes of number and measurement!
6. Discuss the prefixes of colour!
7. Discuss the prefixes of negation!
8. Discuss the issue of Anatomy!
9. Discuss the Musculoskeletal System!
10. Discuss the Cranial Bones!
11. Discuss the Facial Bones!
12. Explain the differences between the maxilla and the mandible!
13. What are the four movements of the mandible?
14. Discuss the Muscles!
15. Discuss the Masticatory Muscles!
16. Discuss the Nervous System!
17. Discuss the Cranial Nerves!
18. Discuss the Circulatory System!
19. Discuss the role of the Lymphatic System!
20. Discuss the Digestive System!
21. Describe the role of the salivary glands!
22. Describe the structures of the oral cavity!
23. Explain the main functions of the tongue!

### 3.2.18 English II

Basic information about the course					
Title	English II				
Code	71290	Abbreviation	221IENG2		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	English	e-learning	No		
Department	Chair of General and Social Subjects				
Course leader	Lidija Štefić, MA, senior lecturer				
Course load					
	1		Total		
Lectures	15		15		
Seminars	15		15		
ECTS			1.5		
Course description					
<p>The aims of the course are as follows: to learn and acquire a very specialist vocabulary used in dental medicine; to get familiar with the English word formation in dental medicine, that is, the formation of words by means of suffixes and prefixes that usually come from Greek and Latin; get familiar with structures which are typical of medicine and dental medicine such as collocations, false pairs, complex nominal structures, synonyms, antonyms, homonyms, homophones, medical and dental eponyms; to practice the use of passive and indirect questions by employing functional and semantic communication activities; to learn systemically how to make a power-point presentation; to learn how to write summaries, abstracts and CVs. Presentation of models is included as well as the analysis of their characteristics. Writing skills comprise a guided writing followed by an independent writing of these demanding forms.</p> <p>The aims of the course are also: to develop linguistic skills for a more receptive use of the English language (listening and reading with comprehension) by applying general English to English in dental medicine; to learn how to give presentations by using a very specific dental vocabulary, to practice communication with patients; to develop critical thinking; to develop habits of a more effective use of grammar books, dictionaries and other publications related to dental medicine.</p>					
Criteria for taking the course exam					
<p>The grade includes participation in teaching, regular attendance, presentation of the seminar paper and the assignment.</p>					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Presentation on a given topic has to be delivered prior to taking the written exam. Elements included into the written exam: knowledge of vocabulary specific for dental medicine; knowledge of grammar structures, power point presentations. The final grade is a combination of all the mentioned elements.</p>					
Weekly teaching plan					

<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. the teeth</li> <li>2. tooth morphology;</li> <li>3. dental caries;</li> <li>4. tooth discoloration;</li> <li>5. periodontology;</li> <li>6. smoking as a risk factor;</li> <li>7. oral cancerophobia;</li> <li>8. oral diseases;</li> <li>9. pedodontics;</li> <li>10. minor oral surgery;</li> <li>11. orthodontics;</li> <li>12. pharmacology;</li> <li>13. oral hygiene;</li> <li>14. fixed prosthodontics;</li> <li>15. removable prosthodontics;</li> <li>16. implantology;</li> <li>17. forensic dentistry</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Related to the above mentioned lecture topics with additional linguistic issues included. The students are required to browse scientific databases such as Science Direct, PubMed, etc.</li> </ol>
<b>Course leader and associates</b>
Lidija Štefić, MA, senior lecturer
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. L.Štefić: English in Dentistry I, Stomatološki fakultet, Zagreb 1998.</li> <li>2. L. Štefić: Glossary, Stomatološki fakultet, Zagreb 1996.</li> <li>3. E.Glending, R. Howard: Professional English in Use, Cambridge University Press, Cambridge 2007.</li> <li>4. C.M. Dofka: Dental terminology, Thomson publishing (Delmar), 2000.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>a. L. Štefić: Jezik stomatologije:englesko-hrvatska kontrastivna analiza, magistarski rad, Zagreb 2001.</li> <li>b. M. Vodanović: Stomatološki trojezični rječnik, Školska knjiga, Zagreb 2005</li> <li>c. Contemporary monolingual dictionaries: Oxford, Webster, Longman, Cobuild etc.</li> <li>d. Medical dictionaries</li> </ol>
<b>Required knowledge</b>
Structures which are typical of medicine and dental medicine such as collocations, false pairs, complex nominal structures, synonyms, antonyms, homonyms, homophones, medical and dental eponyms; passive and indirect questions; power-point presentations, summaries, abstracts and CVs; communication with patients.

**Required skills**

Listening and comprehension, reading and comprehension, speech and writing.

**Exam questions**

Discuss the following topics:

1. the teeth
2. tooth morphology
3. dental caries
4. caries prevention
5. tooth discoloration
6. periodontology
7. smoking as a risk factor
8. oral cancerophobia
9. oral diseases
10. pedodontics
11. minor oral surgery
12. orthodontics
13. pharmacology
14. oral hygiene
15. fixed prosthodontics
16. removable prosthodontics
17. implantology
18. forensic dentistry



### 3.2.19 Ethics

Basic information about the course					
Title	Ethics				
Code	132814	Abbreviation		112OBIOE	
Total ECTS points	3	Status		Obligatory	
Exam	Yes	Calculated in grade average		Yes	
Language of teaching	Croatian	e-learning		No	
Department	Chair of General and Social Subjects				
Course leader					
Course load					
	1	2	Total		
Lectures	15		15		
Seminars		15	15		
ECTS			3		
Course description					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Weekly teaching plan					
1. component					
Lecture topics:					
1.					
2. component					
Seminar topics:					
1.					
Course leader and associates					
Literature					
Required literature:					
1.					
Recommended literature:					
1.					

<b>Required knowledge</b>
<b>Required skills</b>
<b>Exam questions</b>
1.

### 3.2.20 Ethics in Dental Medicine

Basic information about the course				
Title	Ethics in dental medicine			
Code	71291	Abbreviation	611OETIK	
Total ECTS points	3	Status	Obligatory	
Exam	Yes	Calculated in grade average	Yes	
Language of teaching	Croatian	e-learning	No	
Department	Chair of General and Social Subjects			
Course leader				
Course load				
	1		Total	
Lectures	15		15	
Seminars	15		15	
ECTS			3	
Course description				
The principal task of this course is to familiarize students with the ethical intellectual tools they need for the proper conduct of the dental profession in the complex context of health care and health business. The emphasis is on explaining the connection between ethical concepts, medical practices and professional practices for improved decision-making ability of professional and moral behaviour and to clarify individual coping with contemporary challenges. In practical terms, the students should be trained to independently create professional ethical decisions.				
Criteria for taking the course exam				
What is graded				
Written exam	Yes	Oral exam	Yes	Practical exam
Seminar		Minor preliminary exam		Major preliminary exam
Rules of grading and additional information				
The final exam consists of two parts: (1) a written exam – home-take essay from lecturing and seminar material, (2) oral examination – theoretical matters. Performance and dedication to the seminar and interactive forms of work will affect the overall evaluation (50% grade).				
Weekly teaching plan				
1. component				
Lecture topics:				
1. Profession of dental medicine and professional ethics (morals, ethics, principles and commitments; to be ethical is a matter of choice; ethical codes in the field of dental medicine - a comparative analysis; dental profession and professional duties).				
2. Categories of professional duties (patient as a priority; ideal doctor-patient relationship; the central values of the of the profession of dental medicine; competence; commitment to the principles of serving the public; ideal collegial relationships among dentists; relations between dental medicine and the wider society; accessibility of services; professional integrity and training).				

<ol style="list-style-type: none"> <li>3. The central values of the of the dental profession (life and a general health of the patient, the patient's oral health, patient autonomy, professional practice patterns; aesthetics; efficiency of available resources)</li> <li>4. The relationship between a patient and a doctor of dental medicine (Guild model; users model; commercial model, the interactive model; autonomy vs. paternalism; duty of telling the truth and informed consent).</li> <li>5. Ethical decision-making procedures (set options; determining occupational and other priorities; ranking options; conflict of professional duties; conscious disregard of professional duties; moral habits, judgment and conscience).</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Patients with disabilities (deciding on the treatment of persons with disabilities, the role of parents and guardians, the capacity to make autonomous decisions)</li> <li>2. Collaboration with patients (encouraging awareness and cooperation; integrity, autonomy, discontinuation of treatment of uncooperative patient).</li> <li>3. Bad outcome and professional work (what to do after the sighting of a bad professional work of colleagues; what to do when a patient asks about the evaluation of the (bad) work of previous dentist; what to do when a patient does not ask and the work is bad and has the consequences on the current oral health of patient; what to do when a dentist himself/herself perform badly and he/she is conscious of that fact).</li> <li>4. Practical work of a doctor of dental medicine as an associate activity (cooperation vs. lone rider; cooperation of a general dentist and specialist; the other co-workers in a team; collaboration through conflict).</li> <li>5. Confidentiality and the patient's medical records (confidentiality as general professional duty; confidentiality and health professionals; exemption from compliance with professional secrets; electronic archiving and confidentiality).</li> <li>6. Dentists and HIV.</li> <li>7. Social justice and accessibility of oral health care (social justice, basic needs and fair distribution of oral care, fairness and the free market, protection of basic oral health).</li> <li>8. Dental medicine as a relationship of business management (new challenges for dental medicine; ethics of advertising; competitiveness and professional integrity; different models and philosophies of practice of dental medicine).</li> <li>9. Profession of dental medicine and community (central values and competencies; attitude towards colleagues; ability to provide services).</li> </ol>
<b>Course leader and associates</b>
Prof.dr.sc. Gordana Cerjan-Letica Prof.dr.sc. Paris Simeon
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Ozar, David and Sokol, David (2002) Dental Ethics at Chairside: Professional Principles and Practical Applications (second edition). Washington D.C.: Georgetown University Press.</li> <li>2. Williams, Johns (2007) Priručnik etike dentalne medicine World Dental Federation. Ferney-Voltaire: FDI. Elektronička verzija: <a href="http://www.fdiworldental.org/content/fdi-dental-ethics-manual">http://www.fdiworldental.org/content/fdi-dental-ethics-manual</a>. Hrvatski prijevod dostupan na: <a href="http://www.hsk.hr/adminmax/File/PSE%20-%20final.pdf">http://www.hsk.hr/adminmax/File/PSE%20-%20final.pdf</a></li> <li>3. Kodeks stomatološke etike i deontologije Hrvatske stomatološke komore. Elektronička verzija: <a href="http://www.hsk.hr/?page=akti-kodeks">http://www.hsk.hr/?page=akti-kodeks</a></li> </ol>

4. Načela etike i kodeks profesionalnog ponašanja Američkog stomatološkog udruženja. Elektronička verzija: <a href="http://www.ada.org/prof/prac/law/code">http://www.ada.org/prof/prac/law/code</a> (Prevela G. Cerjan-Letica; umnoženo za potrebe studija na Stomatološkom fakultetu).
<b>Recommended literature:</b>
1. Određuje se individualno prema interesu studenata te za potrebe izrade seminarskih radova
<b>Required knowledge</b>
Thorough understanding of professional ethical guidelines in the practice of dental medicine; ability of rating of specific causes of ethical problems in the social context of dental medicine; knowledge in the relevant ethical and other regulatory documents that shape the profession of dental medicine in Croatia and worldwide; competence for independent ethical decision making in daily professional practice .
<b>Required skills</b>
Ethics courses because of its conceptual nature are not directly aimed at the development of new specific skills. However, the application of gained knowledge and (ethical) professional attitudes will facilitate future dentists addressing specific organizational, professional and health problems they will face in the practice of the profession and in making responsible decisions. In this sense, the course - through the analysis of specific documents and professional situations - allows the acquisition of indirect skills.
<b>Exam questions</b>
<p><b>A. Written exam (home-take essay)</b></p> <p>On the specific example of professional ethical issue, students independently apply ethical decision-making procedures, choose the appropriate elements and models of ethical decision making and propose a solution.</p> <p><b>B. Oral exam</b></p> <p>Ethical obligations and principles in dental medicine – profession and professional duties.  Codes of ethics in the field of dental medicine - a comparative analysis.  Categories of professional duties of doctors of dental medicine.  Patient as a priority.  Autonomy of the patient.  Commitment to the principles of serving the public.  The central values of the profession of dental medicine.  Professional practice patterns of dental medicine.  Relationships between patients and dentist - guild model.  Relationships between patients and dentists – user model.  Relationships between patients and dentists - commercial model.  Relationships between patients and dentist - an interactive model.  The duty of telling the truth and informed consent.  Procedures for making ethical decisions.  Determination and ranking of ethical options.  Determining occupational and other priorities.  Conflict of professional duties.  Conscious disregard of professional responsibilities.  Moral habits, judgment and conscience.  Patients with disabilities.  Dentists and HIV.  Poor outcome of professional work.</p>

Practical dental work as collaborative activity.  
Confidentiality as a general professional duty.  
Confidentiality of patient medical records.  
Social justice and accessibility of oral health care.  
Dental medicine as a relationship of business management.  
Profession of dental medicine and community.

### 3.2.21 Fixed Prosthodontics I

Basic information about the course					
Title	Fixed prosthodontics I				
Code	71292	Abbreviation	412OFPR1		
Total ECTS points	9.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Fixed Prosthodontics				
Course leader	professor Dragutin Komar, PhD, DMD				
Course load					
	1	2	Total		
Lectures	15		15		
Special clinical practicals	45	45	90		
ECTS			9.5		
Course description					
<p>The study program of Fixed prosthetics I teaches students about basic biomedical and technological knowledge and skills related to the clinical procedures in the therapy of damaged and / or lost function of tooth crowns in completely dentate or partially edentulous patients. This program encourages students' ability to analyze the current situation and select the best possible fixed prosthodontic therapy based on interdisciplinary approach to each clinical case, receive basic orientation in prophylaxis and prosthodontic treatment of masticatory system in order to preserve or restore oral health, masticatory function and esthetics regardless of patient's age and background.</p>					
Criteria for taking the course exam					
Passed exam in Preclinical and laboratory fixed prosthodontics					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	Yes
Rules of grading and additional information					
<p>Students will be continuously evaluated during the curriculum within each methodological segment within a semester by a series of small tests, and will be graded as passing or failing. Failed test is not a prerequisite for continuing the class, but students need to pass all tests in order to earn the right to take the final exam.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<ol style="list-style-type: none"><li>1. Introduction to crowns, indications and contraindications, types of crowns.</li><li>2. Tooth assesment for crown preparation.</li><li>3. Individual post and core; tooth preparation and manufacture.</li><li>4. Prefabricated post and core; tooth preparation and manufacture.</li><li>5. Impression procedures in fixed prosthodontics.</li></ol>					

6. Temporary crowns (immediate and long-term)
7. Complete metal crowns
8. Jacket crown; tooth preparation and construction materials.
9. Metalceramic crown; tooth preparation and construction materials.
10. Full ceramic crown; tooth preparation and construction materials
11. Esthetic veneers; tooth preparation and construction materials.
12. Indirect inlay and onlay; tooth preparation and construction materials.
13. Modified crowns for combined fixed-removable prosthodontic appliances.
14. Telescopic crown systems; Precision attachments.
15. Complications during crown use.

#### **Special clinical practicals topics:**

1. Clinical working environment in fixed prosthodontics; Instruments; Sterilization and disinfection procedures
2. Clinical examination, medical and dental history, dental status, soft tissues assessment
3. X-ray analysis
4. Impression techniques, types of impression trays
5. Anatomical impression
6. Burs for tooth preparation in FP – Types and characteristics
7. Soft tissue conditioning for tooth preparation for crown; local anesthesia & cord packing
8. Tooth and soft tissue preparation for impression, impression tray selection
9. Local anesthesia, cord packing, tooth preparation for Jacket crown.
10. Manufacture of immediate temporary crown – chairside procedure.
11. Impression tray types and choice of impression materials for production of working cast.
12. Impression procedure.
13. Bite registration – materials and techniques.
14. Working cast analysis and metal construction try-in.
15. Try-in and adjustment of Jacket crown.
16. Temporary and/or permanent crown fixation techniques – conventional cementation

\* Topics are not performed in chronological order, but by the arrival of patients at different clinical casuistry stages.

## **2. component**

#### **Special clinical practicals topics:**

1. Clinical working environment in fixed prosthodontics; Instruments; Sterilization and disinfection procedures
2. Damaged and old crown removal.
3. Root preparation and individual post and core modelling on multirooted tooth (direct technique)
4. Root preparation and individual post and core modelling on multirooted tooth (indirect technique)
5. Individual multirooted post and core cementation.
6. Tooth preparation (chamfer margin) for metalceramic crown; local anesthesia
7. Tooth preparation (chamfer margin) for telescopic or modified crown; local anesthesia
8. Tooth and soft tissue preparation for impression procedure; cord packing and application of chemical adstrigens; impression tray selection.
9. Impression techniques and procedures.
10. Bite registration using silicones; Face-bow use and transfer of intermaxillary relation in articulator space.
11. Working cast analysis and metal construction try-in for metalceramic fixed appliance; color selection

12. Metalceramic appliance try-in and occlusal adjustment.
13. Temporary and/or permanent fixation of fixed prosthodontic appliance; glassionomer cements.
14. Principles of tooth preparation for esthetic veneers; demonstration and cementation of veneers.
15. Principles of tooth preparation for inlay and onlay; demonstration and cementation of inlay/onlay.

\*Topics are not performed in chronological order, but by the arrival of patients at different clinical casuistry stages.

#### **Course leader and associates**

Mr.sc. Lana Bergman, DMD  
 Doc.dr.sc. Andreja Carek  
 Doc.dr.sc. Amir Ćatić  
 Prof.dr.sc. Adnan Ćatović  
 Doc.dr.sc. Marko Jakovac  
 Prof.dr.sc. Dragutin Komar  
 Slađana Milardović, DMD  
 Prof.dr.sc. Ketij Mehulić  
 Prof.dr.sc. Jasmina Stipetić-Ovčariček  
 Joško Viskiće, DMD  
 Prof.dr.sc. Denis Vojvodić  
 Prof.dr.sc. Jasenka Živko-Babić

#### **Literature**

##### **Required literature:**

1. Ćatović A. i sur. Klinička fiksna protetika. Ispitno štivo. Stomatološki fakultet Sveučilišta u Zagrebu, 1999.
2. Schillenburg TH, Hobo S, Whitsett I, Jacobi R. Osnove fiksne protetike 3 rd edition. Media ogled 2008.

##### **Recommended literature:**

1. Rosenstiel S, Land F, Fujimoto J. Contemporary fixed prosthodontics. 3rd ed. Mosby inc. Publishing, 2001.
2. Misch CE. Implant Dentistry. 2nd ed. St. Louis: Mosby Inc. 1999.
3. Živko-Babić J, Jerolimov V. Materijali u stomatološkoj protetici. Odabrana poglavlja. Zagreb: Školska knjiga, 2005.
4. Jerolimov V. i sur. Stomatološki materijali. Odabrana poglavlja. Zagreb: Stomatološki Fakultet, 2005.
5. Mehulić K. Keramički materijali u stomatološkoj protetici. Zagreb: Školska knjiga, 2010.

#### **Required knowledge**

Crowns – indications and contraindications, crown types, functional and esthetic longevity of crowns, procedures in crown production, individual metal post and core (direct and indirect techniques) post and core fixation techniques, multisegment post and core, prefabricated post and core. Introduction to bridges – indications and contraindications, biomechanical analysis of abutment teeth, material selection in planning for bridges, overview of impression procedures, techniques and materials, reconstructive and rehabilitational aspects of fixed bridges, bridge biomechanics, Toronto bridges. Gerontological aspects of partial edentulousness.

#### **Required skills**

Ergonomics of dental profession; safety regulations; types, characteristics and selection of instruments; dental and orofacial status; medical and dental history; removal of decrepit existing fixed appliances; testing vitality of the abutment teeth; X-ray analysis; treatment plan; biomechanical analysis of abutment teeth; fabrication and analysis of study casts; preparation of plaster and impression materials; bite records; types and selection of impression trays; anatomic alginate impressions; analysis, disinfection and storage of impressions; analysis of tooth preparation; tooth and root preparation and modeling of post and core for single rooted and multirrooted teeth; individual and prefabricated posts and cores; post and core fixation procedures and materials; inlay, onlay, overlay; working with face-bow, transfer of intermaxillary records into articulator space, working with articulator; working cast analysis; quality control of fixed appliance fabrication procedures; accuracy assessment of tooth preparation for crowns and bridges; tooth preparation with different abutment cervical margins types.

#### **Exam questions**

Clinical workplace, instruments, apparatus and devices in fixed prosthodontic practice; basics of occlusion and articulation; articulators and face-bows; characteristics and classification of casts in fixed prosthodontics; technology and fabrication of fixed prosthodontic appliance; classification characteristics of esthetic materials for FPDs; preliminary examination, diagnosis and treatment plan; teeth and supporting tissues preparation for FP therapy; types, characteristics and selection of burs in FP; local anesthesia; soft and hard tissues protection during and after tooth preparation; basic principles of tooth preparation; tooth preparation analysis, detection and repair of mistakes; post and core indications, contraindications, types, classification, fabrication procedures and materials; crown types and classification; types and classification of impression materials; classification of impression techniques; shape, color and esthetics of natural and artificial teeth; conventional and adhesive permanent fixation materials, techniques and procedures; temporary cementation of FPD; removal of decrepit existing fixed prostheses; complications during function.

### 3.2.22 Fixed Prosthodontics II

Basic information about the course					
Title	Fixed prosthodontics II				
Code	71293	Abbreviation	512OFPR2		
Total ECTS points	7	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Fixed Prosthodontics				
Course leader	professor Dragutin Komar, PhD, DMD				
Course load					
	1	2	Total		
Lectures	15		15		
Special clinical practicals	45	60	105		
ECTS			7		
Course description					
<p>The study program of Fixed prosthetics II teaches students biomedical and technological knowledge and skills related to the clinical procedures in the therapy of damaged and/or lost function of tooth crowns in completely dentate or partially edentulous patients.</p> <p>This program encourages students' ability to analyze the current situation and select the best possible fixed prosthodontic therapy based on interdisciplinary approach to each clinical case, receive advanced orientation in prophylaxis and prosthodontic treatment of masticatory system incorporating knowledge and methodology for production of multiunit bridges, full ceramic bridges, modified crowns with or without precision attachments, combined fixed-removable prosthodontic appliances, and implant-supported prosthodontic therapy.</p> <p>During the course period students' knowledge is constantly evaluated in each methodological unit. During the second semester, students have to pass the patient clinical exam that is a prerequisite for taking the oral exam. Clinical exam consists of patient treatment and treatment planning, dental and orofacial analysis, fabrication of study casts, their transfer to the articulator space and instrumental functional analysis, X-ray diagnostics, and evaluation of clinical treatment phases. At the end of the treatment students have to present their clinical case with photographs and detailed explanations prior, during and after treatment.</p>					
Criteria for taking the course exam					
Passed exam in Preclinical and laboratory fixed prosthodontics					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam	Yes	Major preliminary exam	Yes
Rules of grading and additional information					
<p>During the course period students' knowledge is constantly evaluated in each methodological unit. Clinical course supervisor confirms student's mastering of specific methodological unit by his signature in Student's course booklet.</p> <p>During the second semester, students have to pass the patient clinical exam as a prerequisite for taking the oral exam. Clinical exam consists of patient treatment and treatment planning, dental and orofacial analysis, fabrication of study casts, their transfer to the articulator space and</p>					

instrumental functional analysis, X-ray diagnostics, and evaluation of clinical treatment phases. At the end of the treatment students have to present their clinical case with photographs and detailed explanations prior, during and after treatment.

Oral examination can be taken after completion of clinical course, collected signatures in Student's course booklet for all methodological units performed and passed practical exam.

### Weekly teaching plan

#### 1. component

##### Lecture topics:

1. Introduction to fixed bridges, indications and contraindications
2. Biomechanical analysis of abutment teeth; planning and fabrication modalities
3. Impression techniques and procedures
4. Bridge shapes and types
5. Intermaxillary dimension, bite registration procedures, transfer to articulator space
6. FPD fixation
7. Acrylic bridges /immediate and temporary/
8. Toronto bridges, Inlay bridges, adhesive bridges
9. Full-ceramic bridges
10. Implant supported crowns and bridges
11. Oral rehabilitation using fixed prosthodontic appliance
12. Combined fixed-removable appliances, precision attachments overview
13. Complications during FP therapy
14. Gerontological aspects of FP therapy
15. Application of IT and computer technologies in FP therapy

##### Special clinical practicals topics:

1. Clinical examination, medical and dental history, dental status, periodontal assessment, X-ray analysis, biomechanical analysis, FP therapy plan, anatomic impressions
2. Functional analysis
3. Inadequate and decrepit bridge removal
4. Prefabricated post and core; selection and application
5. Tooth preparation for multiunit FPDs; parallelization
6. Parodontoprophylactic supragingival chamfer margin tooth preparation
7. Immediate temporization
8. Cord packing; double cord technique
9. Impression procedures; monophasic impression in individual impression tray
10. Bridgework body try-in
11. Try-in and temporary fixation of bridges
12. Permanent fixation of bridges; Patient instructions on hygiene and use
13. Adhesive bridges – tooth preparation techniques and fixation procedures
14. Inlay bridges – tooth preparation techniques and fixation procedures
15. FRC bridges – tooth preparation techniques and fixation procedures

\* Topics are not performed in chronological order, but by the arrival of patients at different clinical casuistry stages.

#### 2. component

##### Special clinical practicals topics:

1. Combined fixed and removable appliances - Clinical examination, medical and dental history, dental status, periodontal assessment, X-ray analysis, therapy plan, anatomic impressions

2. Classification, indications and selection of precision attachments for combined F-R appliances
3. Modified crowns – tooth preparation
4. Impression techniques, bite registration procedures, face-bow and transfer into articulator space for combined F-R appliances
5. Combined F-R appliances – try-in
6. Combined F-R appliances – fixation procedures
7. Prefabricated post and core (FRC); selection and application
8. Full ceramic multiunit FPDs – shoulder margin type tooth preparation and impression techniques
9. Full ceramic multiunit FPDs - try-in and adhesive fixation procedures
10. Implant-supported FPDs – CBCT analysis and treatment planning
11. Implant-supported FPDs – impression techniques
12. Implant-supported FPDs – abutment choice (metal and zirconia)
13. Implant-supported FPDs – demonstration of completed FPD and fixation procedures
14. FPD evaluation – esthetic and functional longevity analysis
15. Manual and instrumental functional analysis – occlusal splints and sport protection splints

\* Topics are not performed in chronological order, but by the arrival of patients at different clinical casuistry stages.

#### **Course leader and associates**

Mr.sc. Lana Bergman, DMD  
 Doc.dr.sc. Andreja Carek  
 Doc. dr. sc. Amir Ćatić  
 Prof. dr. sc. Adnan Ćatović  
 Doc. dr. sc. Marko Jakovac  
 Prof.dr.sc Dragutin Komar  
 Slađana Milardović, DMD  
 Prof. dr. sc. Ketij Mehulić  
 Prof. dr. sc. Jasmina Stipetić-Ovčariček  
 Joško Viskiće, DMD  
 Prof. dr. sc. Denis Vojvodić  
 Prof. dr. sc. Jasenka Živko-Babić

#### **Literature**

##### **Required literature:**

1. Ćatović A. i sur. Klinička fiksna protetika. Ispitno štivo. Stomatološki fakultet Sveučilišta u Zagrebu, 1999.
2. Schillingburg TH, Hobo S, Whitsett I, Jacobi R. Osnove fiksne protetike 3 rd edition. Media ogledi 2008.

##### **Recommended literature:**

1. Rosenstiel S, Land F, Fujimoto J. Contemporary fixed prosthodontics. 3rd ed. Mosby inc. Publishing, 2001.
2. Misch CE. Implant Dentistry. 2nd ed. St. Louis: Mosby Inc. 1999.
3. Živko-Babić J, Jerolimov V. Materijali u stomatološkoj protetici. Odabrana poglavlja. Zagreb: Školska knjiga, 2005.
4. Jerolimov V. I sur. Stomatološki materijali. Odabrana poglavlja. Zagreb: Stomatološki Fakultet, 2005.
5. Mehulić, K. Keramički materijali u stomatološkoj protetici. Zagreb: Školska knjiga, 2010.

### Required knowledge

Introduction to bridges – indications and contraindications, biomechanical analysis of abutment teeth, material selection in planning for bridges, overview of impression procedures, techniques and materials, reconstructive and rehabilitational aspects of fixed bridges, bridge biomechanics, Toronto bridges, conventional and adhesive fixation material and procedures. Parodontological aspects of fixed prosthodontic therapy. FPD planning and reconstruction in periodontally compromised patients. Introduction to implant-prosthodontics, planning and biomechanical analysis of implant-supported FPDs. Gerontological aspects of partial edentulousness.

### Required skills

Ergonomics of dental profession; safety regulations; types, characteristics and selection of instruments; dental and orofacial status; medical and dental history; removal of decrepit existing fixed appliances; testing vitality of the abutment teeth; X-ray analysis; treatment plan; biomechanical analysis of abutment teeth; fabrication and analysis of study casts; preparation of plaster and impression materials; bite records; types and selection of impression trays; anatomic alginate impressions; analysis, disinfection and storage of impressions; analysis of tooth preparation; tooth and root preparation and modeling of post and core for single rooted and multirrooted teeth; individual and prefabricated posts and cores; post and core fixation procedures and materials; inlay, onlay, overlay; working with face-bow, transfer of intermaxillary records into articulator space, working with articulator; working cast analysis; quality control of fixed appliance fabrication procedures; accuracy assessment of tooth preparation for crowns and bridges; tooth preparation with different abutment cervical margins types; implant-supported FPDs - abutment selection, impression techniques, try-in and fixation procedures.

### Exam questions

Preclinical, clinical and laboratory workplace, instruments, apparatus and devices in fixed prosthodontic practice; basics of occlusion and articulation; articulators and face-bows; characteristics and classification of casts in fixed prosthodontics; technology and fabrication of fixed prosthodontic appliance; classification characteristics of esthetic and metal materials for FPDs; metal welding and soldering principles and techniques; preliminary examination, diagnostic procedures and treatment plan; teeth and supporting tissues preparation for FP therapy; types, characteristics and selection of burs in FP; local anesthesia; soft and hard tissues protection during and after tooth preparation; basic principles of tooth preparation; tooth preparation analysis, detection and repair of mistakes; post and core indications, contraindications, types, classification, fabrication procedures and materials; crown types and classification; types and classification of impression materials; classification of impression techniques; shape, color and esthetics of natural and artificial teeth; conventional and adhesive permanent fixation materials, techniques and procedures; temporary cementation of FPD; removal of decrepit existing fixed prostheses; complications during function; posts and cores – classification, indications, contraindications, selection, application techniques and procedures; multiunit FPDs – classification, principles of tooth preparation, impression techniques, try-in and fixation; combined fixed-removable prosthetic appliances – planning, modified crowns and bridges, precise attachment classification and selection, cementation procedures; oral rehabilitation in fixed prosthodontics – intermaxillary dimension reconstruction.

### 3.2.23 Physics

Basic information about the course					
Title	Physics				
Code	71294	Abbreviation	111OFIZK		
Total ECTS points	6	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning			
Department	Chair of Biophysics				
Course leader	doc.dr.sc Ozren Gamulin				
Course load					
	1		Total		
Lectures	20		20		
Seminars	20		20		
Laboratory practicals	20		20		
ECTS			6		
Course description					
<p>The goal of physics course for student of dental medicine is to learn how to use basic physical principles and laws to describe biological processes and structure of biological systems at the molecular level. In studying metabolic processes and the interaction of the body with the environment simple physical models are used. Those models are based on knowledge of energy and matter transfer inside biological systems and action of external energy sources on biological systems. The main teaching task is to familiarize students with the knowledge of selected parts of physics connected with biological systems and, with examples in seminar classes, bring them closer to ways of thinking necessary to apply that knowledge in dentistry. In addition, students should be able to explain the physical basis of diagnostic and therapeutic methods in dentistry practice necessary for understanding them. Laboratory exercise have task to qualify students to do measurements, explain and present results of experiments. They also have a goal to qualify students for handling simple measuring devices and improve their understanding of basic physical laws.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam	Yes	Major preliminary exam	Yes
Rules of grading and additional information					
<p>The exam consists of a written, practical and oral part.</p> <ul style="list-style-type: none"><li>- Written exam is in the form of test, for a passing grade there have to correctly answer at least 13 out of 25 questions (52%); without passing the written exam student can not proceed to the oral exam</li><li>- Oral exam will check theoretical knowledge acquired during the course</li><li>- The practical part of the exam is to test the knowledge and skills acquired in lab exercises</li><li>- The students can take the written and oral exam without passing the practical exam, but they can not</li></ul>					

get final grade until they pass practical exam

- Once passed, the written and the practical exam is recognized in following exam terms until the new enrollment in to the course.

### **Weekly teaching plan**

#### **1. component**

##### **Lecture topics:**

1. The structure of matter: force and energy, vector and scalar fields, fundamental forces in nature; basic mathematical functions - Analytical and graphical presentation of function
2. The structure of matter: the structure of atom, energy states, modes of binding atoms in the molecule;
3. Basic principles of mechanics: the structure of solids and polymers; defects in materials
4. Basic principles of mechanics: the elastic and plastic deformation, the viscoelastic properties of tissue and materials; mechanical models
5. The fluid mechanics: the model of fluid flow; model of ideal and real fluids; rheological properties of plastic dental materials
6. Applied thermodynamics: basic concepts, I and II law, transport of energy and particles
7. Applied thermodynamics: transport of molecules and ions across biological membranes; Nernst potential
8. Electromagnetism: fundamental laws; electric and magnetic field
9. Electromagnetism: matter in electric and magnetic fields; conductive properties of biological tissues
10. Fundamentals of optics: the laws of geometrical optics, mirrors, lenses, microscope: resolution and contrast

##### **Seminar topics:**

1. Lever and the bridge; application in dentistry; edge and screw dislocations, formation of plastic deformation
2. Pressure in liquids and buoyancy; surface tension and adhesive properties of dental materials
3. Oscillations and acoustic wave, interaction of sound wave with tissue, ultrasound in dentistry
4. Contact phenomena between two metal, half-cell and galvanic cell in mouth
5. Generation and propagation of action potential, electric and magnetic fields in a body – application in diagnostic
6. Metallurgical and electron microscopy, optics of the eye
7. Basic principles of lasers, laser applications in dentistry
8. The interaction of electromagnetic waves with tissue, the radiation; dosimetry
9. X - rays in diagnostics
10. Magnetic resonance in diagnostics

##### **Laboratory practicals topics:**

1. Error calculation; force diagram; torque; graph drawing
2. Viscosity of fluids, the surface tension of fluid
3. Microscope ocular scale calibration and determination of sample dimensions; Numerical aperture
4. Serial and parallel connection of resistors
5. The use of variable resistor in a circuit; The electrical conductivity of the electrolyte
6. Deformation of rigid body; Measurement of electromotive force of galvanic cell
7. Determining the strength of converging and diverging lenses
8. Colloquium

<b>Course leader and associates</b>
Prof. dr.sc. Dubravka Krilov Doc.dr. sc. Sanja Dolanski-Babić Doc.dr.sc. Ozren Gamulin Kristina Serec, prof
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. J. Brnjas- Kraljević, D. Krilov: Stomatološka fizika, Medicinska naklada, Zagreb, 2006.</li> <li>2. J. Brnjas-Kraljević: Fizika 1, Struktura tvari i dijagnostičke metode, Medicinska naklada,</li> <li>3. Balarin M., D. Broz: Vježbe iz fizike, udžbenik, Medicinski fakultet, Zagreb, 1999.</li> <li>4. Physics textbooks, which students can read in the library of the Department of Physics and Biophysics</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. The teaching text on the web site of the Institute of Physics and Biophysics (<a href="http://physics.mef.hr">http://physics.mef.hr</a>)</li> <li>2. Ronta G., I. Tarjan: An Introduction to Biophysics with Medical Orientation, Akademiai Kiado, Budapest 1994th</li> <li>3. J.D. Cutnell, K.W. Johnson: Physics, Volume I, John Wiley &amp; Sons Inc., New York, 1997.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Analytical and quantitative approach to the study of human body functions</li> <li>• Know how to show and explain the biological processes at the molecular level</li> <li>• Describe the mechanical phenomena in oral cavity by applying force diagram</li> <li>• Describe the mechanical properties of tissue and polymer</li> <li>• Describe the electrical aspects of the oral cavity</li> <li>• Describe the physical basis of diagnostic methods</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• Implementation and conversion of measuring Units (SI)</li> <li>• Graphical presentation of measurement results</li> <li>• Assessment of result accuracy - calculation of simple errors</li> <li>• Reading graphs</li> <li>• Handling simple measuring instruments and results reading</li> </ul>
<b>Exam questions</b>
<p>Area I.</p> <ol style="list-style-type: none"> <li>1. Analytical and graphical presentation of the basic mathematical functions: linear, reciprocal and exponential</li> <li>2. Periodic functions, harmonic functions; anharmonic functions – Fourier theorem</li> <li>3. The structure of atom; energy states of atoms, electron quantum numbers, Pauli exclusion principle</li> <li>4. Connections between atoms in molecules; energy and states of the molecule; interactions of biological molecules</li> <li>5. Oscillations: free, damped and forced - resonance</li> <li>6. Sound wave: the wave equation, the intensity of the wave, acoustic impedance , reflection and refraction of sound waves</li> <li>7. Physical and physiological parameters of sound, Doppler effect, sound generator</li> </ol>

8. Basic concepts of thermodynamics, first and second laws of thermodynamics, mechanical and thermal interactions
9. Heat transfer: conduction, convection, evaporation and radiation
10. Transport of particles: free diffusion in fluids; Fick's law; diffusion in solid body
11. Transport of particles through a permeable and semi-permeable membrane; transport of ions through a semi-permeable membrane

#### Area II.

1. Fundamental forces in nature; representation of force in coordinate system; addition of forces; Newton's laws
2. Lever, condition of translational and rotational equilibrium: levers in the body, the lower jaw as a lever; equilibrium conditions; bridge in dentistry
3. Structure of solids: crystals and polycrystals, metal alloys, polymers
4. Imperfections and defects in crystal lattice: point and line defects
5. Elasticity of solid bodies - the nature of elastic force; linear elastic deformation
6. Occurrence of plastic deformation - the role of dislocation; phenomena in elastic and plastic deformations (malleability, hardening, recovery, fatigue); hardness;
7. Hardness - methods of determination; thermal expansion and thermal stresses of body
8. Viscoelastic properties of matter; mechanical elements and models
9. Mechanical properties of polymers; deformation in polymers; mechanical model of amorphous polymer
10. Hydrostatic: pressure in fluids, buoyancy, surface properties of fluid; adhesion in dentistry
11. Flow of the fluid: models of ideal and real fluids, Newton's and Poiseuille's law;
12. Rheological properties of fluid and polymer non newtonian fluids and polymers

#### Area III.

1. Electric field of isolated charge and dipole, polarization mechanisms of matter in electric field; matter in an alternating electric field
2. Magnetic field; substance in a magnetic field: diamagnetism, paramagnetism, ferromagnetism
3. The nature and properties of an electromagnetic waves, propagation speed in medium; energy density of electromagnetic field
4. Contact voltage between two metal; thermo couple, galvanic cell, galvanic corrosion and galvanic phenomena the mouth
5. The flow of electrical current through biological conductor; differential form of Ohm 's law; Action potential – generation and propagation
6. Fundamentals of geometrical optics; plane and spherical refracting surface: image construction and refracting equation
7. Mirrors and lenses: image construction and mirror and lens equation
8. Magnifying glass : image construction, magnification angle; optical microscope: image construction, magnification
9. Resolution microscope, metallographic microscope, electron microscope
10. Errors of an eye: chromatic and spherical aberration, astigmatism, eye – as a thick lens, errors of an eye

#### Area IV.

1. Magnetic properties of nuclei, the interaction of magnetic moment with constant external magnetic field
2. Absorption energies of varying magnetic fields – emergence of resonance, magnetization and chemical shift
3. Relaxation processes in magnetic resonance imaging
4. X-ray tube and generating of x-ray; spectrum of x-ray radiation; effects of anode voltage and heating current
5. Interaction of X-radiation with tissue; contrast; half thickness of absorber
6. Classical imaging : penumbra, X-ray film, dental apparatus, basics of CT method

7. Interaction of electromagnetic radiation with tissue
8. Radioactivity; dosimetry

### 3.2.24 Physiology

Basic information about the course					
Title	Physiology				
Code	71295	Abbreviation	212OFIZI		
Total ECTS points	12	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Chair of Physiology				
Course leader	Prof. dr. sc. Jagoda Roša				
Course load					
	1	2	Total		
Lectures	8	7	15		
Seminars	33	24	57		
Laboratory practicals	28	20	48		
ECTS			12		
Course description					
<p>Physiology course provides students with insights on functioning of the human body, physiological functions of the organism, such as maintaining: nominal level of glucoses in the blood, body liquids volume, specific ions concentration (Na+, K+ Ca++,...), arterial pressure, blood flow, heart function, breathing, hormones secretion, as well as many other physiological processes in our body. Knowing how each organ works and its role in the process of maintaining "dynamic balance" is the basis for understanding of beginnings and the development of medical conditions.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	Yes
Rules of grading and additional information					
<p>The acquired knowledge is continually tested, both orally and in writing, through seminars and practicals. Students' competence for the major exam is graded through preliminary exams after each unit (1. Heart and blood circulation, 2. Kidney and respiration, 3. Nerve system, 4. Digestive and endocrine system). The exam encompasses all mandatory matter treated during the course, through lectures, seminars and practicals, in accordance with the list of exam matter. The exam is both oral and written. The final grade is an arithmetic average of all parts of the written exam and the grade appointed at the oral exam. Admittance to the oral exam is subject to passing the written exam.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<div>1. Ionic transportation through the cell membrane. Membrane and action potential.</div> <div>2. Muscle Contraction Physiology.</div>					

<ol style="list-style-type: none"> <li>3. Physiological basis of cardiovascular function review.</li> <li>4. Breathing mechanics.</li> <li>5. Respiratory exchange ratio.</li> <li>6. Blood pH regulation.</li> <li>7. Organization of the nervous system. Neurophysiology of Neurons. The role of synapses in the nervous system, processing of information.</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Cardiac muscle; rhythmic excitation of heart; heart as a pump.</li> <li>2. Blood vessels. Hemodynamics of blood circulation. Veins and their functions.</li> <li>3. Local regulation of blood flow, tissual and humoral. Capillary dynamics, lymphatic system.</li> <li>4. Arterial pressure regulation: short-term and long-term regulation.</li> <li>5. Minute volume and venous inflow.</li> <li>6. Kidney I: Glomerular filtration, renal blood flow. Renal clearance. Analysis of the glomerular filtrate.</li> <li>7. Kidney II: Medullary osmotic gradient, osmolarity and natrium concentration screening. Osmoreceptors and ADH. Blood volume and extracellular fluid volume screening.</li> <li>8. Breathing I: breathing mechanics. Pulmonary circulation</li> <li>9. Breathing II: Physical Principles of Gas Exchange. The O<sub>2</sub> and CO<sub>2</sub> transportation through blood and biofluids. Breathing regulation.</li> <li>10. Acid-base balance.</li> <li>11. Sensory senses. Receptors and the neural pathway of the senses. The feeling of pain and the physiological analgesia. Thermal sensors.</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Erythrocytes count, determining the concentration of haemoglobin, hematocrit, erythrocyte sedimentation, determining the blood values (colour index, PSV, PSHb, PSKHb)</li> <li>2. Electrocardiography: normal EKG. Reading blood pressure.</li> <li>3. Leukocyte count. Coagulation tests.</li> <li>4. Osmotic resistance of erythrocytes.</li> <li>5. Spirometry: static and dynamic.</li> <li>6. Differential blood count, defining blood group within the ABO and Rh systems.</li> <li>7. Special senses: eye: eyesight sharpness, perimetry test, stereoscopic vision, pupillary reflex; ear: hearing test using tuning fork; examination of the olfaction and taste.</li> </ol>
<b>2. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Physiology of Pain.</li> <li>2. Neurophysiology of movement: Neural control of movements.</li> <li>3. Brain cortex; intellectual functions, learning and memorizing. Function of the brain in behaviour and motivation.</li> <li>4. Liver and physiological functions of digestion and metabolism.</li> <li>5. Mechanism of hormones activity; Pituitary gland: growth regulation and the growth hormone function.</li> <li>6. Balanced diet, feeding regulation, obesity and starvation, insulin resistance.</li> <li>7. Physiological mechanisms of adapting to strain: differences between a sedentary person and a well trained athlete.</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Special senses: physiology of vision, hearing, keeping balance, and chemical senses (taste and olfaction).</li> </ol>

<ol style="list-style-type: none"> <li>Controlling the motoric axis of the nervous system, spinal reflexes.</li> <li>Secretion inside the digestive tract. Digestion and absorption of nutrients.</li> <li>The endocrine pancreas: insulin, glucagons. Regulation of glycemia, and diabetes.</li> <li>Adrenal gland cortex and stress regulation.</li> <li>Calcium and phosphate metabolism in the tissue of bones and teeth.</li> <li>Male and female sex hormones.</li> <li>Thermoregulation.</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>Saliva: regulation of secretion, changes in pH, flow.</li> <li>Indirect calorimetry, basal metabolism rate in humans.</li> <li>Thyroxine: measuring metabolism intensity of rats.</li> <li>Glucose tolerance test.</li> <li>Muscle activity physiology: ergometry, Åstrand's test; evaluating the functioning of the cardiovascular system; reaction of the cardiovascular system to strain by muscle activity.</li> </ol>
<b>Course leader and associates</b>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>Guyton &amp; Hall: Fiziologija čovjeka i mehanizmi bolesti, Medicinska naklada, Zagreb 2006.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>Berne, R.M. i Levy M.N. : Fiziologija, treće izdanje, Medicinska naklada Zagreb, 1996.</li> </ol>
<b>Required knowledge</b>
<p><b>GENERAL PHYSIOLOGY</b></p> <p>Homeostatic mechanisms, principles of biofeedback.</p> <p>Transfer of nutrients through cellular membrane.</p> <p>Membrane potential, physiological basis.</p> <p>Action potentials, origination and expansion, speed of expansion, rhythmic plateau.</p> <p>Stimulation of skeletal muscle, neuromuscular transfer.</p> <p>Skeletal and flat muscles contraction, physiological structure, energetic, molecular mechanism of contraction, neural and hormonal control.</p> <p><b>HEART</b></p> <p>Cardiac muscle, heart as a pump, function of valves, heart activity regulation, more and less functional heart.</p> <p>Cardiac cycle, systolic and diastolic phase, self-regulation of the heart's activity, nerve regulation, effects of temperature, potassium and calcium ions.</p> <p>Normal electrocardiogram (EKG), relation to the cardiac cycle, detecting waves, methods of EKG registration, normal analysis of an EKG.</p> <p><b>BLOOD</b></p> <p>Erythrocytes, generating haemoglobin, life span of an erythrocyte, blood groups of AB0 and Rh systems.</p> <p>Blood cells and immunity. Leukocytes, granulocytes, general properties, inflammation, the role they play in an inflammation.</p> <p>Organism's resistance to infection, innate and acquired immunity.</p> <p>Haemostasis and blood coagulation, coagulation mechanism, coagulation tests, conditions which cause substantial bleeding in humans, thromboembolic disorders, physiologic anticoagulation in blood.</p>

## BLOOD CIRCULATION

Circulation, physical properties of circulation, blood pressure, flow, resistance.

Blood vessels, elasticity, functions of the arterial and venous system, pulse pressure.

Veins and their function, venous pressure, function of veins as blood containers.

Microcirculation, structure of capillaries and the blood flow in them, vasomotion, diffusion through capillary membrane, exchange of water and nutrients, filtration.

Intercellular fluid and intercellular space.

Lymphatic system, lymph vessels, generating lymph and its flow, physiological role of the lymphatic system.

Local blood flow, mechanism of control.

Circulation regulation: local, humoral, nervous.

Arterial blood pressure: arterial blood pressure control, fast, by the nervous system, long-term, by the kidney activity, methods of measuring.

Blood flow through skeletal muscles and its regulation in the state of inactivity and during muscle activity. Coronary flow.

## BODILY FLUIDS

Bodily fluids, departments, composition and volume, maintaining the volume and composition, measuring the volume of bodily fluids, osmotic balance.

## KIDNEYS

Kidneys, physiological constitution, blood flow through kidneys, filtration, physiological control over filtration and flow, self-regulation of glomerular filtration and flow.

Urine formation, analysis of the glomerular filtrate, reabsorption and secretion inside the renal channels, diluted and concentrated urine, elimination of excess water, regulating osmolarity of the bodily fluids and their concentration, potassium, sodium, calcium, urea, and other ions.

Plasma clearance and evaluation of the renal function.

## LUNGS

Pulmonary ventilation, mechanics of the pulmonary ventilation, pulmonary volume and capacity, minute volume of breathing, alveolar ventilation, respiratory pathways.

Pulmonary circulation, physiological makeup of the pulmonary circulation system, blood volume and pressure inside pulmonary system, blood flow inside lungs and its division, pulmonary capillary dynamics.

Alveolar air, its composition and relation to the atmospheric air, diffusion of gasses through the respiratory membrane, effect of ventilation and perfusion proportion on the gas concentration inside alveoli. Transportation of oxygen and carbon dioxide through blood and bodily fluids.

Regulation of respiration, respiratory centre, chemical control of breathing, peripheral chemo receptors, breathing regulation during muscle activity.

## ACID BASE BALANCE

Regulation of acid base balance. Precise regulation of hydrogen ions. Protection from variations in concentration of hydrogen ions: lungs and kidneys.

## NERVOUS SYSTEM

Nervous system, organisation, synapses, neuron network for information processing.

Body senses I: touch and position.

Body senses II: pain, types of pain, receptors and their stimulation, means of transfer, physiological system of analgesia, headache. Thermal sense.

Special senses: vision, hearing, taste, olfaction.

Motor neurophysiology: motor function of the spinal core, spinal reflexes.

Cerebral cortex and cerebral stem control over motor functions.

The role of cerebellum and basal ganglia.

Cerebral cortex, intellectual functions, behaviour and motivation.

States of cerebral activity, sleeping and brain waves.

Autonomic nervous system.

Blood flow inside brain, composition of cerebrospinal fluid.

## DIGESTIVE SYSTEM

Digestive system: activity, nervous control and blood flow, saliva, secretion and composition of saliva, its importance in digestion, pressing and mixing of food inside digestive tract, secretion, digestion and absorption inside digestive system.

Liver as an organ, physiological functions in digestion and metabolism.

## METABOLISM

Balanced diet and feeding regulation, obesity and starvation.

Energetic and intensity of metabolism. Transfer of energy and factors influencing energy expenditure.

Body temperature, temperature regulation, fever.

## ENDOCRINOLOGY

Endocrinology: mechanism of hormonal activity, pituitary gland hormones and the role of hypothalamus in regulating their secretion. Physiological functions and regulation of secretion of: growth hormone, thyroid gland hormones, adrenal gland hormones, sex hormones. Insulin, glucagons and diabetes. Parathyroid hormone and calcitonin, their role in calcium and phosphate metabolism in bones and teeth.

## PHYSIOLOGY OF SPORTS

Sports physiology: muscles in the process of activity, breathing, bodily fluids and salt, cardiovascular system, body temperature and metabolism during muscle activity.

## Required skills

### HEMATOLOGY AND BODILY FLUIDS:

Blood extraction from fingertips, erythrocytes and leukocytes count, determining blood groups, determining hematocrits, measuring haemoglobin, performing coagulation tests, defining osmotic resistance of erythrocytes, performing differential blood count.

### EKG:

Placing electrodes and performing EKG test.

### ARTERIAL BLOOD PRESSURE

Measuring arterial blood pressure using quicksilver manometer, measuring heart frequency.

### SPIROMETRY

Performing static and dynamic spirometry.

Measuring and counting values of pulmonary volume and capacity.

### ENDOCRINOLOGY

Performing glucose overload test, defining the thyroxine effect on metabolism, operating on small laboratory animals.

### METABOLISM

Measuring basal human metabolism using indirect calorimetric method.

### PHYSIOLOGY OF SPORTS

Defining oxygen expenditure during strain and assessing cardiovascular status and physical condition using ergometry and Atrand's test.

## Exam questions

1. Explain physiological mechanisms of body temperature regulation in the state of inaction as opposed to the muscle activity in a tropical climate (elevated temperature and moisture in the air).
2. Explain physiological mechanisms of body temperature regulation in the state of inaction as opposed to muscle activity in an environment with elevated temperature.
3. Explain physiological mechanisms of body temperature regulation during physical strain of an athlete in excellent shape in an environment with elevated temperature.
4. Explain physiological mechanisms of body temperature regulation in a state of inaction as opposed to physical strain in an environment with low temperature.

5. How does low outside temperature influence the body temperature regulation? Muscle activity in low temperatures.
6. Which physiological factors influence skeletal system's adaptation to physical strain?
7. Influence of physical strain on the skeletal-muscular system. Compare inaction with physical strain, good physical shape with sedentary type.
8. Water in the body. Explain physiological mechanisms of maintaining volume and composition of bodily fluids during physical strain. Influence of physical practice.
9. Explain physiological mechanisms of maintaining volume and composition of bodily fluids during physical strain of a sedentary person versus an athlete with excellent physical shape.
10. Changes in the cardiovascular system during muscular activity: difference between poor and good physical shape, inaction versus physical strain.
11. Changes in the respiratory system during muscular activity: difference between inaction and physical strain.
12. Name factors that regulate breathing in the state of inaction and during physical strain.
13. Explain "Bohr's Effect" during physical strain.
14. Draw changes in the oxyhemoglobin curve during great physical strain.
15. Explain processes of inspiration and expiration during inaction and during physical strain.
16. Breathing regulation during muscular strain.
17. Haemoglobin and its capacity to transfer oxygen during muscular strain. The curve of haemoglobin saturation.
18. Blood's capacity to transfer oxygen during muscular strain.
19. Explain physiological mechanisms of breathing at the beginning and during muscular activity.
20. Explain physiological mechanisms of regulation of the diffusion capacity of the respiratory membrane for oxygen and carbon dioxide during muscular activity.
21. Explain physiological mechanisms of the heart activity regulation and arterial pressure during inaction as opposed to physical strain.
22. Explain physiological mechanisms of peripheral circulation regulation during muscular activity.
23. Explain physiological mechanisms of pulmonary circulation regulation during muscular activity.
24. Explain physiological mechanisms of generating and releasing energy in the muscles during heavy muscular strain. The difference between a sedentary person and a well trained athlete.
25. Heavy muscular strain and changes in metabolism.
26. Explain the term "Athletic heart syndrome."
27. Explain the relation between the two physiological mechanisms which influence the heart volume.
28. Compare average values of minute heart volume during inaction and during maximal physical strain of a sedentary person versus a well trained athlete.
29. Explain physiological mechanisms of arterial pressure changes during physical strain of a sedentary person versus well trained athlete.

### 3.2.25 Forensic Dental Medicine

Basic information about the course					
Title	Forensic dental medicine				
Code	71297	Abbreviation	511IFORE		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Chair of Forensic Dentistry				
Course leader	Professor Hrvoje Brkić DMD, PhD				
Course load					
	1		Total		
Lectures	15		15		
Laboratory practicals	15		15		
ECTS			1.5		
Course description					
In this course students are introduced to the basics of forensic dentistry that they will need in their dental practice. Students learn methods of identification of human body, i.e. importance of dental documentation in determining identity. The importance is also given to the new techniques, such as DNA extraction from dental tissues and PCR technique. Students are also introduced to the quantification of traumatic injuries of oral and dental tissues, and application of law in dental malpractice cases.					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
At the end of the course students take an oral exam. Students are drawing cards with five questions each. All the questions are available to the students on the web pages of the Chair of Forensic Dentistry. There are always several students present on the exam, up to five in one group. Grades are depending on the quality of the answers.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction and History of Forensic Dentistry in Croatia and Worldwide					
2. Dental Identification: Procedure, Instruments, Analysis					
3. Interpol Disaster Identification Forms					
4. Identification in Mass Disasters, and Organization of the DVI Team					
5. Comparison of Antemortem and Postmortem Dental Findings					
6. Age Determination by Teeth					
7. Hereditary and Environmental Dental Characteristics					

8. DNA and Forensic Dentistry 9. Visual Documentation in Forensic Dentistry 10. Sex and Race Determination from Teeth and Skull 11. Analysis of Bite Mark Evidence 12. Dental Jurisprudence and Professional Liability Issues 13. Expert Witness Malpractice 14. Classification of Dental and Orofacial Traumatic Injuries 15. Cases from Dental Practice
<b>Laboratory practicals topics:</b>
1 & 2. Dental charting and dental notation 3 & 4. Ante mortem dental data 5 & 6. Post mortem dental characteristics 7 & 8. Dental age assessment 9 & 10. Bite mark analysis 11 & 12. Students' seminars 13, 14 & 15. Visit to the Department of Forensic medicine
<b>Course leader and associates</b>
Professor Hrvoje Brkić Assistant professor Jelena Dumančić Assistant professor Marin Vodanović
<b>Literature</b>
<b>Required literature:</b>
1. Brkić H. Forenzična stomatologija. Zagreb: Školska knjiga; 2000. 2. Jerolimov V, Brkić H. Vještačenje u stomatologiji. Zagreb: Stomatološki fakultet Sveučilišta u Zagrebu i Akademija medicinskih znanosti Hrvatske; 2005.
<b>Recommended literature:</b>
1. International Journal of Forensic Odonto-Stomatology ( <a href="http://www.iofos.eu">www.iofos.eu</a> )
<b>Required knowledge</b>
Students are introduced to the basic procedures in identification of the human body based on developmental and acquired dental characteristics. Introduction to the dental practice legislative in the Republic of Croatia; DNA isolation from dental tissues; human bite mark analysis and identification of the bite perpetrator; Forensic expertise in qualification of the oral and facial trauma in case of compensation claims; Errors and negligence in clinical dental practice. Criminal law paragraphs referring to physicians and dental medicine doctors. Informed consent application. Patient rights and responsibilities of the dental medicine doctor. Keeping dental records and importance of medical and dental documentation in case of litigation and compensation claims.
<b>Required skills</b>
In this course students develop critical thinking skills and the use of evidence along with communication skills in written and oral. Students acquire dental identification techniques and learn about importance of keeping quality dental records for establishing identity. The importance of new techniques like DNA extraction from dental tissues and PCR technique in forensic procedures are recognized. Students learn to assess and quantify facial, oral and dental injuries in purpose of litigation and criminal procedures and develop forensic skills necessary for conducting independent dental practice.

### Exam questions

1. Development of Forensic Dentistry in the World
2. Development of Forensic Dentistry in Croatia
3. Forensic dentistry according to Sopher
4. Paul Revere
5. August Cerer & Juraj Kallay
6. Fire in Paris – Bazar de la Charite
7. Tooth numbering systems
8. Palmer-Zsigmondy system
9. FDI two-digit notation
10. Universal numbering system
11. Upgrade FDI two-digit notation
12. Tooth surfaces codes
13. Instruments and supplies for a dental identification kit
14. Dental impression materials
15. Dental examination forms
16. Interpol disaster victim identification forms
17. Computer programs for dental identification
18. Forensic dental photography
19. Photography standards in forensic dentistry
20. Visual Documentation in forensic dentistry
21. Bite mark photography
22. Postmortem procedure
23. Antemortem dental characteristics
24. Dental examination
25. Examination of oral soft tissues in forensic dentistry
26. Developmental tooth disorders
27. Acquired tooth disorders
28. Abnormalities of tooth size
29. Abnormalities of tooth number
30. Abnormalities in tooth position
31. Abnormalities of tooth form
32. Defects of tooth structure
33. Tooth color abnormalities
34. Acquired abnormalities in tooth structure
35. Tooth fillings
36. Prosthetic appliances in dental identification
37. Effects of fire and high temperature on dental tissues
38. Effects of fire and high temperature on dental fillings
39. Radiography in forensic dentistry
40. Intraoral radiographs
41. Extraoral radiographs
42. Dental age assessment
43. Dental age assessment – intrauterine development
44. Dental age assessment – newborn and child
45. Dental age assessment – adolescent
46. Chronology of primary dentition
47. Chronology of permanent dentition
48. Root development of the permanent molars
49. Dental age assessment – adults

50. Dental age estimation – Johanson method
51. Dental age estimation – Gustafson method
52. Race determination
53. Sex determination
54. Anthropological characteristics according to Krogman
55. Genomic DNA isolation from dental tissues
56. Mitochondrial DNA isolation from dental tissues
57. Polymerase chain reaction (PCR) in forensic science
58. Mass disasters
59. Mass disasters causation
60. Big traffic accidents in Croatian history
61. Classification in dental identification reports
62. Positive dental identification
63. Possible dental identification
64. Insufficient Evidence
65. Exclusion
66. Identification of bite-mark perpetrator
67. Bite mark documentation
68. Human bite mark analysis procedure
69. Human bite mark changes
70. Most frequent anatomic locations of the human bite mark
71. ABFO bite mark analysis procedure
72. Patient rights
73. Ethics of dental profession
74. Human rights and medical treatment
75. Rights to privacy
76. Professional confidence and disclosure
77. Responsibilities of a doctor
78. Right to refuse dental treatment
79. Criminal responsibility of a doctor
80. Arbitrary treatment
81. Malpractice and dental treatment
82. Illegal transplantation of human organs
83. Doctors' refusal to provide medical assistance
84. Written informed consent for dental treatment
85. Responsibility to cover compensation claims
86. Dental medicine doctor's rights and responsibilities
87. Forensic medical expertise
88. Expertise in forensic odontology
89. Forensic expert witness
90. Compensation of damages
91. Quantification of dental trauma
92. Medical forensic expertise in quantification of the physical injuries in criminal procedure
93. Medical forensic expertise in litigation
94. Assessment of the severity of physical injuries
95. Severe injuries of the oral cavity
96. Physical injuries of the oral cavity
97. Decrease of daily activity level in case of oral cavity trauma
98. Decrease of daily activity level in case of permanent teeth trauma
99. Decrease of daily activity level in case of jaw injury
100. Decrease of daily activity level in case of limited mouth opening



### 3.2.26 Gynecology and Obstetrics

Basic information about the course					
Title	Gynecology and obstetrics				
Code	71298	Abbreviation	421IGINE		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Gynaecology and Obstetrics				
Course leader	Doc. dr. sc. Krunoslav Kuna				
Course load					
	1		Total		
Lectures	10		10		
Clinical practicals	5		5		
ECTS			1.5		
Course description					
<p>Through the anatomy of the female reproductive system, the students are introduced to the basic knowledge of gynecology and obstetrics, trying to establish as much as possible different links with the diseases and conditions in the oral cavity. Emphasis will be given to an early detection of gynecological malignancies and frequent gynecological diseases and syndroms. Focus will be on the importance of perinatology today, on maternal and perinatal mortality, morbidity, and its prevention and treatment. The main emphasize will be put on the importance of medical deontology, especially in perinatology.</p> <p>Students will leave the course with knowledge of gynecological diagnostics and therapy, of the conception and physiological changes during pregnancy, childbirth, and puerperium. They will acquire knowledge about physiology of woman's organism with special attention to reproduction, clinical picture, approach to gynecological diseases, and family planning. They will acquire basic knowledge of the pathology of pregnancy: diseases caused and exacerbated by pregnancy, chronic and infectious diseases, emergencies in obstetrics and gynecology. Students will understand the basics of conducting a normal delivery and approach to puerperium. They will gain knowledge of the diagnostic and therapeutic program in perinatology, as well.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Oral exam in groups. Student draws a card with three questions.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Relation between dental medicine and gynecology. Pregnant woman as a dental patient.					

2. Anatomy and physiology of female reproductive system.
3. Fertilization. Establishment and maintenance of pregnancy and its diagnosis. Determining of date of birth. Fetal position.
4. Antenatal care. Anamnesis, inspection, palpation, external and internal measurement. Labor and delivery. Contemporary approaches to delivery conduction.
5. Pathology of pregnancy: diseases during pregnancy. Early and late gestosis. Gestational diabetes. Rh-immunization. Bleeding in pregnancy. Transverse lie position. Narrow pelvis. Gemini.
6. Pathology of childbirth: Bleeding during delivery.
7. Dysfunctions due to disturbed development of genital organs.
8. Irregular rotation of child's head. Protrusion of small parts. Breech presentation.
9. Puerperium and puerperal complications.
10. Infant care.
11. Genital infections. Sexually transmitted diseases in gynecology and obstetrics.
12. Benign genital tract tumors.
13. Malignant genital tract tumors.
14. Family planning.

#### **Clinical practicals topics:**

1. Antenatal care
2. Oral hygiene during pregnancy and puerperium
3. Normal and pathological childbirth
4. Operative delivery
5. Puerperium
6. Spontaneous and induced termination of pregnancy
7. Dysfunctional uterine bleeding
8. Vaginal discharge
9. Early detection of gynecologic malignancies
10. Stress incontinence of urethral sphincter
11. Basic principles of ultrasound in gynecology and obstetrics

#### **Course leader and associates**

doc. dr. sc. Krunoslav Kuna

#### **Literature**

##### **Required literature:**

1. Porodništvo, A. Dražančić i sur., Školska knjiga, Zagreb, 1999. II. Izdanje
2. Ginekologija, V. Šimunić i sur., Naklad Ljevak, Zagreb, 2001

##### **Recommended literature:**

1. Porodništvo, I. Kuvačić, A. Kurjak, J. Đelmiš i sur., Medicinska naklada, Zagreb 2009.
2. Perinatologija danas, I. Kuvačić, S. Škrabin-Kučić, Nakladni zavod Matice hrvatske, Zagreb, 2003.

#### **Required knowledge**

Introduction to pregnancy physiology, mechanism of normal childbirth and physiology of normal puerperium; review of the most common causes of high-risk pregnancies and childbirth; prenatal, perinatal and postnatal care with special focus on the role of dentist.

Introduction to endocrinological changes in different phases of female life; inflammatory diseases; sexually transmitted diseases; introduction to gynecologic oncology (prevention, symptomatology, diagnostics and treatment)

### Required skills

Logical judgement in the approach to obstetrics and gynecological profession and the most common conditions in every day practice.

According to the experience acquired during the clinical practice, an easier approach to testing material and a better analysis of the most common problems are expected.

Given that the graduated dentists are highly trained health professionals, knowledge of obstetric and gynecology profession should help them in communication with pregnant women, puerperal women, and gynecologic patients.

### Exam questions

1. Prenatal care
2. Atonia uteri
3. Auscultation in obstetrics
4. Puerperium
5. Deflexion positions
6. Pregnancy diagnostics
7. Diabetes melitus and pregnancy
8. Fetal position or habitus
9. Embryonic and fetal development stages
10. Gestosis – classification by time of genesis, causes, clinical presentation, and treatment
11. Gestosis E
12. Gestosis P
13. Gestosis H
14. Gestosis EPH
15. Eclampsia imminens
16. Eclampsia convulsiva
17. Descend and prolaps of small parts
18. Medical indications for Caesarean delivery: a) absolute, b) relative indications
19. Leopold-Pawlick's maneuvers
20. Maneuvers for delivery of retained placenta
21. Measurement
22. Missed abortion
23. The most common sexually transmitted diseases in clinical practice
24. Determination of gestational age
25. Determining of due date
26. Palpation in obstetrics
27. Stages of childbirth
28. First stage
29. Second stage
30. Third stage (methods of separation and signs of placental expulsion)
31. Fourth stage
32. Transverse lie position
33. The advantages of an actively managed third stage of labor
34. Placenta praevia
35. Primipara vetusta – possible complications during pregnancy and childbirth
36. Growth of the uterus during pregnancy
37. Rh sensitization
38. Full-term delivery and preterm delivery
39. Certain signs of pregnancy
40. Spontaneous abortion

41. Fetal positions
42. Fetal positions and classification
43. Breech presentation and delivery method
44. Modern methods of delivery management (cardiotocography)
45. Labors: classification and types of labors
46. The role of amniotic sac and amniotic fluid
47. Narrow pelvis
48. The importance of inspection in obstetrics
49. Multiple pregnancy
50. Probable signs of pregnancy
51. Neglected transverse lie position

### 3.2.27 Histology with Embryology

Basic information about the course					
Title	Histology with embryology				
Code	71299	Abbreviation	112OHIST		
Total ECTS points	8.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Histology and Embriology				
Course leader	Prof. dr. sc. Đurđica Grbeša				
Course load					
	1	2	Total		
Lectures	13	14	27		
Seminars	11	7	18		
Laboratory practicals	15	20	35		
ECTS			8.5		
Course description					
<p>Histology is one of the basic fields of medicine which deals with the structure of a human body that can be studied only by using the optical or similar devices. Histology also deals with the cell (cytology) and with the fine structure of some organs (microscopic anatomy), i.e. the histology encompasses the entire microscopic and sub-microscopic system of the organism. Nowadays, histology (cytophysiology, histophysiology) cannot even be envisioned without the synchronous topo-chemical research (cytochemistry and histochemistry). Thus students gain insight into understanding of the chemical components of the cell, i.e., of their positioning in the cell, and the way in which their molecules are being synthesized. By using the electron microscope we are entering the macromolecular research area which is common to the cytomorphology and histomorphology, chemistry, biochemistry and physiology. Usage of the radioactive isotopes, microspectography, fluorescent microscopy, molecular genetics etc., helps us to both gather the data of the light microscopy, and to encompass in a broader way the insights of the general histology following the ultrastructural data. Human embryology is still descriptive in a certain sense, but the employment of the results in the comparative and experimental embryology contributed to the causative understanding of the complex occurrences during the development of human embryo.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	Yes
Rules of grading and additional information					
<p>Exam comprises practical part (microscoping the histological slides) and oral part i.e. evaluation the theoretical knowledge of histology and embryology.</p>					
Weekly teaching plan					

<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Epithelial tissue</li> <li>2. Connective tissue</li> <li>3. Lecture is not performed</li> <li>4. Bone</li> <li>5. Muscle tissue</li> <li>6. Nerve tissue and nervous system</li> <li>7. The circulatory system</li> <li>8. Digestive tract-specificity of the digestive mucosa</li> <li>9. Structure of pharynx, esophagus and stomach</li> <li>10. Lecture is not performed</li> <li>11. Organs associated with the digestive tract</li> <li>12. The urinary system</li> <li>13. The respiratory system</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Seminar is not performed</li> <li>2. Connective tissue cells, cartilage</li> <li>3. Seminar is not performed</li> <li>4. Dried bone ground, bone remodeling</li> <li>5. Muscle tissue, contraction</li> <li>6. Central and peripheral nervous tissue</li> <li>7. Capillary, blood</li> <li>8. Structure of the oral cavity, glands, tongue</li> <li>9. Gastric glands</li> <li>10. Structure of the small intestine</li> <li>11. Structure of the liver and pancreas</li> <li>12. Nephron, filtration barrier</li> <li>13. Blood-air barrier</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. How to handle the microscope, simple squamous epithelium, stratified nonkeratinized and squamous keratinized epithelium, pseudostratified epithelium</li> <li>2. Dense irregular connective tissue, tendon (longitudinal and cross section)</li> <li>3. Hyaline cartilage, elastic cartilage and fibrocartilage</li> <li>4. Decalcified bone</li> <li>5. Skeletal muscle, cardiac muscle and smooth muscle</li> <li>6. Spinal cord, CS ganglia, vegetative ganglia, peripheral nerve</li> <li>7. Artery and vein (H+E, orcein), cardiac fibrous skeleton, blood smear</li> <li>8. Parotid gland, sublingual gland, tip of the tongue, papilla vallata</li> <li>9. Esophagus, stomach (fundus, pylorus)</li> <li>10. Small intestine, large intestine</li> <li>11. Liver, pancreas, gall bladder</li> <li>12. Kidney, ureter, urinary bladder</li> <li>13. Trachea, lungs</li> </ol>
<b>2. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Histology of the endocrine glands</li> <li>2. Histology of the male reproductive system</li> </ol>

<ol style="list-style-type: none"> <li>Histology of the female reproductive system</li> <li>Menstrual cycle, fertilization, implantation</li> <li>Embryonic development, gastrulation, fetal membranes</li> <li>Development of the heart and blood vessels, fetal circulation</li> <li>Development of the head and neck</li> <li>Development of the oral cavity, anomalies</li> <li>Lecture is not performed</li> <li>The immune system, lymphoid organs</li> <li>Histology of the eye</li> <li>Histology of the ear</li> <li>Lecture is not performed</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>Cell signaling</li> <li>Spermatogenesis</li> <li>Oogenesis</li> <li>Seminar is not performed</li> <li>Skin, glands of the skin</li> <li>Placenta from the delivery room</li> <li>Seminar is not performed</li> <li>Tooth</li> <li>Seminar is not performed</li> <li>Antigens and antibodies</li> <li>Seminar is not performed</li> <li>Seminar is not performed</li> <li>Seminar is not performed</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>Pituitary gland, thyroid gland, adrenal gland</li> <li>Testis, epididymis, ductus deferens, prostate gland</li> <li>Ovary, fallopian tube, vagina</li> <li>Uterus of the young girl, uterine premenstrual mucosa, vagina</li> <li>Skin of the head, lip, mammary gland</li> <li>Placenta, umbilical cord</li> <li>Intramembranous ossification</li> <li>Tooth in the alveolar bone, hard palate, soft palate</li> <li>Development of the tooth stage I and II</li> <li>Lymph node, spleen, lingual tonsil</li> <li>Eye, optic nerve</li> <li>Ear</li> <li>Recapitulation, advices for the exam</li> </ol>
<b>Course leader and associates</b>
Prof. dr sc Želimir Bradamante Prof. dr sc Ljerka Banek Prof. dr sc Đurđica Grbeša Prof. dr sc Gordana Jurić-Lekić Prof. dr sc Srećko Gajović Prof. dr sc Davor Ježek Doc. Dr sc Dinko Mitrečić

Literature
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. L.C. Junqueira, J. Carnerio, RO Kelley: Osnove histologije, Školska knjiga, Zagreb 2002. VII. izdanje</li> <li>2. B.Durst-Živković: Praktikum histologije, Školska knjiga, Zagreb 1998.</li> <li>3. Sadler: Langmanova medicinska embriologija, Školska knjiga 1996. – VII. Izdanje</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Bradamante Ž., Švajger A.: Vježbe iz histologije, fotografije histoloških preparata, I dio 2001.</li> <li>2. Bradamante Ž., Švajger A.: Vježbe iz histologije, fotografije histoloških preparata, II dio 2002.</li> </ol>
<b>Required knowledge</b>
<p>Students should be thoroughly acquainted with structures and development of the human body by means of classical and contemporary methods of microscopic investigations and embryonic development; they should master the skills of microscopy of the most characteristic cells, tissues and organs presented at histological slides. By utilizing their previous knowledge in physics, chemistry, biochemistry, biology and anatomy students should gain insight into normal structure of the human body by means of light microscopy and electron microscopy.</p> <p>Embryology studies the development of the embryo and helps students to understand the complex relationship within the structure of the human body. Its practical medical implications are also of great importance, since it accounts for the appearance of anomalies in the development of certain organs.</p>
<b>Required skills</b>
To learn how to use the binocular light microspore during the practicals.
<b>Exam questions</b>

### 3.2.28 Immunology

Basic information about the course					
Title	Immunology				
Code	71300	Abbreviation	211OIMUN		
Total ECTS points	3	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning			
Department	Chair of Immunology				
Course leader	Prof. dr. sc. Ivan Šamija				
Course load					
	1		Total		
Lectures	20		20		
Seminars	10		10		
ECTS			3		
Course description					
Immunology is one of the youngest and most dynamic disciplines with a considerable impact to the development of many other medical branches such as microbiology, organ & tissue transplantation, oncology, etc. Immunological aspects of various diseases/disorders are incorporated into almost all fields of medical science through the diagnostics, treatment, or both (autoimmune diseases, immunodeficiencies, infective diseases, hypersensitivity, etc.). Dentists will be dealing with almost all of these aspects in their medical practice. The aim of this course is to provide the students basic knowledge about (i) the organization and function of the immune system, (ii) immunological aspects of immune diseases/disorders, and (iii) current methods of laboratory immunological diagnostics.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Written exam: A test with 30 questions, 1 point granted for each positive answer, no negative points; 17 points required to pass (positive/negative points granted on seminars are added/subtracted from those collected on the exam). Viva: A card with 4 questions is chosen; the answers to all questions are rated and the final grade is a mean of the four sub-grades (each sub-grade must be positive, i.e. between 2 and 5).					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction. Immune system organization. Innate/nonspecific and adaptive/specific humoral and cellular immunity. Lymphoid organs and tissues. Immune cells.					

<ol style="list-style-type: none"> <li>Cells: T &amp; B lymphocytes, NK cells, granulocytes, monocytes/macrophages, antigen presenting cells, basophils, mast cells, platelets.</li> <li>Soluble immune system components: antibodies, cytokines, chemokines, complement system. Innate immunity – local and systemic; cellular and humoral.</li> <li>Adaptive/specific immunity. Antigen recognition, B cell antigen receptors; antibodies – structure and function.</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>Immunity to bacteria and fungi.</li> <li>Immunity to viruses and parasites.</li> <li>Lymphoid tissue of the oral cavity, immune components of saliva.</li> <li>Tumor immunology.</li> <li>Laboratory immunological methods – morphological and functional tests, molecular methods.</li> </ol>
<b>Course leader and associates</b>
Prof. dr. sc. Josip Lukač
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>Lukač J. immunology. School of Dental Medicine, University of Zagreb, 2004. A course book for School of Dental Medicine University of Zagreb students, available at <a href="http://www.sfzg.unizg.hr/predmet/71300">http://www.sfzg.unizg.hr/predmet/71300</a></li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>Immunology. M. Taradi, Ed., Medicinska naklada, Zagreb, 7th ed., 2009.</li> </ol>
<b>Required knowledge</b>
Students should acquire the basic knowledge about (i) immune mechanisms, both local and systemic, about their types and interrelationship, as well as their role in the development of diseases/disorders, particularly autoimmune diseases, immunodeficiencies, malignant tumors and infections, (ii) the current methods of immunological laboratory diagnostics (flow cytometry, immunofluorescence methods, enzyme immunoassays and polymerase chain reactions ) and its role in detection and monitoring of oral diseases and other diseases involving oral cavity.
<b>Required skills</b>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li> <p>Lymphoid organs and tissues</p> <p>Interleukins</p> <p>Type 1 hypersensitivity</p> <p>Laboratory methods for detection of soluble molecules (such as cytokines, antibodies, etc.)</p> </li> <li> <p>Classification of immune cells</p> <p>Cytokines</p> <p>Inflammation</p> <p>Diagnostic use of monoclonal antibodies</p> </li> <li> <p>The main characteristics of natural immunity</p> </li> </ol>

Structure and classes of antibodies  
 Antitumor immunity  
 Immunodeficiencies  
 4  
 The main characteristics of adaptive immunity  
 Lymphoid tissue of oral cavity  
 Functions of antibodies  
 Laboratory methods for immune cells enumeration  
 5  
 Humoral adaptive immunity  
 Basic characteristics of T lymphocytes, surface markers, classification  
 Hypersensitivity  
 Functional and morphologic tests for granulocytes  
 6  
 Phagocyte classification, mechanism of phagocytosis  
 Humoral immune response, characteristics of primary and secondary response  
 Autoimmunity  
 Functional and morphologic tests for B lymphocytes  
 7  
 Humoral mediators of immune response  
 T cell antigen receptors: structure, characteristics, function  
 Type IV hypersensitivity  
 Immunofluorescence laboratory tests  
 8  
 MHC molecules and their role in antigen recognition  
 Basic characteristics of B lymphocytes, surface markers  
 Types of tissue/organ transplantation with respect to histocompatibility  
 Immunity to fungi  
 9  
 Cellular natural immunity  
 Basic characteristics of monocytes/macrophages , functions  
 Main causes of autoimmunity  
 Anaphylactic shock  
 10  
 B lymphocyte activation  
 Regulation of the immune response  
 Secondary immunodeficiencies  
 Functional and morphological tests for T lymphocytes  
 11  
 Interferons: types and function  
 Basic characteristics of NK cells, surface markers, function  
 Immune components of saliva  
 Role of T lymphocytes in tissue rejection  
 12  
 Types of antigen presenting cells  
 Immunological tolerance  
 Immunity to bacteria  
 Transplant rejection, GVHD  
 13  
 B cell antigen receptors: structure, characteristics, function  
 T cell activation, cellular immune response  
 Immunity to viruses

Types of transplant rejection

14

T cell-mediated cellular immune response

Type II hypersensitivity

Immunity to parasites

Functional and morphological tests for monocytes/macrophages

15

Type III hypersensitivity

Primary immunodeficiencies

Mechanisms for evading antimicrobial defenses

Functional and morphological tests for NK cells

### 3.2.29 Infectology

Basic information about the course					
Title	Infectology				
Code	121483	Abbreviation	311OINFE		
Total ECTS points	3	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Chair of Infectology				
Course leader	Prof. Višnja Škerk, MD, PhD				
Course load					
	1		Total		
Lectures	15		15		
Clinical practicals	25		25		
ECTS			3		
Course description					
Infectology is a branch of medical sciences that studies the biological processes of infections and infectious diseases.					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	Yes
Rules of grading and additional information					
The exam is preceded by a large colloquium - a written exam with 60 questions and offered answers (the correct answer is one of 5 options offered), which lasts for 60 minutes. The oral exam is taken by at least three students; each has to answer 5 questions.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction. General infectious diseases. Infections of the oral cavity.					
2. Viral hepatitis, EBV and CMV infections.					
3. HIV-infection					
4. Viral exanthematous diseases					
5. Respiratory tract infections					
6. Gastrointestinal infectious diseases					
7. Urogenital and sexually transmitted infections. Skin and soft tissue infections.					
8. Central nervous system infections					
Seminar topics:					
1. Physical examination of an infectious disease patient.					
2. Streptococcal infections. Skin and soft tissue infections.					

<ol style="list-style-type: none"> <li>Sepsis, infections of the oral cavity. Endocarditis.</li> <li>Antimicrobial therapy and prophylaxis.</li> <li>Toxoinfections.</li> <li>Zoonoses. Haemorrhagic fevers.</li> <li>Enteroviroses. Mumps.</li> <li>Infections of the oral cavity.</li> <li>Infections transmitted by blood.</li> <li>Central nervous system infections.</li> </ol>
<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>Physical examination of patients with most common infectious disease syndromes.</li> </ol>
<b>Course leader and associates</b>
Prof. Višnja Škerk, MD, PhD Vladimir Krajinović, MD
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>I. Beus; V.Škerk: Infektologija za stomatologe. Zagreb, Graphis, 2003.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>Presečki V. Stomatološka mikrobiologija. Zagreb, Medicinska naklada, 2009.</li> <li>Morović M, Trošelj Vukić B. Infekcije usne šupljine. Rijeka, Medicinski fakultet Rijeka, 2009.</li> <li>Schlossberg D. Clinical Infectious Disease. Cambridge University Press, 2008</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>General infectious diseases. Infections of the oral cavity. Viral hepatitis, EBV and CMV infection.</li> <li>HIV-infections. Viral exanthematous diseases.</li> <li>Respiratory tract infections</li> <li>Gastrointestinal infectious diseases</li> <li>Urogenital and sexually transmitted infections. Skin and soft tissue infections.</li> <li>Central nervous system infections</li> <li>Streptococcal infections.</li> <li>Sepsis, Endocarditis</li> <li>Antimicrobial therapy and prophylaxis.</li> <li>Toxoinfections.</li> <li>Zoonoses.</li> <li>Haemorrhagic fevers.</li> <li>Enteroviroses.</li> <li>Mumps.</li> <li>Infections transmitted by blood.</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>Patient history and physical examination of infectious disease patient.</li> </ul>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>General infectious diseases.</li> <li>Infections of the oral cavity.</li> <li>HIV-AIDS</li> </ol>

4. Viral hepatitis
5. Skin and soft tissue infections
6. Sepsis
7. Antimicrobial therapy and prophylaxis
8. Infections transmitted by blood
9. Gastrointestinal infections and alimentary intoxications
10. Sore throat
11. Infections caused by streptococci
12. Respiratory tract infections
13. Toxoinfections
14. Central nervous system infections
15. Viral exanthematous diseases
16. Zoonoses

### 3.2.30 Internal Medicine

Basic information about the course					
Title	Internal medicine				
Code	71302	Abbreviation	312OINTE		
Total ECTS points	9	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Internal Medicine				
Course leader	Prof. dr. sc. Neven Ljubičić				
Course load					
	1	2	Total		
Lectures	23	22	45		
Seminars	10	10	20		
Clinical practicals	20	20	40		
ECTS			9		
Course description					
<p>Students are learning the subject of "Internal Medicine" through lectures, seminars and clinical practice in the field of clinical entities (subspecialties) that cover internal medicine, including: Cardiology, Gastroenterology, Nephrology, Pulmonology, Endocrinology and Metabolic Diseases, Rheumatology, Allergology, Immunology and Clinical Pharmacology.</p> <p>Students are taught methods of diagnosis, clinical examinations and treatment for each of the specialty.</p> <p>Special attention is directed on diseases that are closely related to dental pathology and surgery.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>During the practical part of the exam the students takes medical history and perform physical examination. The practical part is not graded with notes, the student passes or does not pass the practical part. If a satisfactory, approach to the theoretical part of the exam where he has to answer 5 theoretical questions.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<ol style="list-style-type: none"><li>1. First Introductory lecture</li><li>2. Cardiomyopathy. Heart failure</li><li>3. Rheumatic infective endocarditis. Heart defects.</li><li>4. Ischemic Heart Disease</li><li>5. Diseases of pericardium, mvocardium and blood vessels</li></ol>					

<ol style="list-style-type: none"> <li>6. Arterial Hypertension</li> <li>7. Shock. Sudden cardiac death.</li> <li>8. Ulcer disease. Gastric cancer</li> <li>9. Inflammatory bowel disease. Bowel diverticulosis. Colon cancer</li> <li>10. Viral hepatitis. Liver tumors</li> <li>11. Diseases of the pancreas and biliary system. Tumors of the pancreas.</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Principles of cardiopulmonary resuscitation</li> <li>2. Pain in the chest</li> <li>3. Disorders heart rhythm</li> <li>4. Gastrointestinal bleeding</li> <li>5. Liver cirrhosis. Portal hypertension</li> </ol>
<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Correct history data taking</li> <li>2. Set of targeted questions in order to obtain history data according to specific organ systems</li> <li>3. Clinical status of patients and method of examination</li> <li>4. Symptoms and signs of certain pathological conditions</li> <li>5. Setting of diagnosis in accordance with the history and status</li> </ol>
<b>2. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Pulmonary tuberculosis. Pulmonary carcinoma.</li> <li>2. Pulmonary embolism. Pulmonary hypertension. Chronic pulmonary heart disease.</li> <li>3. Chronic obstructive pulmonary disease (COPD). Asthma.</li> <li>4. Hypothalamic-pituitary axis disorders. Adrenal gland disorders.</li> <li>5. Thyroid disease. Metabolic disorders of the skeleton.</li> <li>6. Diabetes mellitus complications</li> <li>7. Urinary tract infection. Nephrolithiasis. Obstructive nephropathy. Urinary tract tumors.</li> <li>8. Glomerular diseases. Tubulointerstitial disease.</li> <li>9. Diseases of the hematopoietic stem cells</li> <li>10. Diseases of lymphocytes and plasma cells.</li> <li>11. Anemia. Thrombosis and thrombophilia.</li> <li>12. Rheumatoid arthritis. Systemic lupus erythematosus.</li> <li>13. Rational use of antimicrobial drugs, antipyretics and analgesics. Clinical significance of side effects and drug interactions.</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Acute respiratory failure. ARDS. Pneumonia.</li> <li>2. Renal failure</li> </ol>
<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Rational diagnostic methods aimed for the final diagnosis</li> <li>2. Basics of electrocardiogram (ECG)</li> <li>3. Imaging methods</li> <li>4. Treatment plan based on diagnosed disease</li> <li>5. Work-up and treatment in Internal medicine emergencies.</li> </ol>
<b>Course leader and associates</b>
Proffesor of internal medicine Neven Ljubičić, MD, PhD

Assistant professor of internal medicine Hrvoje Pintarić, MD, PhD  
 Assistant professor of internal medicine Petar Gačina, MD, PhD  
 Teaching/research assistant Marko Nikolić, MD, PhD  
 Teaching/research assistant Šime Manola, MD, PhD  
 Teaching/research assistant Karmela Altabas, MD, PhD

## Literature

### Required literature:

1. Petrac D et al. Internal medicine, 2008. Zagreb, Medical Biochemists

### Recommended literature:

1. Vrhovac B, Francetic I, Jaksic B, Labar B, Vucelic B. INTERNAL MEDICINE, 2008. Zagreb, Ljevak
2. Braunwald E et al. Harrison's Principles of Internal Medicine (Croatian translation). 1999th Split, Placebo
3. Čustovic F: Medical history and physical examination. 2000th Zagreb, School Books
4. Antonin B et al. Propedeutics of internal medicine. 1989. Zagreb, Jumena
5. Metelko Z, Harambašić H et al. Internal propedeutics and basic physical diagnosis. 1999th Zagreb, Medical Biochemists

### Required knowledge

- Basic principles of diseases within Internal medicine (including cardiology, gastroenterology, nephrology, pulmonology, metabolic diseases and endocrinology, rheumatology, allergology and immunology).
- Work-up and treatment methods for each of the specialty.
- Special attention is focused on diseases that are closely related to dental pathology and surgery.

### Required skills

- Taking medical history
- Physical examination of the patient including:
  - Inspection
  - Palpation
  - Percussion
  - Auscultation with
- Heart-rate determination.
- Blood pressure measurement .

### Exam questions

Oral exam will be made based on following literature: Petrač D. et al. Internal medicine. 2008th Zagreb, Medical Biochemists

Practical part of the exam consists of taking patient's medical history and performing physical examination all of which should be presented to the examiner.

### 3.2.31 Cariology

Basic information about the course					
Title	Cariology				
Code	71303	Abbreviation	221OKARI		
Total ECTS points	1.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Endodontics and Restorative Dentistry				
Course leader	Prof.dr.sc. Katica Prskalo				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
<p>Cariology is the basic part of dental medicine study which on the basis of knowledges about development of hard tooth tissue and supporting structures, histology and chemical composition of hard tooth tissue study developmental abnormalities of permanent teeth, etiology of hard tissue disease, chemical interaction during development of dental caries lesion, histopathological and clinical manifestations of caries lesions, caries diagnosis, caries risk tests, immunology aspect of caries disease , epidemiology, oral hygiene and prevention of dental caries and influence of system diseases on caries development. Teaching is thematic divided in three parts. In first part students on the basis of knowledges about teeth development and histology of hard tooth tissue acquire knowledges about developmental disorders and theirs influence on caries development as well as about noncaries teeth damages. The second part throughly discussing etiology, development, histopathological and clinical manifestations of caries lesions, caries diagnosis, classification of caries lesions and influence of system disease on caries development. Third part includes epidemiology, immunology aspect and prevention of caries disease.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>The exam in Cariology is taken after 4th semester. Students have oral exam. During the exam a students should answer at least 9 questions.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div><div>Introduction in the course of cariology</div></div> <div><div>2.</div><div>Developmental abnormalities of hard tooth tissues; morphological abnormalities of permanent teeth</div></div>					

3. Structural abnormalities of hard tooth tissues
4. Physical and chemical damage of the hard tooth tissues and pulpo-dentinal complex reactions
5. The oral cavity and saliva
6. The factors influence caries disease; the role of diet on caries development
7. The oral microflora and biofilms on teeth
8. Metabolism of the dental plaque
9. Chemical and physical processes in the caries lesion
10. Histopathological and clinical aspect of caries disease
11. Caries diagnosis
12. Caries classification; caries in risk patients
13. Caries risk tests; immunology aspect of caries disease; chemical caries prophylaxis
14. Prevention of dental caries; non-operative and operative treatment
15. Prognosis of dental caries; epidemiology of caries disease

#### **Course leader and associates**

Professor Katica Prskalo  
 Professor Goranka Prpić-Mehićić  
 Professor Ivica Anić  
 Professor Ivana Miletić  
 Professor Silvana Jukić-Krmek  
 Professor Nada Galić  
 Professor Marina Katunarić  
 Professor Božidar Pavelić  
 Professor Tonči Staničić  
 Professor Sanja Šegović  
 Professor Zrinka Tarle  
 Assistant professor Vlatko Pandurić  
 Assistant professor Paris Simeon  
 Assistant professor Zoran Karlović  
 Assistant professor Bernard Janković

#### **Literature**

##### **Required literature:**

1. Jozo Šutalo i sur. Patologija i terapija tvrdih zubnih tkiva. Naklada Zadro, Zagreb, 1994.
2. Fejerskov O & Kidd E. Dental Caries. The Disease and its Clinical Management. I ed. Blackwell Munsgaard, Copenhagen, 2003.

##### **Recommended literature:**

1. Thylstrup A & Fejerskov O. Textbook of Clinical Cariology. II ed. Munksgaard, Copenhagen, 1994.

#### **Required knowledge**

- Oral cavity
- Saliva
- Oral environment and dental caries
- Oral microflora metabolism
- Dental plaque
- Clinical and histopathological aspect of caries disease
- Epidemiology of dental caries
- Oral hygiene and dental caries

- Chemical and physical processes in the caries lesion
- Chemical caries prophylaxis
- Immunology of dental caries
- Caries diagnosis
- Prognosis of dental caries
- Caries risk tests
- Prevention of dental caries
- Influence of system disease on dental caries development

### Required skills

### Exam questions

1. Abnormalities during initial stage of tooth formation?
2. Abnormalities during morfodifferentiation of tooth?
3. Abnormalities during aposition of hard tooth tissue?
4. Tooth color disturbances?
5. Abrasion, attrition, erosion and abfraction of tooth?
6. Dentin hypersensitivity (etiology, therapy )?
7. Primary, secondary and tertiary dentin?
8. Major and minor salivary glands?
9. Secretion and composition of saliva?
10. Functions of saliva?
11. Measurement of unstimulated and stimulated flow rate?
12. The oral microflora?
13. Biofilms on teeth?
14. The microbiology of caries lesions (enamel, dentin, root surface)?
15. Development of dental plaque (Pellicle formation, microbial colonization, immature and mature dental plaque)?
16. Fissure and smooth surface plaque (Microbiology and structure)?
17. Metabolism of dental plaque?
18. Chemical interaction during development of caries lesion (demineralisation and remineralisation)?
19. Clinical and histological manifestation of enamel caries („white spot“ lesions)?
20. Progression of the enamel lesion?
21. Clinical and histological manifestation of dentin caries?
22. Progression of the dentin lesion?
23. Dentin reaction to caries progression?
24. Caries classification?
25. Root surface caries (Active and inactive (arrested) root surface lesion)?
26. Occlusal caries and smooth surface caries?
27. Clinical diagnosis of smooth-surface caries, pit and fissure caries, proximal caries?
28. Radiologic diagnosis in caries management?
29. Advanced methods of caries diagnosis?
30. Prevention of dental caries?
31. Oral hygiene and dental caries (toothbrushing, flossing, professional toothcleaning and dental caries)?
32. Diet and the caries process (Systemic and local dietary effects)?
33. Chemoprophylaxis of dental caries?
34. Fissure sealants and dental caries (indication, contraindication, materials)?
35. Tests for assessment of caries risk?

36. Caries immunology (the immune system and dental caries, antigens used in experimental caries vaccines, immunization routes, caries immunization in humans)?
37. An epidemiological approach to dental caries (analysis and interpretation of data)?
38. The prognosis for caries lesions?

### 3.2.32 Chemistry

Basic information about the course					
Title	Chemistry				
Code	71304	Abbreviation	111OKEMI		
Total ECTS points	8	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Chair of Chemistry				
Course leader	Professor Jasna Lovrić, Msc, PhD				
Course load					
	1		Total		
Lectures	30		30		
Seminars	15		15		
Laboratory practicals	30		30		
ECTS			8		
Course description					
<p>This course is intended to provide a proper education for future doctors of dental medicine. The aims are to enable students to gain knowledge and understanding of the major concepts in chemistry, to introduce experimental work, to teach students to think and draw conclusions. Chemistry as a basic first-year course should also enable students to better understand chemistry and facilitate attending courses like Biochemistry, Physiology, Pharmacology and clinical courses.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam	Yes	Major preliminary exam	
Rules of grading and additional information					
<p>Attending all forms of academic instruction is obligatory. Students are obliged to prepare for given seminar topics and laboratory exercises in advance. Every absence from seminar or laboratory exercise must be made up before attending partial tests or final exam. After completing all forms of academic instruction and making up excused absences, a student is given a signature which is required for attending the final exam in Chemistry.</p> <p>The exam is a combination of written and oral exams. Only those students who have demonstrated satisfactory performance in the written exam, may take the oral exam. The maximum number of points achievable in the written exam is 30 and the minimum number needed to pass the written exam is 16. If a student achieves 15 or more points from two partial tests, he or she will not have to attend the written exam. Once a student has passed the written exam, he or she is not required to take the written exam for the current academic year. Students attending the written exam for the third time within the same academic year can attend the oral exam if they achieve at least 13 points in the written exam.</p> <p>Students should prepare for the exam from the material given during instruction or present on the official website as well as the assigned literature.</p>					

## Weekly teaching plan

### 1. component

#### Lecture topics:

1. Intramolecular and intermolecular forces. Chemical bonds and van der Waals forces. Binding energy. Coordinative bond, complex compounds. Hydrogen bond. The structure and properties of water. Water in the human body. Inorganic substances in the oral cavity.
2. Solution. Classification and properties of solutions. Solubility. Enthalpy of solvation. Effect of temperature and pressure on the solubility. Solubility of gases - Henry's law. The distribution of substances between the two solvents. Water as solvent. Hydrophobic and hydrophilic substances. Vapor pressure-effect of temperature and concentration, Raoult's law. Colligative properties of solutions. Boiling point elevation. Freezing point depression. Osmosis and osmotic pressure. Measurement of colligative properties. Saline. Constitutive properties of the solutions. Surface tension. Capillary action, surface-active and inactive materials. The strength of the electrolyte, dissociation constant and the degree of dissociation. Conductivity of the electrolyte. Acid and base definitions and properties. Colloids-structure and properties. Adsorption. Donnan's equilibrium.
3. Chemical equilibrium. The law of mass action. The influence of various factors on the equilibrium. LeChatelier's principle. Dilution law. Solubility product. Slightly soluble salts. Tooth enamel - spoilage and protect teeth. Water balance in the body.
4. Energetics of chemical reactions. Chemical and energy changes. General concepts in energetics. Organism as a chemical system. Thermodynamics of living organisms - 1st and 2nd law of thermodynamics. Gibbs energy as a criterion for the spontaneity of the process. Coupled reactions. High energy compounds and energy utilization of biochemical exergonic reactions.
5. Electrochemical reactions. Electrolytic and galvanic cells. Potential of the redox potential system, redox potential of the biochemical system. Concentration cell. Electrochemical processes in the oral cavity. Corrosion.
6. Kinetics of chemical reactions. The rate of reaction. Effect of concentration and temperature on the rate of the reaction. Mechanism of the reaction, transition state and the energy diagram of the reaction. Influence of other factors on the rate of the reaction (solvent, ionic strength, catalysts). Photochemical processes.
7. Organic Chemistry. Orbital structure of carbon and its hybridization. Energy and bond length in organic molecules. Physical and chemical properties of organic compounds, the biological significance. Isomers of organic compounds (constitutional, tautomerism, stereoisomerism). Resonance stabilization. Hydrocarbons (aliphatic and cyclic). Polycyclic compounds. Halogenated derivatives of hydrocarbons. Aromatic hydrocarbons. Polynuclear aromatic compounds.
8. Alcohols, phenols and ethers. Reactions and biologically significant examples of alcohols and phenol.
9. Aldehydes and ketones. Reactions and biologically significant representatives of aldehydes and ketones.
10. Carboxylic acids and their derivatives. Acyl halides, amides, anhydrides, esters. Halogen-, hydroxy and oxo-acid.
11. Compounds with sulfur. Thiols and their oxidation products, thioesters, sulfonamides. Compounds with nitrogen (nitro compounds, amines, amino alcohols, nitriles). Heterocyclic compounds and their derivatives.
12. Derivatives of carbonic acid and urea. Guanidine and its biologically important derivatives - creatine, creatine phosphate.
13. Carbohydrates - classification, oxidation and reduction reactions. Biologically significant representatives of monosaccharides. Disaccharides. Polysaccharides. N- and O-glycosides. Deoxy sugars, amino sugars, and phosphorylated sugar.

14. Lipids (simple and complex lipids - phospholipids, sphingolipids). Isoprenoid lipids-steroids. 15. Amino acids - classification, peptide bond, isoelectric point, the reactions of amino acids. Peptides and proteins - structure and function
<b>Seminar topics:</b>
1. Fundamentals of stoichiometry. Gas laws. 2. Solution - colligative properties, osmosis, osmotic pressure, osmole, isotonic solution. Constitutive properties - surface tension, diffusion. 3. Neutralization and hydrolysis reactions. 4. Thermodynamic functions. Gibbs energy of biological processes. Bioenergetics of redox reactions. 5. Redox reactions. 6. pH and buffers. Acids and bases. Types of acidity. Definitions, examples, mechanism of action of buffers, buffer capacity. Henderson-Hasselbalch equation. 7. Electrolysis. Nernst equation, the potential of the redox reaction. Daniell cell. Kinetics of chemical reactions. 8. Colloidal dispersion systems - distribution, preparation, properties, decomposition. Colloid charge, isoelectric point. Dialysis.
<b>Laboratory practicals topics:</b>
1. Preparation of solution. 2. Volumetric analysis. Acidimetric and alkalimetric titration. 3. Redox reaction reactions (manganometric and iodometric titrations). 4. pH measurement. Preparation of buffers and determination of buffer capacities. 5. Preparation of the reaction mixtures and monitoring the rate of chemical reactions. 6. Optical Methods – spectrophotometry and polarimetry. 7. Preparation and properties of colloidal dispersion systems. Coagulation of colloids. 8. Applying the equilibrium law - slightly soluble salts.
<b>Course leader and associates</b>
Professor Jasna Lovrić, Msc, PhD Associate Professor Blaženka Foretić, Msc, PhD Associate Professor Željka Vukelić, Msc, PhD Igor Picek, PhD Danijela Cvijanović, Master of chem. Vladimir Damjanović, Master of chem.
<b>Literature</b>
<b>Required literature:</b>
1. V. Hankonyi, V. Ondrušek: Selected topics of physical chemistry, School of Medicine University of Zagreb, 1990. 2. V. Hankonyi: Organic chemistry for students of medicine, the manual 3. N. Burger: Zbirka zadataka iz kemije, Medicinska naklada, 2012. 4. J. Lovrić: pH i puferi, Medicinar 2004; 45(2):20 5. B. Foretić, J. Lovrić, Ž. Vukelić: Materials for seminars and labs for chemistry for dental students, the manual, 2012.
<b>Recommended literature:</b>
1. R. Chang: General Chemistry, The Essential Concept, Mc Graw Hill, Higher Education, New York, 2006.

2. M. M. Silberberg: Chemistry, The molecular Nature of Matter and Change, Mc Graw Hill, New York, 2000.
3. J. Gorzynski Smith, Organic Chemistry, Mc Graw Hill, Higher Education, New York, 2006.

### Required knowledge

Students should acquire basic theoretical knowledge of physical and organic chemistry. Students also must master basic laboratory techniques, then the experimental work in the laboratory. Physical chemistry curriculum includes bioenergetics with electrochemistry and photochemistry, kinetics, chemical equilibrium and the theory of solutions. Classes devoted to organic chemistry presents a general overview of chemistry of organic compounds with special reference to simple and complex biologically important molecules such as carbohydrates, lipids, amino acids and proteins, nucleic acids and alkaloids.

### Required skills

Elementary laboratory procedures: weighing, pipetting, titrating, preparing solutions of known composition, diluting solution.  
 Classical methods for quantitative chemical analysis of acids, bases, oxidizers and reducing agents.  
 Instrumental techniques of quantitative analysis - spectroscopy and polarimetry.  
 Preparation of buffer mixtures, colorimetric and potentiometric determination of pH, determination of buffer capacity.  
 Preparation of colloidal systems and coagulation of colloids. Dialysis.  
 Quantitative analysis of some biologically important slightly soluble salts, and reaction for the detection of major functional groups of organic compounds.

### Exam questions

1. Types of chemical processes - neutralization, hydrolysis, formation of insoluble compound. Explanation by example.
2. Expression of quantitative composition of the substances, Avogadro's constant, number of moles, molarity and molality.
3. Avogadro's law, molar volumen, Charle's and Boyle's law.
4. Expression of the quantitative composition of the mixture.
5. Dalton's law of partial pressure – definition, calculation. Composition of the air.
6. The ideal gas equation - significance of symbols and units.
7. Gas laws.
8. Intra - and intermolecular forces.
9. Hydrogen bond.
10. Coordinative bond - formation, ligands, nomenclature – examples.
11. The structure and properties of water; the water in the human body.
12. Solubility - factors that influence the solubility, solubility product - meaning.
13. Solutions -classification by type of particle, the density of the solution, properties of solutions.
14. Solution - water as the solvent, the enthalpy and entropy of solvation; Nernst law.
15. The degree of dissociation - definition, dependency on external factors, determination.
16. Acids and bases (Arrhenius, Bronsted, Lewis). Explanation by example.
17. Hydrolysis as a Bronsted acid-base reactions. Hydrolysis of organic compounds. Examples.
18. The concept of energy, system, environment, reversible and irreversible processes.
19. System properties and changes of the system, the standard thermodynamic

- functions.
20. The first law of thermodynamics.
  21. The reaction enthalpy - definition, dimension, sign, determination.
  22. Enthalpy of combustion and the energy value of food ingredients. Enthalpy of hydrolysis and neutralization - explanation by example.
  23. Enthalpy of chemical bonds. Enthalpy of solvation.
  24. Thermochemical laws.
  25. The second law of thermodynamics.
  26. Entropy - definition and meaning.
  27. The reaction entropy, sign, dimension, overall change in entropy for the spontaneous reaction.
  28. Gibbs energy of biological processes.
  29. Gibbs energy and spontaneity of the process - the impact of enthalpy, entropy and temperature.
  30. Endergonic and exergonic reactions; coupled reactions.
  31. Energy rich compounds, phosphorylation.
  32. ATP - the energy rich compound, the structure.
  33. Physicochemical methods for the determination of substances - polarimetry and spectrophotometry.
  34. Lambert - Beer's law and its application.
  35. Gibbs energy of redox – reactions.
  36. Meaning of the potential of the redox system.
  37. Nernst equation, standard reduction potential.
  38. Daniell cell.
  39. Concentration cell.
  40. Chemical equilibrium - thermodynamic and kinetic point of view.
  41. Steady state of the open systems ("steady state").
  42. The equilibrium constant and Gibbs energy.
  43. Le Chatelier's principle.
  44. Ostwald's dilution law.
  45. The rate of reactions. Reaction order.
  46. First order reactions.
  47. Effect of temperature on reaction rate.
  48. Types of catalytic processes and the influence of catalyst concentration on the reaction rate.
  49. Vapor pressure.
  50. Colligative properties of solutions.
  51. Osmosis, osmotic pressure, osmoles, isotonic solution.
  52. Constitutive properties of solutions.
  53. Ion-product constant of water, pH scale.
  54. Types of acidity.
  55. Buffers - definition, examples, mechanism of buffer action.
  56. Buffer systems of the body, the composition
  57. The mechanism of buffer action.
  58. Buffer capacity.
  59. The importance of buffers, buffer Henderson-Hasselbalch equation.
  60. Colloids - distribution, stability, charge, isoelectric point.
  61. Colloids - optical and electrical properties, dialysis.
  62. Macromolecular colloids.
  63. Donnan equilibrium.
  64. Adsorption.
  65. Functional groups of organic compounds.

66. Isomerism - constitutional, configurational, stereoisomerism, tautomerism.
67. Hydrocarbons, halogenated derivatives of hydrocarbons.
68. Properties of compounds with a double bond.
69. Aromatic compounds.
70. Benzene - properties and characteristic reactions.
71. Alcohol - biologically important compounds, reactions.
72. Glycerol - reactions, properties.
73. Phenols - biologically important compounds, reactions.
74. Aldehydes and ketones - biologically important compounds, reactions.
75. Carboxylic acid - properties, example.
76. Aromatic acids and derivatives.
77. Saturated and unsaturated mono and dicarboxylic acids.
78. Fatty acids, fatty acid oxidation.
79. Esters of inorganic and organic acids.
80. Halogen-, hydroxy-, oxo- acid - biologically important compounds, reactions.
81. Carboxylic acid derivatives - biologically important compounds, reactions.
82. Amino acids - properties, optical activity, reaction.
83. Biogenic amines - formation of biologically important compounds.
84. Urea and its derivatives.
85. Amines.
86. Amino alcohols and aminophenols.
87. Sulfur containing compounds.
88. Nitrogen containing compounds.
89. Heterocyclic compounds – examples.
90. Structure of nucleoside and nucleotide.
91. Carbohydrates - classification, oxidation and reduction reactions.
92. Monosaccharides.
93. General reactions of monosaccharides.
94. Cyclic forms of monosaccharides.
95. Disaccharides.
96. N- and O-glycosides.
97. Types of isomerism in sugar, mutarotation.
98. Deoxy sugars, aminosugars, phosphorylated sugars.
99. Polysaccharides.
100. Simple lipids.
101. Isoprenoid lipids – steroids.
102. Complex lipids - phospholipids, sphingolipids, structure.
103. Peptides – examples.
104. Protein – the structure, classification of proteins.

### 3.2.33 Surgery

Basic information about the course					
Title	Surgery				
Code	71305	Abbreviation	412OKIRU		
Total ECTS points	7	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Surgery				
Course leader	August Mijić, MD, PhD, Professor				
Course load					
	1	2	Total		
Lectures	15	15	30		
Seminars	15	15	30		
Clinical practicals	15	15	30		
ECTS			7		
Course description					
<p>The objectives are to learn and to understand principles in surgery, basic surgical skills and how to apply them. All topics in lectures are precisely chosen thus every student of dental medicine can easily be informed about basic diagnostic and therapeutic management in surgery. During practical exercises students rotate through a variety of surgical units including inpatient and outpatient clinic, departments, ER admittance, critical care and polytrauma management units as well as sterilization unit and operating room. Students get basic information about procedures in abdominal surgery, vascular surgery and traumatology.</p> <p>We pay special attention to practical exercises in handling with surgical instruments and suture techniques that are very important for practice in dental medicine.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1. Gastric and esophageal diseases</div><div>2. Surgery of malignant large bowel diseases</div><div>3. Brain tumors, diagnostic and treatment</div><div>4. Plastic surgery and hand injuries</div><div>5. Benign large bowel diseases</div><div>6. Adult urology (Chosen topics)</div></div>					

<ul style="list-style-type: none"> <li>7. Endocrine surgery</li> <li>8. Fractures, dislocations, osteomyelitis</li> <li>9. Vascular surgery</li> <li>10. Vascular surgery emergencies</li> <li>11. Minimally invasive surgery</li> <li>12. Upper gastrointestinal bleeding</li> <li>13. Operative and nonoperative treatment of fractures</li> <li>14. Chosen topics</li> </ul>
<b>Seminar topics:</b>
Principles in diagnostics and management in vascular surgery. Diagnosis and management of gastrointestinal and hepatobiliary diseases. Emergencies in abdominal surgery. Spine disorders. Plastic and reconstructive surgery. Internal fixation of long bones and hip arthroplasty. Principles in anesthesiology. Adult urology. Minimally invasive surgery.
<b>Clinical practicals topics:</b>
<p>Department of Vascular Surgery – Educational round. Department of Abdominal Surgery – Educational round.</p> <p>Department of Traumatology – Educational round.</p> <p>Outpatient clinic - gastroenterology (gastroscopy), coloproctology (colonoscopy), traumatology (cast and brace techniques).</p> <p>Surgical procedures in vascular, abdominal surgery and traumatology.</p>
<b>2. component</b>
<b>Lecture topics:</b>
<ul style="list-style-type: none"> <li>1. Gastric and esophageal diseases</li> <li>2. Surgery of malignant large bowel diseases</li> <li>3. Brain tumors, diagnosis and treatment</li> <li>4. Plastic surgery and hand injuries</li> <li>5. Benign large bowel diseases</li> <li>6. Adult urology (Chosen topics)</li> <li>7. Endocrine surgery</li> <li>8. Fractures, dislocations, osteomyelitis</li> <li>9. Vascular surgery</li> <li>10. Vascular surgery emergencies</li> <li>11. Minimally invasive surgery</li> <li>12. Upper gastrointestinal bleeding</li> <li>13. Operative and nonoperative treatment of fractures</li> <li>14. Chosen topics</li> </ul>
<b>Seminar topics:</b>
<ul style="list-style-type: none"> <li>1. Gastric and esophageal diseases</li> <li>2. Surgery of malignant large bowel diseases</li> <li>3. Brain tumors, diagnosis and treatment</li> <li>4. Plastic surgery and hand injuries</li> <li>5. Benign large bowel diseases</li> <li>6. Adult urology (Chosen topics)</li> <li>7. Endocrine surgery</li> <li>8. Fractures, dislocations, osteomyelitis</li> <li>9. Vascular surgery</li> <li>10. Vascular surgery emergencies</li> </ul>

<ul style="list-style-type: none"> <li>11. Minimally invasive surgery</li> <li>12. Upper gastrointestinal bleeding</li> <li>13. Operative and nonoperative treatment of fractures</li> <li>14. Chosen topics</li> </ul>
<b>Clinical practicals topics:</b>
<ul style="list-style-type: none"> <li>1. Gastroenterology Outpatient Clinic (Gastroscopy)</li> <li>2. Coloproctology Outpatient Clinic (Digital rectal exam, colonoscopy)</li> <li>3. Neurosurgery Outpatient Clinic</li> <li>4. Plastic and reconstructive outpatient clinic</li> <li>5. Urology Outpatient and Inpatient clinic</li> <li>6. Endoscopic surgical procedures (Operating room)</li> <li>7. Traumatology Outpatient Clinic (reduction, immobilization)</li> <li>8. Vascular Outpatient clinic</li> <li>9. Department of Vascular Surgery</li> <li>10. Department of Minimally Invasive Surgery</li> <li>11. Surgical procedures in traumatology (Operating room)</li> <li>12. Round at different departments</li> </ul>
<b>Course leader and associates</b>
Miroslav Bekavac – Bešlin, MD, PhD, Professor Mario Ledinsky, MD, PhD, Professor Aljoša Matejčić, MD, PhD, Professor Mario Zovak, MD, PhD, Assistant Professor Dinko Vidović, MD, PhD, Senior Research Associate
<b>Literature</b>
<b>Required literature:</b>
<ul style="list-style-type: none"> <li>1. „Kirurgija za stomatologe“ Miroslav Bekavac – Bešlin, Mario Ledinsky, Aljoša Matejčić, August Mijić, Lucijan Negovetić, Medicinska Naklada, Zagreb, 2003.</li> </ul>
<b>Recommended literature:</b>
<b>Required knowledge</b>
Principles in surgery. Surgical clinical exam, diagnostics and surgical treatment with special attention to wound management, ambulatory surgery, immobilization and treatment of critically injured patients.
<b>Required skills</b>
<b>Exam questions</b>
<ul style="list-style-type: none"> <li>1. Asepsis and antisepsis</li> <li>2. Surgical site infections</li> <li>3. Wound healing</li> <li>4. Burns</li> <li>5. Polytrauma</li> <li>6. Immobilization</li> <li>7. Craniocerebral trauma</li> <li>8. Pneumothorax</li> </ul>

9. Lung tumors
10. Breast tumors
11. Artery diseases
12. Vein diseases
13. Cerebrovascular disease
14. Internal fixation
15. Open fractures
16. Closed fractures
17. Fracture healing
18. Complications associated to appendicitis
19. Acute pancreatitis
20. Esophageal diseases
21. Gastric diseases
22. Liver surgery
23. Small bowel diseases
24. Large bowel diseases
25. Hematemesis and melena
26. Hernias
27. Ileus

### 3.2.34 Clinical Pharmacology

Basic information about the course					
Title	Clinical pharmacology				
Code	86997	Abbreviation	521IKFAR		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning			
Department	Chair of Pharmacology				
Course leader	Kata Rošin-Grget, DDS; PhD, Associate Professor				
Course load					
	1		Total		
Seminars	15		15		
ECTS			1.5		
Course description					
<p>The aim of the course is, using a system of problem based learning (PBL), to teach and motivate student to the selection of the drug in a rational and responsible approach, which is much more than knowing the names of the drug and disease diagnosis. Over 15 seminars, in the duration of 1 hour each, problems of individual clinical cases will be presented to students for which they should propose the most suitable treatment. After established diagnosis, together with the patient's known features (age, sex, body weight, physiological condition), the student should prepare questions for taking the targeted history that will provide insight into the disease from which the patient suffers, with special reference to the organs involved in the pharmacokinetics of drugs (e.g. kidney disease which can lead to decreased excretion of the drug and the image of relative drug overdose) and in pharmacodynamics. Furthermore, the goal is to anamnestically find out which drugs patient is already taking, in order to anticipate possible interactions between drugs, and possible adverse reactions. Assuming good knowledge of all the features of the drug (as student was taught during the courses Basic and Dental Pharmacology) and based on the information obtained from the patient, the student should be able to estimate the ratio of benefit and potential harm ("risk / benefit") of therapy chosen to apply, and on the basis of this judgment, make a responsible decision on which drug to choose, in what dose and time intervals to apply the chosen drug. Furthermore, student should determine the duration of therapy, and the precautions that the patient should carry out, in relation to the occurrence of possible side effects or interactions with other drugs.</p>					
Criteria for taking the course exam					
Exam in dental pharmacology is required for registration for Clinical Pharmacology.					
What is graded					
Written exam		Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	Yes
Rules of grading and additional information					
Test of knowledge will be conducted at the end of the seminars, in written form of Big colloquium. Two tasks at the colloquium will be assessed each with 30 points. A passing score is 41 points.					
Weekly teaching plan					

<b>1. component</b>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Factors that may affect the choice of drug</li> <li>2. Problem: the elderly patient</li> <li>3. Problem: pregnant and breastfeeding women</li> <li>4. Problem: the patient with cardiovascular disease</li> <li>5. Problem: the patient with kidney and liver disease</li> <li>6. Problem: the patient with diabetes</li> <li>7. Problem: immunosuppressed patient</li> <li>8. Problem: the patient with an allergy</li> <li>9. Problem: patients with bronchial asthma and hyperthyroidism</li> <li>10. Problem: the patient who takes a larger number of drugs - interaction</li> <li>11. Problem: self-medication-possible side effects</li> <li>12. Problem: the patient with contraindication to the use of local anesthetics or their additions</li> <li>13. Problem: patients with transplanted organ and blood clotting disorder</li> <li>14. Problem: the patient treated with psychoactive drugs</li> <li>15. Colloquium: Analysis and recommendations for therapy of two dental patients</li> </ol>
<b>Course leader and associates</b>
Kata Rošin-Grget, DDS; PhD, Associate Professor Kristina Peroš, DDS, PhD, Senior Research Fellow Ivana Šutej, DDS, PhD, Senior Research Fellow
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Ileana Linčir et all. Pharmacology for dentistry, 3rd. ed. Zagreb: Medicinska naklada; 2011.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Francetić I., Vitezić D. Basics of clinical pharmacology. Zagreb:Medicinska naklada;2007.</li> <li>2. Bennett PN, Brown MJ: Clinical Pharmacology, 10.ed. London: Churchill Livingstone; 2008.</li> <li>3. Francetić I. et al. Pharmacotherapeutic manuel . 6th ed. Zagreb: Medicinska naklada, 2010.</li> </ol>
<b>Required knowledge</b>
Student should gain knowledge of the clinical and pharmacological principles that are necessary for the treatment of dental patients, depending on patient's characteristics and pathological changes in orodental system that needs treatment. Based on the diagnosis of diseases in orodental system, students should evaluate the need for the drug administration.
<b>Required skills</b>
The student must be able to use information about drugs and, based on the known features of the drug, to decide which treatment to apply for the patient. Also, the student must be capable in rational drug selection, determination of dose and length of treatment, methods of administration of drug and giving instructions to patient on how to take the drug and alert on possible side effects, as well as how to respond if any of the side effects appears. The student must be able to use the information for the formal application of side effects.
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. Principles of clinical pharmacological therapy in patients with a diagnosis of orodental diseases</li> </ol>

2. Elderly patients with a diagnosis of orodental diseases: approach and solution of problems, and the analysis and evaluation of the proposed therapy.
3. Pregnant and breastfeeding women diagnosed with orodental diseases: rest like in problem No 2.
4. Cardiovascular patients diagnosed with orodental diseases: rest like in problem No 2.
5. Patients with kidney and liver disease, and a diagnosis of orodental diseases: rest like in problem No 2.
6. Patients with diabetes and a diagnosis of orodental diseases: rest like in problem No 2.
7. Immunosuppressed patient with a diagnosis of orodental diseases: rest like in problem No 2.
8. Patient with allergy and diagnosed orodental diseases: rest like in problem No 2.
9. Patients with bronchial asthma and hyperthyroidism diagnosis and orodental diseases: rest like in problem No 2.
10. Patients who take many medications and possible interactions with a drug that is applied by doctor of dental medicine: rest like in problem No 2.
11. Automedication and possible interactions and side effects: rest like in problem No 2.
12. Patients with contraindications for the use of local anesthetics or their additions: rest like in problem No 2.
13. Patients with transplanted organ and blood clotting disorder and the diagnosis of orodental diseases: rest like in problem No 2.
14. Patients treated with psychoactive drugs and diagnosed orodental diseases: rest like in problem No 2.

### 3.2.35 Clinical Periodontology

Basic information about the course					
Title	Clinical periodontology				
Code	71306	Abbreviation	512OKPAR		
Total ECTS points	7	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Periodontology				
Course leader	Professor Darije Plančak, DMD, MSc, PhD				
Course load					
	1	2	Total		
Lectures	15		15		
Special clinical practicals	45	45	90		
ECTS			7		
Course description					
<p>Before taking the Clinical Periodontology course, the student is required to pass the exam in the Preclinical Periodontology course. Classes of Clinical Periodontology continue to teach where Preclinical Periodontology finished, and together they cover, in accordance with the recommendations of the European Federation of Periodontology (EFP), 3-semester program with theoretical (lectures) and practical component (preclinical and clinical practice). The practical component consists of the clinical program, and students learn how to diagnose periodontal disease, periodontal treatment planning, overcoming problems of periodontal instrumentation, and achieve the competence to assist in the periodontal surgical procedures. In the clinical treatment of patients, students need to initiate, conduct and complete causal therapy (initial instructions in hygiene and causal periodontal therapy, scaling and root planning, and periodontal therapy with antiseptic and/or antibiotic control), and also conduct the supportive periodontal therapy as a prerequisite for the completeness of the program. Furthermore, comprehensive knowledge of surgical periodontal procedures and the competence to assist in surgical periodontal procedures is required.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	Yes
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Students' knowledge is assessed in terms of their theoretical knowledge and clinical practice. Case report must be structured as a paper for publication in a professional journal. After completing 10th semester students take an exam that has a practical, written and oral component. Practical and written examination components consist of a presentation of selected clinical cases with complete documentation and treatment planning. The oral exam consists of interviews with some of the lecturers from the Department of Periodontology.</p>					
Weekly teaching plan					

<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Periodontitis as a risk for systemic health</li> <li>2. Antibiotics in periodontal treatment</li> <li>3. Root surface instrumentation and conditioning</li> <li>4. Suturing, periodontal dressing, postoperative care and periodontal surgery outcome</li> <li>5. Resective osseous surgery, distal ridge procedures</li> <li>6. Gingival augmentation</li> <li>7. Root coverage</li> <li>8. Crown lengthening</li> <li>9. Introduction to regenerative therapy of periodontium</li> <li>10. Wound healing, guided tissue regeneration</li> <li>11. Furcation treatment</li> <li>12. Endodontics and periodontology</li> <li>13. Occlusal therapy of the patients with reduced periodontium</li> <li>14. Orthodontics and periodontology</li> <li>15. Basic periodontal aspects of osseointegrated dental implants</li> </ol>
<b>Special clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Examination of the patient with periodontal disease</li> <li>2. Periodontal disease diagnostics</li> <li>3. Treatment planning</li> <li>4. Cause related periodontal therapy</li> <li>5. Surgical periodontal therapy</li> <li>6. Supportive periodontal therapy</li> </ol>
<b>2. component</b>
<b>Special clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Examination of the patient with periodontal disease</li> <li>2. Periodontal disease diagnostics</li> <li>3. Treatment planning</li> <li>4. Cause-related periodontal therapy</li> <li>5. Surgical periodontal therapy</li> <li>6. Supportive periodontal therapy</li> </ol>
<b>Course leader and associates</b>
<p>Professor Darije Plančak, DMD, MSc, PhD  Professor Marija Ivić-Kardum, DMD, MSc, PhD  Professor Andrej Aurer, DMD, MSc, PhD  Assistant prof. Darko Božić, DMD, MSc, PhD  Ana Badovinac, DMD  Ivan Puhar, DMD  Domagoj Vražić, DMD</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Herbert F. Wolf, Klaus H. Rateitschak, Edith M. Rateitschak, Thomas M. Hassell. Parodontologija, 3th ed. Zagreb Naklada Slap;2009.</li> <li>2. Jan Lindhe, Thorkild Karring, Niklaus P. Lang. Klinička parodontologija i dentalna implantologija, 1st Croatian ed, Zagreb, Globus, 2004.</li> </ol>

<b>Recommended literature:</b>
1. Michael G. Newman, Henry H. Takei, Fermin A. Carranza. Carranza's Clinical Periodontology, 10th edition, Philadelphia, WB Saunders Co., 2006
<b>Required knowledge</b>
<ol style="list-style-type: none"> <li>1. Diagnostics, documentation and treatment planning for periodontal patients</li> <li>2. Inclusion of periodontal treatment in the comprehensive treatment of the patient</li> <li>3. Describe and manage nonsurgical periodontal treatment of periodontitis patients</li> <li>4. Understanding and knowing of wound healing and surgical principles in periodontology</li> </ol>
<b>Required skills</b>
<ol style="list-style-type: none"> <li>1. Examination of the patient and recognition of periodontal diseases</li> <li>2. Periodontal indices determination</li> <li>3. Periodontal disease diagnostics</li> <li>4. Supragingival instrumentation</li> <li>5. Subgingival instrumentation</li> <li>6. Periodontal probing</li> <li>7. Motivation of the patient and oral hygiene instructions</li> <li>8. Supragingival and subgingival instrumentation with sonic and ultrasonic instruments</li> <li>9. Treatment planning and explaining the treatment</li> <li>10. Periodontal surgery planning</li> <li>11. Carrying out supportive periodontal therapy</li> <li>12. Periodontal treatment based on PBL principles</li> </ol>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. Periodontitis as a risk for systemic health</li> <li>2. Antibiotics in periodontal treatment</li> <li>3. Root surface instrumentation and conditioning</li> <li>4. Suturing, periodontal dressing, postoperative care and periodontal surgery outcome</li> <li>5. Resective osseous surgery, distal ridge procedures</li> <li>6. Gingival augmentation</li> <li>7. Root coverage</li> <li>8. Crown lengthening</li> <li>9. Introduction to regenerative therapy of periodontium</li> <li>10. Wound healing, guided tissue regeneration</li> <li>11. Furcation treatment</li> <li>12. Endodontics and periodontology</li> <li>13. Occlusal therapy of the patients with reduced periodontium</li> <li>14. Orthodontics and periodontology</li> <li>15. Basic periodontal aspects of osseointegrated dental implants</li> </ol>

### 3.2.36 Comparative Odontology

Basic information about the course			
Title	Comparative odontology		
Code	71307	Abbreviation	521IKODO
Total ECTS points	1.5	Status	Elective
Exam	Yes	Calculated in grade average	Yes
Language of teaching	Croatian	e-learning	No
Department	Department of Dental Anthropology		
Course leader	assistant professor Marin Vodanović		
Course load			
	1		Total
Lectures	10		10
Seminars	5		5
ECTS			1.5
Course description			
<p>In accordance with the subject matter, Comparative Odontology completes students' education with specific insight into the structure and function principles of the wild animals teeth, with consistent comparing with human teeth. Students acquire knowledge about teeth characteristics of fish, amphibians and reptiles, with a special accent on the teeth of wild mammals. Throughout this course students will become acquainted with specific traits of wild carnivores' and herbivores' teeth, as well as with special adaptations to different types of diet. A particularity of this course is special attention given to continuously growing teeth; critical observation is encouraged towards certain pathological conditions on animal teeth, both with the mentioned continuously growing teeth and those whose growth is limited. Particular attention will be given to techniques of determining age and their applicability to particular tooth's characteristics, which is a significant part of population research and is frequently practiced in laboratories all over the world. The aim of these lectures is to enlarge students' competencies in the field of comparative odontology, and to help form experts able to recognize, understand and prevent pathological teeth conditions, as well as to estimate age correctly and reliably, which is an important part of cultivation and population research.</p>			
Criteria for taking the course exam			
What is graded			
Written exam	Yes	Oral exam	Practical exam
Seminar		Minor preliminary exam	Major preliminary exam
Rules of grading and additional information			
Weekly teaching plan			
1. component			
Lecture topics:			
1. Evolutional development and teeth morphology			

<ol style="list-style-type: none"> <li>2. Function and changing of teeth in wild animals</li> <li>3. Fish denture</li> <li>4. Amphibians' and reptiles' denture</li> <li>5. Wild mammals' denture</li> <li>6. Continuously growing teeth</li> <li>7. Pathology of continuously growing teeth</li> <li>8. Pathology of limited growth teeth</li> <li>9. Importance of pathological changes on wild animals' teeth</li> <li>10. Evaluation of wild game age by teeth examination</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Function and changing of teeth in wild animals</li> <li>2. Wild mammals' denture</li> <li>3. Pathology of continuously growing teeth</li> <li>4. Evaluation of wild game age by teeth examination</li> </ol>
<b>Course leader and associates</b>
Prof. dr. sc. Vera Njemirovskij
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Kallay,J. (1977): Komparativna odontografija. Izdavački zavod Jugoslavenske akademije, Zagreb.</li> <li>2. Miles,A.E.W., Grigson C. (1990): Colyer's variations and diseases of the teethof animals, revised edn.Cambridge University press, Cambridge.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Simon Hillson (2009): Teeth .Cambridge Manuals in Archaeology,Cambridge,University Press</li> </ol>
<b>Required knowledge</b>
<p>Comparative odontology completes the education of students of biomedical group by specific insights into structure, principles of functioning and pathological developments in the area of animal teeth. Attendants acquire knowledge about characteristics of fish, amphibian and reptile denture, with special accent on mammal denture. Further on, students are introduced to comparative differences which depend on diet, evolutionary adaptation, basic characteristics of continually growing teeth, as well as pathological developments on animal teeth and their causes. Also, in the final stage of the course, students are acquainted with principles and importance of animal teeth in age estimation.</p>
<b>Required skills</b>
<p>Comparative odontology curriculum, especially the part comprised of seminars, expands vertically and encourages critical consideration of teeth conditions and their causes. Students acquire ability to assess the most probable causes of certain pathological conditions, as well as its influence on the individual organism within the environment. The particularity of this course is providing students with skill necessary for realistic assessment of domestic and wild animals' age by the tooth's basic characteristics, whether it be in its original place, taken out, intact or cut.</p>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. Development of animal teeth, provenance, evolutionary development</li> <li>2. Placement on the phylogenetic tree and its influence on particularities of the denture</li> </ol>

3. Define groups and differences between dentures by their shape
4. Name and exemplify kinds of changing teeth
5. Define epidermal tooth, its characteristics and where it can be found
6. Describe differences in structure and function of various types of molar teeth in carnivores and herbivores
7. Name, define and exemplify means of fixing teeth into the jaw
8. Fish denture, examples of heterodonty
9. Pharyngeal teeth – their characteristics and positioning
10. Characteristics of amphibian dentition
11. Characteristics of reptile dentition
12. Venomous teeth in vipers, kinds and characteristics
13. Position and particularities of fish, amphibian and snake teeth
14. Differences between alligators and crocodiles
15. Characteristics of mammals' dentition
16. Define linear regression in mammals' teeth
17. Characteristics of marsupial dentition
18. Insectivore dentition, presence of tubercles
19. Explain pseudo-monophyodont dentition
20. Explain relation between teeth reduction and temporal joint and its influence on the feeding habits
21. What are carnassials and which teeth compose them?
22. What are secodont teeth, and what are selenodont teeth?
23. Describe continuous growth teeth
24. Which animal species have such dentition?
25. Describe continuous growth teeth using the example of wild boar's denture
26. Rodent incisors – characteristics of their structure and growth
27. Explain the relation between growth and wear of teeth
28. Bacterial infection, possible means of development, consequences
29. Impact of trauma on the tooth
30. Complete and incomplete fracture
31. Malformations
32. Consequences of a loss of teeth from the upper or lower jaw
33. Dental caries
34. Fluoride contamination and its consequences
35. Dental pathology and its impact on the animal
36. Consequences of the irregular wearing of teeth
37. Define the striae of Retzius and age evaluation observing the tooth sections
38. Time of tooth eruption, changing of teeth, and age evaluation
39. Dental wear and secondary dentine (x-ray projections) in age evaluation
40. Causes of interference in age evaluation

### 3.2.37 Maxillofacial Surgery

Basic information about the course					
Title	Maxillofacial surgery				
Code	71308	Abbreviation	611OMKIR		
Total ECTS points	7	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Maxillofacial Surgery				
Course leader	Prof.dr.sc. Vedran Uglešić				
Course load					
	1		Total		
Seminars	30		30		
Special clinical practicals	45		45		
ECTS			7		
Course description					
<p>Purpose of the course is to enable students to master theoretical and practical knowledge and the basic skills in maxillofacial surgery. Considering the extremely functional and aesthetic significance of the region the purpose of this course is to:</p> <ul style="list-style-type: none"><li>• Introduce the students to the theoretical knowledge of the inflammatory processes mouth, face, jaw and neck and to differentiate them from other less common pathological conditions in this region.</li><li>• To adopt knowledge of the of head and neck oncology, deformities of soft tissues, bones and facial malformations and treatment options with special emphasis on the importance and necessity of a team approach to treatment. Basics inspection of function in children and adults with deformities, cephalometric methods and model analysis and insight into the surgical orthodontics.</li><li>• To enable the student to learn how to recognize and properly inspect the mouth, face and jaws, observe pathological condition, consider the differential diagnostic options and diagnostic specificity.</li></ul>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Student approaches an oral exam. The exam is based on the textbook and material adopted in seminars</p>					
Weekly teaching plan					
1. component					
Seminar topics:					
1. Introduction to Maxillofacial Surgery					

<ol style="list-style-type: none"> <li>2. Maxillofacial trauma surgery (Epidemiology, soft tissue injuries and fractures of the lower jaw)</li> <li>3. Maxillofacial trauma surgery (fractures of the middle face)</li> <li>4. Deformities of the facial bones (orthodontic treatment and Planning)</li> <li>5. Facial bone deformities (orthognathic surgery)</li> <li>6. Plastic and reconstructive surgery of the head and neck (circulation of the skin and mucous membranes, types and distribution of lobes, types of reconstruction)</li> <li>7. Inflammation in the maxillofacial region (odontogenic, non-odontogenic and specific inflamations)</li> <li>8. Differential diagnosis of jaw translucency</li> <li>9. Tumor Head and Neck Surgery (etiology, epidemiology, classification, pathology, tumor database)</li> <li>10. Tumors of the oral cavity</li> <li>11. Tumors of the skin, melanoma, tumors of the lip</li> <li>12. Tumors of the paranasal sinuses</li> <li>13. Tumor and non-tumor salivary gland diseases</li> <li>14. Maxillofacial malformations (epidemiology, etiology, the most common syndromes)</li> <li>15. Maxillofacial malformations (treatment)</li> </ol>
<b>Special clinical practicals topics:</b> <ol style="list-style-type: none"> <li>1. Patient medical history and the specifics in maxillofacial surgery</li> <li>2. Medical status of patients with head and neck diseases.</li> <li>3. Examination of patients with head and neck injuries</li> <li>4. Setting of intermaxillary fixation, osteosynthesis of facial bones (operations)</li> <li>5. Examination of patients with facial bone deformations, analysis of models and preoperative preparation</li> <li>6. Osteotomy of the mandible and maxilla (operation)</li> <li>7. Reconstruction of skin defect - local flap (operations)</li> <li>8. Large reconstruction of head and neck - myocutaneous or microvascular free flap (operations)</li> <li>9. Postoperative care (nursery)</li> <li>10. Differential diagnosis of skin lesions</li> <li>11. Neck dissection (surgery)</li> <li>12. Monoblock resection of intraoral cancer (surgery)</li> <li>13. Intraoral excision (operation)</li> <li>14. The procedure for the recruitment of new patients (clinic maxillofacial surgery)</li> <li>15. Operation of cleft lip / palate</li> <li>16. Postoperative patient monitoring (clinic maxillofacial surgery)</li> <li>17. Suturing on the model</li> <li>18. Small outpatient surgery (clinic maxillofacial surgery)</li> </ol>
<b>Course leader and associates</b> Prof. dr. sc. Vedran Uglešić Doc.dr. sc. Predrag Knežević Dr. sc. Aleksandar Milenović Lovro Grgurević, dr.dent.med
<b>Literature</b> <b>Required literature:</b> <ol style="list-style-type: none"> <li>1. Bagatin M, Virag M i sur.: Maksilofacijalna kirurgija. Školska knjiga, Zagreb, 1991.</li> <li>2. Virag M: Disekcija vrata: logika i klasifikacija. Medicinar 40 (suppl. 1); 45-50, 1999.</li> </ol>

**Recommended literature:**

1. Virag M: Deset predrasuda i nešto više činjenica o melanomu. Medicinar 45 (3); 14-18, 2004.
2. Aljinović-Ratković N.: Maksilofacijalna traumatologija, skripta, Zagreb 2003.
3. Strana literatura iz svih područja u dogovoru s nastavnikom

**Required knowledge**

Students should fully master propaedeutics and physical examination and be able to self-diagnose and do simple procedures. Students should know the implications of a particular diagnosis and follow the procedure for its confirmation and treatment. Students should see primary pathology not only in class but also in clinics, ward and operating room.

**Required skills**

Students must master skills of physical examination of oral cavity and neck. Evaluation of the general condition of patients with odontogenic abscesses. Physical examination of the head and neck trauma. Orientation reading the X-ray images and CT findings of head and neck. Assessment of hypermobility of the fractured upper jaw. Assess the level of fracture. Evaluation of occlusion in maxillary fractures. Clinical examination of the zygomatic fractures. Orientation of craniograms with fractures of the upper jaw. Clinical examination of the oral cavity in a fracture of the mandible. Orientation to the ortopantomograph with fracture of the mandible. Oral cavity examination in intraoral cancer. Clinical examination of lymph nodes. Clinical examination of parotid glands. Clinical examination of submandibular glands. Clinical examination of the sublingual glands. Clinical examination for the tumor of the maxillary sinus. Evaluation of occlusion in skeletal malformations. Set the working diagnosis of deformity based on the clinical picture. Orientation examination in cleft lip and cleft palate patients.

**Exam questions**

1. Submandibular abscess?
2. Sublingual Abscess?
3. Pterygomandibular abscess?
4. Temporal abscess?
5. Fractures of the zygomatic bone?
6. Fractures of the mandible?
7. LeFort II maxillary fractures?
8. "Blow out" fractures of the orbit?
9. Radical neck dissection?
10. Adenocystic carcinoma?
11. Carcinoma of the maxillary sinus?
12. Baseocellular cancer?
- 13th Progenia?
14. Microgenia?
15. Mandibular micrognathism?
16. Maxillary micrognathism?
17. Cleft palate?
18. Clefts of the lip?
19. Secondary surgery for cleft lip?
20. Secondary surgery for cleft palate?
21. Classification of clefts according to the embryological development?
22. Basics of His and Stark theory in embryology and pathogenesis of cleft?

23. Epidemiology of cleft - cleft incidence, differences in the frequency of different races and by gender?
24. How to interpret the etiology of emergence of cleft lip and palate?
25. Clefts within the syndrome?
26. What can we do for the prevention of cleft?
27. The role of the palatine plates in the treatment of cleft?
28. List the time sequence of basic primary surgery in the treatment of cleft lip and palate?
29. Start of cleft treatment, the arguments for early treatment of cleft palate?
30. Unilateral cleft lip surgery?
31. Bilateral cleft lip surgery?
32. Cleft palate surgery?
33. Secondary procedures on the lip and the palate, when do we do the corrections?
34. ENT and logopaedic treatment of patients with CLP?
35. The role of the orthodontist in the team treatment of the cleft?
36. What do we mean by team medical treatment and name the specialties participating in the team?
37. Conservative and surgical treatment of fractures of the mandible?
38. Types of osteosynthesis in fractures of the mandible?
39. Favourable and unfavourable directions of lower jaw fractures?
40. What are the direct and the indirect fractures of the lower jaw?
41. List types of fractures of lower jaw?
42. Complications of mandibular fracture?
43. What is it osteoplasty?
44. Difference between diplopia in entrapment of orbital contents and enoftalmus?
45. Clinical signs of zygomatic bone fractures?
46. Radiographic signs of fracture of zygomatic bone?
47. The difference in the clinical picture with LeFort I and LeFort II fractures of the upper jaw?
48. What is a dental compensation?
49. The role of the orthodontist in the treatment of skeletal deformities of the facial bones?
50. How to distinguish false from true mandibular prognathism?
51. When you operate on deformities of the facial bones?
52. Duration intermaxillary fixation in orthognathic surgery?
53. When to start active treatment of facial bone deformities?
54. Surgery in mandibular prognathism?
55. Surgery in mandibular micrognathism?
56. Surgery in maxillary micro and retrognathism?
57. The most common etiologic factors in facial deformities
58. Limits of orthognathic surgery?
59. The most common complications of facial deformity surgery?
60. Local and general symptoms and signs of inflammation?
61. Inflammation maxillofacial region?
62. Difference between empyema and abscesses?
63. Anatomical characteristics and inflammation of submandibular region?
64. Anatomical features of inflammation of pterygomandibular region?
65. Anatomical characteristics and inflammation of buccal region?
66. Anatomical features of inflammation of infratemporal and parotid area?
67. Radiographic diagnosis of inflammation?
68. Spreading odontogenic infections?
69. Diagnosis and treatment of mediastinitis?
70. Therapy of odontogenic inflammation?
71. Indications for intraoral incision?
72. The indications for extraoral incision?

73. Intracranial complications of inflammation?
74. Therapy of odontogenic inflammation?
75. Actinomycosis?
76. Tuberculosis of maxillofacial region?
77. Parotitis?
78. Mucocele?
79. Cheilitis?
80. TNM Classification?
81. Intraoral cancer (in general)?
82. Epidemiology of intraoral cancer?
83. Intraoral cancer therapy?
84. Neck dissection?
85. Commando operations (history and indications)?
86. Tumors of the maxillary sinus?
87. Classification of tumors of the maxillary sinus?
88. Differential diagnosis of maxillary sinus shadowing?
89. Diagnosis of tumors of the maxillary sinus?
90. Benign tumors of the skin?
91. Risk group for the development of skin cancer?
92. Squamous cell carcinoma of the skin?
93. Basocellular skin cancer?
94. Melanoma (epidemiology)?
95. Classification of melanoma according to Clark and Breslow?
96. Therapy of melanoma?

### 3.2.38 Microbiology with Parasitology

Basic information about the course					
Title	Microbiology with parasitology				
Code	71309	Abbreviation	211OMIKR		
Total ECTS points	6	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Microbiology with Parasitology				
Course leader	Associate Professor Ana Budimir				
Course load					
	1		Total		
Lectures	5		5		
Seminars	20		20		
Laboratory practicals	35		35		
ECTS			6		
Course description					
Aim of this subject is to give to the student of dental medicine review of general facts about viruses, bacteria and protozoa that are pathogenic for human. Content of the subject is intended as a basics in microbiology, with special accent on pathogens involved in diseases in oral cavity or in diseases in other organs. Also, the scope of subject is prevention of infections and spread of infections in dental practice.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Requirement for the access to the exam is regulary completed classess. Exam is composed of practical and written part. After passing the practical and written part students can take oral exam.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Biology of microorganisms					
2. Pathogenicity of microorganisms. Basics of infectious immunology. Antibiotics, disinfection and sterilisation					
3. Structure, classification and replication of viruses. Diagnostics of viral infections. Influence of viruses on host cell					
4. Basics of medical mycology					
5. Protozoa in oral cavity					
Seminar topics:					

<ol style="list-style-type: none"> <li>1. Streptococci</li> <li>2. Staphylococci, neisseriaceae, haemophilic bacteria</li> <li>3. Actinobacilli, actinomycetes</li> <li>4. Enterobacteria. Vibrios. Campylobacters. Helicobacter</li> <li>5. Anaerobic bacteria. Spirochaetes.</li> <li>6. Mycobacteria, corynebacteria. Intracellular bacteria.</li> <li>7. Viruses that are transmitted by blood. Prions.</li> <li>8. Herpesviruses. Orthomyxoviruses. Paramyxoviruses. Picornaviruses.</li> <li>9. Ecology of oral flora. Microbiology of oral plaque and caries.</li> <li>10. Infections in oral cavity. Distant infections caused by bacteria from oral cavity.</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Hand hygiene. Hygiene of equipment and instruments in dental practice.</li> <li>2. Cultivation and microscopy of bacteria. Determination of antimicrobial sensitivity.</li> <li>3. Cultivation and microscopy of gram positive cocci.</li> <li>4. Cultivation and microscopy of neisseriaceae and haemophilic, enteral bacteria and acidfast bacteria.</li> <li>5. Cultivation and microscopy of anaerobic bacteria</li> <li>6. Cell culture, molecular methods</li> <li>7. Methods for direct detection of microorganisms</li> <li>8. Serologic methods for detection of microorganisms</li> <li>9. Cultivation and microscopy of fungi</li> <li>10. Microscopy of protozoa</li> <li>11. Oral flora</li> <li>12. Oral flora</li> </ol>
<b>Course leader and associates</b>
<p>Assoc. prof. Vanda Plečko</p> <p>Assist. prof. Nataša Beader</p> <p>Assist. prof. Ana Budimir</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. V. Presečki. Stomatološka mikrobiologija. Medicinska naklada, Zagreb 2009. Sveučilišni udžbenik.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. S. Kalenić, E. Mlinarić-Missoni: Medicinska bakteriologija i mikologija. Merkur A.B.D., Zagreb, 2001.</li> <li>2. B. Richter: Medicinska parazitologija. Merkur A.B.D., Zagreb, 2002</li> </ol>
<b>Required knowledge</b>
<p>Students must acquire knowledge about structure, pathogenicity, habitat, antimicrobial sensitivity, transmission routes and diseases caused by listed microorganisms including basic principles of prevention and laboratory identification:</p> <ol style="list-style-type: none"> <li>1. Streptococci</li> <li>2. Staphylococci, neisseriaceae, haemophilic bacteria</li> <li>3. Actinobacilli, actinomycetes</li> <li>4. Enterobacteria.</li> <li>5. Vibrios.</li> <li>6. Campylobacters. Helicobacter</li> </ol>

7. Anaerobic bacteria.
  8. Spirochaetes.
  9. Mycobacteria, corynebacteria.
  10. Intracellular bacteria.
  11. Viruses that are transmitted by blood. Prions.
  12. Herpesviruses. Orthomyxoviruses. Paramyxoviruses. Picornaviruses.
- Students must acquire knowledge about ecology of oral flora, microbiology of dental plaque and caries, microorganisms involved in inflammation in oral cavity and about causative agents and pathogenesis of distant infections caused by microorganisms which are part of normal oral flora including conditions and prevention of these infections.

#### Required skills

Students must acquire proper techniques for hand hygiene, technique of preparation of microscopis slides from samples taken from oral cavity and from bacterial and mycological cultures including microscopy of these slides. Also, they have to acquire skills of recognition of gram positive and gram negative bacteria and specific fungal and protozoal species in microscopic slides and cultures.

#### Exam questions

On oral exam question are synthetic, and they cover any part of curriculum.

Oral exam is consisted of three questions:

1. One question from general microbiology, including mycology and parasitology.  
(Structure and function specific parts of bacteria; bacterial classification; bacterial exotoxins; endotoxin; other factors involved in bacterial pathogenicity; sensitivity/resistance of bacteria to antibiotics; basics of infectious immunology; immunoglobulins, cell immunity; structure and classification of viruses; factors involved in pathogenicity of viruses; influence on host cell; prions; structure and main groups of medically important fungi; *Candida albicans*; primary pathogenic dimorphic fungi; medically important parasites; *E. gingivalis*, *T. tenax*; hand hygiene - concepts, principles, methods, media; definitions of disinfection and sterilization, methods of disinfection; methods of sterilization; personal protective equipment in dental practice.
2. One question from bacteriology  
(Streptococci; oral streptococci, BHS-A; staphylococci; neisseriaceae; hemophilic bacteria; actinobacilli; actinomycetes. Enterobacteria: *E. coli*; *Salmonella*; opportunistic enterobacteria, vibrios, campylobacters, helicobacter. Anaerobic bacteria: gram positive anaerobic bacteria (cocci and bacilli), *C. tetani*, gram negative anaerobic bacteria. Spirochaetes, mycobacteria, corynebacteria. *C. trachomatis* and other intracellular bacteria; ecology of oral flora. Microbiology of dental plaque and caries, causative agents of infections in oral cavity, distant infections caused by bacteria from oral flora.)
3. One question from virology  
(Viruses transmitted by blood, viral hepatitis – HAV, HBV, HCV; HIV; herpes viruses: HSV1, HSV2; CMV, EBV, VZV; influenza virus, parainfluenza virus, RSV, rubella virus, morbilli virus; enteroviruses, rhinoviruses).

### 3.2.39 Dental Microscope

Basic information about the course					
Title	Dental Microscope				
Code	137217	Abbreviation	611IMIKR		
Total ECTS points	1,5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Fixed Prosthodontics				
Course leader	assistant professor Marko Jakovac				
Course load					
	1		Total		
Lectures	15		15		
Preclinical practicals	4		4		
ECTS			1,5		
Course description					
<p>The "Dental Microscope" is multidisciplinary collegium and it is consist of lectures in field of prosthodontics, endodontics, periodontology and implantology.</p> <p>Dental microscope and loupes are very important for better precision in dentistry. The precision is especially important in endodontic treatment. The root canals are small and dental microscope is almost obligatory for dentists specialized in that field of dentistry. Microsurgery is relatively new field in dentistry and better visual recognition reduce trauma and induce better recovery of the patient. There are a lot of new microsurgical instruments developed for use with microscope. In implantology the use of the microscope is limited but nevertheless precision is important for proper implant placement and during prosthetic part of the therapy.</p> <p>Special field in precision is minimal invasive tooth preparation. Microscope and loupes are essential for micro preparations. They are important for inspection of dental impression and try-in. Optical devices are recommended also for dental laboratories for better precision and marginal fit of the prosthetic appliances.</p> <p>The ergonomics is a new important field in dentistry. Work with optical devices reduces stress on neck, shoulders and spine.</p>					
Criteria for taking the course exam					
Attendance on lectures and practical excersises.					
What is graded					
Written exam		Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam	No	Major preliminary exam	No
Rules of grading and additional information					
For pass on the exam candidate should correctly answer 60 % of the questions. For every higher grad student should answer 10% more of the questions correctly.					
Weekly teaching plan					
1. component					
Lecture topics:					

<ol style="list-style-type: none"> <li>1. Introduction lecture; Meaning of the magnification in dental medicine</li> <li>2. Ergonomics</li> <li>3. Dental Loupes</li> <li>4. Dental Microscope</li> <li>5. Restorative dentistry and precision</li> <li>6. Endodontic treatment and optical devices</li> <li>7. Micro endodontics and instruments</li> <li>8. Periodontology and optical devices</li> <li>9. Microsurgery and instruments</li> <li>10. Optical devices in implantology</li> <li>11. Tooth preparation for full ceramic crown with the loupes</li> <li>12. Minimal preparations in fixed prosthodontics with dental microscope</li> <li>13. Clinical cases with dental microscope</li> <li>14. Dental laboratory and optical devices</li> <li>15. Recapitulation</li> </ol>
<b>Preclinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Dental loupes basics</li> <li>2. Practical exercises with loupes. Field of view, focus and solving double vision.</li> <li>3. Dental microscope basics</li> <li>4. Practical exercises with microscope. Field of view, focus and solving double vision.</li> </ol>
<b>Course leader and associates</b>
<p>Ass. prof. Marko Jakovac  Ass. prof. Andreja Jelinić Carek  Asoc. prof. Amir Čatić  Asoc. prof. Vlatko Pandurić  Prof. Ivana Miletić  Asoc. prof. Andrej Aurer</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Massironi D. Precision in Dental Esthetics. Milano: Quintessence Pub Co. 2005.</li> <li>2. Merino E. Endodontic Microsurgery. Quintessence Pub Co. 2009.</li> <li>3. Carl Zeiss. Microscopic Dentistry; A Practical Guide. Oberkochen: Carl Zeiss: e-book.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1.</li> </ol>
<b>Required knowledge</b>
<p>During this class students will accept knowledge in:</p> <ul style="list-style-type: none"> <li>-Optical devices in dental medicine</li> <li>-Ergonomics basics</li> <li>-Better precision with dental loupes</li> <li>-Dental microscope</li> <li>-News in restorative dentistry and endodontics.</li> <li>-Minimal invasive tooth preparation</li> <li>-Microsurgery</li> </ul>

<b>Required skills</b>
Solving double vision; Parts of dental microscope; How to get proper focus, change magnification and instruments handling with microscope.
<b>Exam questions</b>

### 3.2.40 Minimally Invasive Surgery

Basic information about the course					
Title	Minimally invasive surgery				
Code	100001	Abbreviation	421IMINI		
Total ECTS points	1,5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Surgery				
Course leader	Prof.dr.sc. Miroslav Bekavac-Bešlin				
Course load					
	1		Total		
Lectures	4		4		
Seminars	2		2		
Preclinical practicals	4		4		
Special clinical practicals	5		5		
ECTS			1,5		
Course description					
<p>Subject Minimally invasive surgery (MIS) contains an overview of the theoretical and practical achievements of endoscopic surgery in the areas of thoracic and abdominal surgery. Today the MIS is accepted surgical technique which is used in nearly all surgical procedures in these areas. The theoretical part delves into the realm of technical aspects necessary to perform surgery (equipment, instruments, electrical currents in medicine, gases, safety for the patient) to the basic actions of daily surgical program so the participants could met the practical value of the MIS.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Definition, advantage and limitations of MIS					
2. Preparation and selection of patients for MIS					
3. Equipment and instruments for MIS					
4. Most commonly MIS procedures in thoracic and abdominal surgery					
Seminar topics:					
1. Anesthesia and establishing pneumoperitoneum					
2. Contraindications of MIS					

<b>Preclinical practicals topics:</b>
5. Surgical suture in MIS
6. Trocars and setting methods
<b>Special Clinical practicals topics:</b>
1. Basic MIS procedures : Laparoscopic cholecystectomy, Laparoscopic hernia surgery, Laparoscopic appendectomy, Laparoscopic exploration
<b>Course leader and associates</b>
Prof.dr.sc. Miroslav Bekavac-Bešlin
<b>Literature</b>
<b>Required literature:</b>
1. Miroslav Bekavac-Bešlin, Mario Ledinsky, Aljoša Matejčić, August Mijić, Lucijan Negovetić: Kirurgija za stomatologe, Medicinska naklada, Zagreb, 2003.
<b>Recommended literature:</b>
1. EAES guidelines of the European Association for Endoscopic Surgery
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>Insight into the significance and practical value of the MIS</li> <li>The ability to assist with basic MIS procedures.</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>Application of intra and extra corporal suture</li> <li>Settings trocars</li> <li>exploration of abdominal cavity</li> </ul>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>Techniques of establishing pneumoperitoneum</li> <li>Basic principles of laparoscopic hemostasis</li> <li>Laparoscopy in pregnancy</li> <li>MIS procedures for acute conditions in the abdomen</li> <li>Complications in laparoscopy</li> <li>Postoperative care of patients after MIS procedures</li> <li>One-day surgery, MIS possibilities</li> <li>Removing tissue preparations from abdominal cavity</li> <li>Surgical trauma in MIS procedures</li> <li>Contraindications of MIS</li> </ol>

### 3.2.41 Removable Prosthodontics I

Basic information about the course			
Title	Removable prosthodontics I		
Code	71310	Abbreviation	412OMPR1
Total ECTS points	9.5	Status	Obligatory
Exam	Yes	Calculated in grade average	Yes
Language of teaching	Croatian	e-learning	No
Department	Department of Removable Prosthodontics		
Course leader	Associate Professor Robert Čelić		
Course load			
	1	2	Total
Lectures	15		15
Special clinical practicals	45	45	90
ECTS			9.5
Course description			
<p>The course program for Removable Prosthodontics I teaches students about the basic biomedical and technological knowledge and skills in removable prosthodontics, which are based upon clinical work in conventional or implant prosthetics treatment of completely edentulous jaws with their supporting soft and hard oral tissues. This program encourages students' capabilities, through analysis of the current situation and selection of the best possible removable prosthodontic treatment, based on an interdisciplinary approach towards each individual clinical case, achieve a basic orientation in the prophylaxis and treatment of the stomatognathic system, through which the maintenance and establishment of oral health of people of different generations and cultures in relation of their socioeconomic status is possible.</p> <p>The curriculum for Removable Prosthodontics I prepares students to learn:</p> <ul style="list-style-type: none"><li>– the importance of oral health and the need for implementing removable prosthodontic treatment based on epidemiological studies</li><li>– recognize nonphysiological and pathological conditions of the stomatognathic system</li><li>– understand the functional anatomy and physiology of a completely edentulous jaws</li><li>– diagnostic procedures and laboratory tests relevant for implementing removable prosthodontic treatment</li><li>– the effect the chosen removable prosthodontic treatment has on the stomatognathic system and patient health</li><li>– understand and correlate the laboratory and clinical protocols for removable prosthodontic treatment</li><li>– materials and instruments, as well as, laboratory and clinical equipment and devices</li><li>– determine the type of material to use for removable prosthodontic treatment</li><li>– conduct removable prosthodontic treatment to improve oral health within a satisfying time period</li><li>– supplement knowledge with literary data and apply them in daily work.</li></ul> <p>The curriculum for Removable Prosthodontics I is concentrated into six interrelated modules:</p> <ul style="list-style-type: none"><li>– Materials and processing technology, and their implementation in the laboratory fabrication of complete dentures.</li><li>– Physiology of the masticatory system which, in addition to knowledge about the normal function, includes knowledge pertaining to the diagnosis and treatment of temporomandibular disorders with removable prosthesis.</li></ul>			

- The biomechanics of the masticatory system and the effect removable prosthodontics have.
- Conventional removable prosthodontics treatment and rehabilitation of the masticatory system.
- Implant prosthetics treatment of completely edentulous jaws.
- Clinical-epidemiological research on the possibility of conducting removable prosthodontics treatment using conventional methods.

The knowledge and skills for diagnostic, therapeutic and laboratory procedures are developed during lectures and clinical exercises in small groups of students under the guidance of teachers and assistants of the Department of Prosthodontics - Department of Removable Prosthodontics. The course lasts two semesters. In the theoretical portion of this course, LCD and video projections of the clinical and laboratory work are used. While during clinical practice, the casuistry of removable prosthodontics treatment is pursued through working on patients.

### Criteria for taking the course exam

Preclinical and laboratory removable prosthodontics

### What is graded

Written exam	Yes	Oral exam	Yes	Practical exam	Yes
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	

### Rules of grading and additional information

The final exam from Removable Prosthodontics I consists of a written exam, practical exam and oral portion of the exam. Throughout the course, students will be tested on their theoretical knowledge through small colloquiums before taking part in clinical practice.

### Weekly teaching plan

#### 1. component

#### Lecture topics:

1. Introductory lecture and program plan for the semester
2. The effects of complete edentulism, anatomic characters of a completely edentulous jaw
3. Anamnesis, examination and treatment planning
4. Preliminary impressions, fabricating a custom tray
5. Functional impression
6. Bite registration and determining intermaxillary relations in edentulous mouths
7. Facebow, articulators and transferring models to an articulator
8. Choosing artificial teeth and guidelines for proper positioning of anterior teeth
9. Guidelines for proper setting of posterior teeth
10. Guidelines for occlusion and articulation of complete dentures
11. Delivery of finished complete dentures
12. Remounting of complete dentures, maintenance and check-ups
13. Temporary and immediate dentures
14. Overdentures and overdenture retention elements
15. Final lecture – recapitulation

#### Special clinical practicals topics:

1. Examination, anamnesis, dental status and removable prosthodontic treatment plan.
2. Analyzing x-rays and cast models.

3. Taking preliminary (situation) impressions of the upper jaw using alginate in completely edentulous patients.
4. Taking preliminary (situation) impressions of the lower jaw using alginate in completely edentulous patients.
5. Analyzing cast models and outline borders for custom tray fabrication for the upper jaw.
6. Analyzing the diagnostic model and outline borders for custom tray fabrication for the lower jaw.
7. Adapting the upper custom tray to the patient's mouth.
8. Adapting the lower custom tray to the patient's mouth.
9. Taking a functional impression of the upper jaw.
10. Taking a functional impression of the lower jaw.
11. Determining and registering intermaxillary relations in completely edentulous patients.
12. Selecting the shade, size and shape of artificial teeth for complete dentures.
13. Transferring working models to an articulator.
14. Clinical evaluation of teeth placement in complete dentures.
15. Delivery and occlusal evaluation of complete dentures.
16. Adjusting complete dentures while being in use.

## **2. component**

### **Special clinical practicals topics:**

1. Examination, anamnesis, dental status and removable prosthodontic treatment plan.
2. Analyzing x-rays and cast models.
3. Taking preliminary (situation) impressions of the upper jaw using alginate in completely edentulous patients.
4. Taking preliminary (situation) impressions of the lower jaw using alginate in completely edentulous patients.
5. Analyzing cast models and outline borders for custom tray fabrication for the upper jaw.
6. Analyzing the diagnostic model and outline borders for custom tray fabrication for the lower jaw.
7. Adapting the upper custom tray to the patient's mouth.
8. Adapting the lower custom tray to the patient's mouth.
9. Taking a functional impression of the upper jaw.
10. Taking a functional impression of the lower jaw.
11. Determining and registering intermaxillary relations in completely edentulous patients.
12. Selecting the shade, size and shape of artificial teeth for complete dentures.
13. Transferring working models to an articulator.
14. Clinical evaluation of teeth placement in complete dentures.
15. Delivery and occlusal evaluation of complete dentures.
16. Adjusting complete dentures while being in use.

### **Course leader and associates**

Prof.Dr.Robert Ćelić DMD, PhD.  
 Prof.Dr. Melita Valentić - Peruzović DMD, PhD.  
 Prof.Dr. Asja Čelebić DMD, PhD.  
 Prof.Dr. Sonja Kraljević – Šimunković DMD, PhD.  
 Prof.Dr. Dubravka Knezović - Zlatarić DMD, PhD.  
 Prof.Dr. Iva Alajbeg DMD, PhD.  
 Assoc. Prof. Tomislav Badel DMD, PhD.  
 Assoc. Prof. Dino Buković DMD, PhD.  
 Assoc. Prof. Nikša Dulčić DMD, PhD.  
 Assoc. Prof. Davor Illeš DMD, PhD.

Assoc. Prof. Domagoj Žabarović DMD, PhD.  
 Nikola Petričević DMD, PhD.  
 Ivica Pelivan DMD, PhD.  
 Maja Pavić DMD, PhD.  
 Sanja Peršić. DMD.  
 Samir Ćimić. DMD.

## Literature

### Required literature:

1. Suvin M. Biološki temelji protetike – Totalna proteza. Zagreb: Školska knjiga, 1984.
2. Suvin M. Djelomična proteza. Zagreb: Školska knjiga, 1982.
3. Kraljević K. Potpuna proteza. Zagreb : Aerografika, 2001.
4. Živko-Babić J, Jerolimov V. Metali u stomatološkoj protetici. Odabrana poglavlja. Zagreb: Školska knjiga, 2005.
5. Jerolimov V. i sur. Stomatološki materijali. Odabrana poglavlja. Zagreb: Stomatološki fakultet, 2005. ([www.sfzg.hr](http://www.sfzg.hr)).

### Recommended literature:

1. Mc Cracken WL. Partial Denture Construction. St. Louis: Mosby Co., 1998.
2. Misch CE. Implant Dentistry. 2nd ed. St.Louis: Mosby Inc. 1999.

### Required knowledge

- physiology and biomechanics of the masticatory system,
- facial muscles and masticatory muscles,
- anatomy and movements of the jaw joint,
- position and movements of the lower jaw,
- physiology of chewing,
- the effects of an edentulous jaw – resorption changes in bone tissue,
- the denture bearing areas of upper and lower complete dentures, soft tissues and muscle activity,
- factors of retention and stabilization of complete dentures,
- types of impressions and models in removable prosthodontics,
- trays and impression materials used in removable prosthodontics,
- functional impression,
- occlusion, articulation and the concept of occlusion,
- determining and registering intermaxillary relations in completely edentulous jaws,
- articulators- types and general use for articulators and facebows,
- characteristics in transferring work models to articulators,
- selecting artificial teeth - material, shape, size and shade,
- setting anterior teeth – esthetic characteristics and personalizing the setting,
- setting posterior teeth - guidelines for setting teeth,
- possibilities and the course of polymerization of complete dentures,
- difficulties while fitting and wearing complete dentures,
- changes to soft tissue in complete denture wearers,
- the importance of checking occlusion, remount and adjusting complete dentures,
- temporary and immediate complete dentures.

### Required skills

The skills students master and acquire during this course can be divided into four levels.

1. Theoretical knowledge.
2. Has watched the procedure, but has not performed the procedure independently.
3. Has performed the procedure independently, but not routinely.
4. Performs the procedure routinely.

1. Theoretical knowledge:

- Physiology and biomechanics of the stomatognathic system.
- Levels of resorptive changes to bone tissue in edentulous patients.
- The effects material choice and type of removable prosthodontic work have on durability, biocompatibility and success of performed treatment.
- Articulators and the factors for choosing them for removable prosthodontic treatment.
- Guidelines for the individualization of teeth setting in complete dentures.
- The concept of occlusion in complete dentures.
- Cast systems in removable prosthodontics.

2. Watched the procedure performed, but has not done it independently:

- Diagnosis and treatment planning of removable prosthodontics.
- Pre-prosthodontic patient preparation for removable prosthodontic treatment.
- Setting teeth in cases of alveolar ridge atrophy and skeletal class I, II, III.
- Clinical-laboratory protocol in fabricating complete dentures.
- Checking occlusion, remount and care for complete dentures while being used.
- Analyzing occlusion on a remounted denture.
- Selective grinding of occlusal contacts in an articulator.
- Temporary, immediate and complete overdentures.

3. Has performed the procedure independently, but not routinely:

- Determining vertical and horizontal relations – centric relation (CR) in completely edentulous patients.
- Transferring master models to an articulator.
- Relining the denture base using the indirect method.

4. Performs the procedure routinely

- Anamnesis, examination and dental status of removable prosthodontic patients.
- Entering data into the patient's medical record.
- Analyzing x-rays.
- Preliminary (situation) impressions of completely edentulous patients.
- Drawing the boundary between movable and non-movable tissue in completely edentulous patients.
- Adjusting custom trays in a patient's mouth.
- Functional impressions.
- Determining and registering intermaxillary relations in edentulous patients.
- Selecting the shade, size and shape of artificial teeth for complete dentures.
- Marking the model for setting teeth.
- Clinical evaluation of set teeth in complete dentures.
- Delivery and occlusion evaluation of finished complete dentures.

### Exam questions

1. How long after extraction is the residual alveolar ridge completely defined?
2. During what year of wearing complete dentures does the largest resorption of the edentulous ridge occur and why?
3. What is the eminentia pyramidalis and how is it formed?
4. What is specific loading and how does it effect denture fabrication?

5. What effect do pressure and tension have on bones?
6. What is an average yearly decrease in vertical dimension in complete denture wearers?
7. What are the different types of bone tissue and from what are the maxilla and mandible composed of?
8. What type of bone tissue is attacked by osteoporosis?
9. What is an overdenture?
10. When and why are overdentures made?
11. What phases are involved when registering the intermaxillary relation?
12. How to register the horizontal relation (what is the relation) in complete dentures, and how to register the horizontal relation when we have antagonist teeth and correct vertical and horizontal relations?
13. How is the vertical relation determined (name the methods)?
14. Which methods for determining the vertical relation are most important in clinical work?
15. Describe transferring the registered intermaxillary relation to a mean value articulator.
16. What are the main characteristics of a mean value articulator?
17. Which way can you connect the bite registrations while registering the intermaxillary relation?
18. What are the upper and lower bite registrations supposed to look like (height, width, etc.)?
19. What is an occlusal plane?
20. How is the occlusal plane determined in the anterior?
21. How to check the correct position of the occlusal plane?
22. How do we determine the occlusal plane in the lateral segment?
23. What are the procedures in determining the intermaxillary relation dependent to the method for determining the prosthodontic plane?
24. What are the fundamental components of the stomatognathic system?
25. What mechanisms are responsible for synchronizing the functions of the masticatory muscles when biting an unknown object?
26. What forms the boundaries of the upper joint space?
27. Which part of the joint space is responsible for rotation movement?
28. What conditions must be met in an arcon concept articulator?
29. What spatial reference points are important for quick mount facebow orientation?
30. What type of dental stone is used for mounting a model in an articulator?
31. What is the most frequent concept of complete dentures occlusion?
32. What is the maximum angle value of anterior guidance occlusion in complete dentures?
33. Describe the phonetic method for determining intermaxillary relationship?
34. Factors of retention and stabilization in complete dentures?
35. Preliminary (situation) impression?
36. Custom tray, functional impression of the upper and lower jaw, master model?
37. Settling lateral teeth, guidelines for setting (statics)?
38. Setting teeth in difficult conditions – skeletal class I, II, III
39. Clinical evaluation of set teeth in edentulous patients?
40. Why is rearticulating the denture necessary after polymerization?
41. Implant prosthetics aspects in rehabilitation of completely edentulous patients – when and how?

### 3.2.42 Removable Prosthodontics II

Basic information about the course			
Title	Removable prosthodontics II		
Code	71312	Abbreviation	512OMPR2
Total ECTS points	7	Status	Obligatory
Exam	Yes	Calculated in grade average	Yes
Language of teaching	Croatian	e-learning	No
Department	Department of Removable Prosthodontics		
Course leader	Associate Professor Robert Čelić		
Course load			
	1	2	Total
Lectures	15		15
Special clinical practicals	45	60	105
ECTS			7
Course description			
<p>The course program for Removable Prosthetics II teaches students about partial denture fabrication. The masticatory system is made up of interrelated and codependent parts and consists of a tooth as masticatory organ, the upper and lower jaws, masticatory muscles, accessory masticatory muscles, temporomandibular joints, soft tissues and salivary glands, and respective parts of the nervous, circulatory and lymphatic system. The requirement for this system to function at its maximum is the balance between all its elements. Tooth loss causes morphological, as well as functional changes in the oral cavity. Depending on the anatomical-morphological characteristics of the oral cavity, the purposes of the partial denture are to provide the function of chewing, achieve satisfactory aesthetics and speech function, act preventively and preserve the remaining teeth, bone, soft tissues and temporomandibular joint function. Many factors influence whether a force will be physiological stimulation or will lead to pathological changes of the supporting tissue. In one hand it depends on the nature of the force (size, direction, course of action, and duration), and on the other hand the individual adaptive characteristics of the supporting structures.</p>			
<p>The curriculum for Removable Prosthodontics II prepares the students to learn:</p> <ul style="list-style-type: none"><li>– functional anatomy and physiology of the partially edentulous jaw, materials and instruments, including laboratory and clinical equipment and</li><li>– devices for fabricating partial dentures,</li><li>– understand and correlate laboratory and clinical protocols for fabricating partial dentures,</li><li>– conduct treatment in order to improve masticatory, aesthetic and phonetic effects,</li><li>– advantages and disadvantages of combined fixed and removable prostheses,</li><li>– determine the type of materials for fabricating partial dentures,</li><li>– to supplement their knowledge with literary data and apply it in their daily work.</li></ul>			
<p>The curriculum for Removable Prosthodontics II is concentrated into six interrelated modules:</p> <ul style="list-style-type: none"><li>– Physiology of the masticatory system in partial edentulism.</li><li>– Materials and processing technologies and their use in laboratory and clinical fabrication of partial dentures.</li><li>– Conventional removable prosthodontics treatment in partial edentulism.</li><li>– Biomechanics of the masticatory system and the effect of partial dentures have.</li></ul>			

- Combined fixed and removable prostheses.
- Retention elements and retention forces in partial denture fabrication.

The knowledge and skills needed for diagnostic, therapeutic and laboratory procedures are developed during lectures and clinical practice in small groups of students under the guidance of teachers and assistants of the Department of Prosthodontics - Department of Removable Prosthodontics. The course lasts two semesters. In the theoretical portion of this course, LCD and video projections of the clinical and laboratory work are used. While during clinical practice, the casuistry of removable prosthodontics is pursued through working on patients.

### Criteria for taking the course exam

Preclinical and laboratory removable prosthodontics

### What is graded

Written exam	Yes	Oral exam	Yes	Practical exam	Yes
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	

### Rules of grading and additional information

The final exam of Removable Prosthodontics II consists of a written exam, practical exam and oral exam. Throughout the course, the students' theoretical knowledge will be tested through small colloquiums before taking part in clinical practice.

### Weekly teaching plan

#### 1. component

#### Lecture topics:

1. Introduction lecture and course plan for the semester.
2. Effects of partial edentulism; anatomic characteristics of partial edentulous jaws.
3. Topographic-functional classification of partial edentulism.
4. Classification of partial dentures; principles of planning and choosing the path for inserting partial dentures.
5. The base of the partial denture – choosing the design and materials.
6. Retention of the partial denture with clasps.
7. Elements for load distribution in partial dentures – occlusal rests.
8. Stabilization of partial dentures.
9. Preparation of the mouth and teeth for partial denture treatment, and impression procedures in partially edentulous jaws.
10. How to register the intermaxillary relationship in partial edentulism, and transferring the relationship to an articulator.
11. Selecting the shade, size and shape of artificial teeth for partial dentures.
12. Factors of occlusion and setting teeth in partial dentures.
13. Clinical evaluation of set teeth in partial dentures; laboratory course in finishing the partial denture and delivering the partial denture.
14. Recall examinations of patients with partial dentures.
15. Closing lecture – recapitulation.

#### Special clinical practicals topics:

1. Examination, anamnesis, dental status i fabrication plan for partial dentures.
2. Taking a preliminary (situation) impression of the upper jaw with alginate in an partially edentulous patient.

3. Taking a preliminary (situation) impression of the lower jaw with alginate in a partially edentulous patient.
4. Analyze cast models and outline borders for fabricating upper jaw custom trays in partially edentulous patients.
5. Analyzing cast models and outline borders for fabricating lower jaw custom trays in partially edentulous patients.
6. Adjusting upper jaw custom trays in the mouth of partially edentulous patients.
7. Adjusting lower jaw custom trays in the mouth of a partially edentulous patients.
8. Taking a functional impression of the upper jaw in partially edentulous patients.
9. Taking a functional impression of the lower jaw in partially edentulous patients.
10. Control of the work model, planning the cast metal framework, retention elements and stabilization of an upper jaw partial denture
11. Control of the working model, planning the cast metal framework, retention elements and stabilization of a lower jaw partial denture.
12. Try-in of the cast metal framework of the partial denture.
13. Determining and registering intermaxillary relations in partially edentulous patients.
14. Clinical evaluation of the set teeth in partial dentures.
15. Delivery and occlusion evaluation in partial dentures.

## **2. component**

### **Special clinical practicals topics:**

1. Examination, anamnesis, dental status and planning a partial denture.
2. Analyzing x-rays and diagnostic models.
3. Planning the base and component elements of cast partial dentures.
4. Clinical-laboratory protocol of fabricating cast partial dentures.
5. Taking a preliminary (situation) impression of the maxilla with alginate in partially edentulous patients.
6. Taking a preliminary (situation) impression of the lower jaw in alginate in partially edentulous patients.
7. Analyzing cast models and outline the custom tray borders of the upper jaw in partially edentulous patients.
8. Analyzing the cast model and outline the custom tray border of the lower jaw in partially edentulous patients.
9. Adjusting the upper jaw custom tray in partially edentulous patients.
10. Adjusting the lower jaw custom tray in partially edentulous patients.
11. Taking a functional impression of the upper jaw in partially edentulous patients.
12. Taking a functional impression of the lower jaw in partially edentulous patients.
13. Control of working models and plan the cast metal framework and elements for retention and stability of the upper partial denture.
14. Control of working models and plan the cast metal framework and elements for retention and stability of the upper partial denture.
15. Try-in of the partial denture cast metal framework.
16. Immediate, diagnostic and transitional partial dentures.
17. Removable prosthodontics rehabilitation possibilities in patients with temporomandibular disorders.
18. Gerontological aspects of removable prosthodontics treatment in partially and fully edentulous patients.
19. Complications when wearing partial or complete dentures.
20. Relining dentures and repairing damaged denture elements.

**Course leader and associates**

Prof.Dr.Robert Ćelić DMD, PhD.  
 Prof.Dr. Melita Valentić - Peruzović DMD, PhD.  
 Prof.Dr. Asja Čelebić DMD, PhD.  
 Prof.Dr. Sonja Kraljević – Šimunković DMD, PhD.  
 Prof.Dr. Dubravka Knezović - Zlatarić DMD, PhD.  
 Prof.Dr. Iva Alajbeg DMD, PhD.  
 Assoc. Prof. Tomislav Badel DMD, PhD.  
 Assoc. Prof. Dino Buković DMD, PhD.  
 Assoc. Prof. Nikša Dulčić DMD, PhD.  
 Assoc. Prof. Davor Illeš DMD, PhD.  
 Assoc. Prof. Domagoj Žabarović DMD, PhD.  
 Nikola Petričević DMD, PhD.  
 Ivica Pelivan DMD, PhD.  
 Maja Pavić DMD, PhD.  
 Sanja Peršić. DMD.  
 Samir Ćimić. DMD.

## Literature

### Required literature:

1. Suvin M. Djelomična proteza. Zagreb: Školska knjiga, 1982.
2. Živko-Babić J, Jerolimov V. Metali u stomatološkoj protetici. Odabrana poglavlja. Zagreb: Školska knjiga, 2005.
3. Jerolimov V. i sur. Stomatološki materijali. Odabrana poglavlja. Zagreb: Stomatološki fakultet, 2005. ([www.sfzg.hr](http://www.sfzg.hr))

### Recommended literature:

1. Mc Cracken WL. Partial Denture Construction. Mosby Co., 1998.
2. 2. Misch CE. Implant Dentistry. 2nd ed. St.Louis: Mosby Inc. 1999.
3. 3. Suvin M. Biološki temelji protetike – Totalna proteza. Zagreb: Školska knjiga, 1984.
4. 4. Kraljevid K. Potpuna proteza. Zagreb: Aerografika, 2001.

### Required knowledge

- the effects of partial edentulism - resorptive changes in bone tissue,
- denture bearing areas for upper and lower jaw partial dentures, soft tissue and muscle activity,
- factors of retention and stabilization in partial dentures,
- retention and stabilization factors in partial dentures,
- trays and impression materials,
- functional impression for partial dentures,
- occlusion, articulation and the concepts of occlusion in partial dentures,
- topographical and functional classification of partial edentulism,
- classification of partial dentures,
- the base of a partial denture- choosing the design and material,
- retention and stabilization of a partial denture,
- tooth and mouth preparations for partial denture fabrication,
- how to register the intermaxillary relation in partial edentulism and transfer this relationship to an articulator,
- clinical and laboratory protocols for fabricating cast partial dentures,
- prosthetic treatment with combined fixed and removable prosthodontics,
- the importance, possibilities and methods of grinding (milling) partial cast dentures,

- telescopic (cones) systems in the treatment of partial edentulism,
- repairing damaged elements of partial dentures,
- oral hygiene during implementation of removable prosthodontics treatment,
- oral cavity and denture hygiene while wearing removable prostheses.

### Required skills

Skills students acquire and master during this course can be divided into four levels:

1. Theoretical knowledge
  2. Has seen the procedure, but not performed it independently
  3. Has performed the procedure independently, but not routinely
  4. Performs the procedure routinely
1. Theoretical knowledge
    - The types and classifications of partial edentulism
    - Trays and impression materials for partial dentures
    - Transferring work models to an articulator
    - The base of the partial denture – design and material selection
    - Retention and stabilization of partial dentures
    - How to register intermaxillary relations in partial edentulism
    - Prosthodontics treatment using combined fixed and removable prostheses.
  2. Has seen the procedure, but not performed it independently:
    - Diagnosis and treatment plan for partial edentulism
    - Pre-prosthodontic patient preparation for a partial denture
    - Clinical and laboratory protocols for fabricating cast partial dentures
    - Temporary, immediate and partial overdentures
    - Prosthodontic treatment with combined fixed and removable prosthesis
    - Selective grinding occlusal contacts in an articulator
  3. Has performed the procedure independently, but not routinely:
    - Planning and determining the path of insertion of a partial denture
    - Selective grinding of occlusal contacts in an articulator
    - Determining vertical and horizontal intermaxillary relationship
    - Transfer work models to an articulator
    - Planning the base, retention elements, stabilization and load transfer in cast partial dentures
    - Determining the prosthetic equator using a parallelogram
  4. Performs the procedure routinely:
    - Anamnesis, examination and patient status
    - Analysis of x-rays
    - Preliminary impressions in partial edentulism
    - Functional impressions in partial edentulism
    - Adjusting a custom tray
    - Selecting the shade, size and shape of artificial teeth for partial dentures
    - Clinical evaluation of set teeth in partial dentures
    - Delivery and assessment of the final partial dentures

### Exam questions

1. What is an occlusal plane?
2. How do we determine the frontal occlusal plane?
3. How do we check the correct position of the occlusal plane?
4. How do we determine the lateral occlusal plane?

5. What are the procedures for determining intermaxillary relationship in regards to the method for determining the occlusal plane?
6. Describe the phonetic method of determining the intermaxillary relationship
7. What components make up the base of a partial denture?
8. What are the possible designs for the base of a metal upper denture? How do we plan a base design of a partial denture?
9. When can a skeletal base of a partial denture be reduced in regards to stress loading?
10. What are design possibilities of lower jaw partial metal dentures?
11. What is a minor connector and where is it found?
12. What distance between base elements is hygienic?
13. What is the thickness of the upper plate and lower plate?
14. How far do clasps reach onto a tooth, what is their function and when are they planned?
15. Borders of a bounded saddle?
16. Borders of a maxillary free-end saddle?
17. Borders of a mandibular free-end saddle?
18. What are the means to transfer loads in partial dentures?
19. When planning occlusal rests, what are the indications and what are the contraindications for tooth-mucosa supported dentures?
20. Preparations for occlusal rests on posterior teeth – how and why?
21. What are the dimensions of minor connectors and occlusal rests?
22. Preparations for occlusal rests on anterior teeth, - why?
23. What is the difference in position of occlusal rests with bounded and free-end saddles?
24. What is specific loading and what does it depend on?
25. What does tooth-mucosa support depend on?
26. Contraindications for tooth-mucosa supported dentures and eventual exceptions?
27. What is the difference between mucosa resilience and tooth intrusion, and how is this problem solved in partial dentures?
28. What is the effect of a small denture base in mucosa supported dentures?
29. What types of attachments are used in free-end saddles and why?
30. Types of attachments based on the range of movement allowed by saddles and indications?
31. Types of telescopic crowns.
32. What is the allowed retention force for any retention element?
33. What happens when the retention force is too strong?
34. When are retention elements activated?
35. Retention elements while chewing and clenching teeth?
36. The Eichner classification?
37. When do the centric relation and vertical occlusal dimension need to be registered?
38. Which horizontal relationship is registered in Eichner class I, and which relation is it?
39. Which horizontal relationship is registered in Eichner class II, and which relation is it?
40. In which Eichner class is it necessary to register the centric relation and determine the vertical dimension?
41. What is RKP and why is it important?
42. Is it possible to increase the vertical dimension with a removable denture if we have antagonist teeth?
43. What determines the occlusal plane in partial edentulism?
44. How can an incorrect occlusal plane be corrected while fabricating a partial denture?
45. When is it possible to increase the vertical dimension in an articulator with the incisal pin, and when is it not possible?
46. In what part of the joint space do rotational movements occur?
47. What spatial orientation points are important for the orientation of a quick mount facebow?

48. Mounting?
49. Which type of dental stone is used for mounting models in an articulator?
50. What are the characteristics of partial edentulism according to the topographic classification Kennedy class I.
51. What is the difference in load distribution in relation to mucosa and tooth supported denture saddles?
52. What are the characteristics of partial edentulism Kennedy class II?
53. What are resilient attachments?
54. How do retention bars achieve esthetic retention?
55. What is the indication for a retention bar?
56. How far does the contour base of the denture need to be from the marginal gingiva for the purpose of periodontal protection?
57. What periodontal pretreatment needs to be done prior to fabricating partial dentures with clasps?
58. How to analyze a diagnostic model of patients with temporomandibular disorders?
59. Stabilization of partial dentures?
60. Tooth and mouth preparation for partial dentures?
61. Clinical evaluation of set teeth in partial dentures?
62. Planning the base and component elements of cast partial dentures?
63. Clinical-laboratory protocol for fabricating cast partial dentures?
64. The significance, possibilities and methods of grinding partial cast dentures?

### 3.2.43 Tooth Morphology with Dental Anthropology

Basic information about the course					
Title	Tooth morphology with dental anthropology				
Code	71313	Abbreviation	212OMORF		
Total ECTS points	10.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Dental Anthropology				
Course leader	Professor Hrvoje Brkić				
Course load					
	1	2	Total		
Lectures	15	15	30		
Preclinical practicals	30	45	75		
ECTS			10.5		
Course description					
<p>Knowledge of the anatomy and function of the orofacial system, development, biology and morphology of the teeth, genetic influence on the development and hereditary changes of dental tissues and teeth. Students get acquainted with permanent and deciduous dentition of recent humans and dentitions of other kinds of mammals, learning about differences between carnivores and herbivores.</p> <p>The theoretical teaching is carried out in lecture format that thematically precede later practical exercises. Practical work is organized for groups of 16 students. There is one teacher or assistant and/or one demonstrator (student in a senior year of study) per six to eight students.</p> <p>The main idea is to classify teeth by drawing in two dimensions, whereas modeling in clay and plaster is done in three dimensions. Teeth models are made in plaster in twelve time bigger size. Samples of natural deciduous and permanent teeth as well as their sections in various surfaces are the next step in the work in Teeth Anatomy. Odontometrics is carried out on the tooth arch casts with the help of sliding caliper.</p> <p>The notification of certain anthropological features of teeth is done according to the Arizona State University method. Histological structure of teeth and stages of tooth development are made available by the use of light microscopy (native and coloured preparations of permanent and deciduous teeth, deciduous teeth in resorption).</p> <p>The X-ray structure of teeth is carried out with the use of radiography of both the jaws and the teeth (orthopantomograms, lateral skull radiographs, standard intraoral periapical views of the teeth, bite-wing radiographs) on the negatoscope.</p> <p>The embryonic development of dental organ is followed by the processing of histological preparations from the tooth bud to its maturation. The evolution development of jaw is studied based on the Krapina pre-historical man collection kept in the Croatian Museum of Natural Sciences in Zagreb.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	

### Rules of grading and additional information

Before every practical exercise, the necessary background knowledge is revised in conversation with students. After that the students have to sketch both- the teeth and dental arches according to a given pattern (model). Carving or modelling of samples of permanent and deciduous teeth is carried out with the model, and is assessed after the groups have been completed without any models. The result contributes to the final grade.

The exam is taken after the completion of the course and it consists of:

- the practical part: terminology and teeth nomenclature,
- recognition of permanent and deciduous teeth,
- light microscopy of histological preparations of permanent teeth, deciduous teeth and embryonal development of tooth germ,
- analysis of occlusion and articulation of the teeth in plaster casts of dental arches) and
- theoretical part in an oral examination format with the selection of questions (questions are written on cards which students can choose) from every teaching unit .

At the end of the studies, students can choose one of the offered topics from the Teeth Morphology with Dental Anthropology in order to write their theses.

### Weekly teaching plan

#### 1. component

##### Lecture topics:

1. Introduction to the subject – human dentition; monophylodontia, polyphylodontia, diphyodontia; physical anthropology; human genetics; embryology; development and growth; importance of the dental morphology in clinical dentistry
2. Description of the tooth form; dental notation (various types); odontometrics; sagittal, transversal and horizontal planes and their importance in clinical dentistry; permanent incisors – number, shape, dimensions, morphology of the crown and root, age of eruption
3. Permanent canines – age of eruption, shape, dimensions, morphology of the crown and root, variations of canines, importance of canines in dental prosthetics
4. Permanent premolars – overview, generally characteristics of maxillary and mandibular premolars; age of eruption, dimensions, number, cusps, differences according to incisors and canines; number of roots; accessory cusps; accessory roots
5. Permanent molars – overview, generally characteristics, age of eruption, dimensions, number, variations in occlusal surfaces, differences between upper and lower molars; variabilities in tooth number; variations in root canals; review of pulp chambers
6. Variabilities of premolars and molars – dimensions, additional cusps, abnormalities of crown and root shape, abnormalities of pulp chamber and root canals; enamel pearl; Tuberculum Carabelli
7. Gonadal dysgenesis – The influence of extra sex chromosomes and deficit of sex chromosomes on development of dental and orofacial tissues in craniofacial region and oral cavity.
8. Deciduous teeth – generally characteristics, differences between deciduous and permanent teeth – number, dimensions, colour, shape, diastemae, shape of the dental arches, age of eruption, pulp chambers
9. Early tooth development, initiation of the tooth development – stages of development, cusp stage, cap stage, bell stage, development of the dental papilla, dentinogenesis, amelogenesis, crown development, development of the root, Hertwig's sheath; development of single rooted teeth, development of multi rooted teeth; phases of tooth eruption
10. Development of the root and periodontal ligament; Hertwig's sheath, epithelial diaphragma, development of single rooted teeth, development of multi rooted teeth,

development of the supporting structures and alveolar process; eruption of teeth; sequence and chronology of teeth eruption

11. Development of occlusion – definition of occlusion, types of occlusion, axial position of the teeth and roots; intercuspal relations; occlusal planes; contacts between upper and lower dental arch; radiographic reviews
12. Masticatory system – functional anatomy of orofacial system; mastication; structures involved in mastication; articulation; articulation of temporomandibular joint; muscles involved in mastication; occlusal relations of molars
13. Dental arches – lip-tongue-cheek system; position of the teeth in maxillary and mandibular dental arch; anatomic alignment and curvatures; various palatal height, role of mastication
14. Teeth articulation, curvatures of the teeth and arches – mechanism and features; intercuspal position; protrusive and retrusive movement; occlusal relation; ideal contacts; movements of the mandible; symmetric and asymmetric movements; condyle movements, inner and outer aspects of premolar and molar cusps; guiding and supporting cusps
15. Self-protective features of human dentition; saliva and ferments; interdental spaces; position of teeth in mandibular and maxillary dental arch; curvatures of dental arches; morphological shape of teeth and their influence, labial and lingual inclination of teeth; effects of vertical, axial and horizontal forces; variation of teeth shape according to development of periodontal disease

#### **Preclinical practicals topics:**

1. Introduction to the subject – terminology; anatomic and physiologic crown, orientation spots; modeling of cupola, tower and cut pyramid (after drawing) in modeling clay
2. Topographic and anatomic marks on the teeth; identification of teeth; modeling of permanent first upper incisor and permanent upper canine in modeling clay in the 1:2 ratio according to the plaster models
3. Marking of teeth on various ways; modeling of the permanent first maxillary premolar in the modeling clay and carving of the permanent second maxillary premolar in plaster in the 1:2 ratio according to the plaster models
4. Main features of the permanent molars (trigonum, talon), lateral teeth; spacious occlusal surfaces; teeth with more cusps divided by grooves and ridges; their function in mastication; total of 12 molars; maxillary molars have three roots and root canals; mandibular molars have two roots and three root canals; modeling of the permanent first maxillary molar in the modeling clay and carving of the permanent mandibular lateral incisor in plaster in the 1:2 ratio according to the plaster models
5. Variations of the maxillary molars; Tuberculum Carabelli; additional cusps; reduced cusps; additional roots and roots canals; carving of the permanent second maxillary molar in plaster in the 1:2 ratio according to the plaster model
6. Drawing on the millimeter paper of details of shape of the crown, root canals and pulp chambers in various sections of maxillary anterior teeth; drawing of maxillary and mandibular dental arches
7. Drawing on the millimeter paper of details of shape of the crown, root canals and pulp chambers in various sections of maxillary posterior teeth; drawing of the teeth in intercuspal position
8. Modeling of the permanent first mandibular incisor in the modeling clay and carving of the permanent mandibular canine in plaster in the 1:2 ratio according to the plaster models; variations of the mandibular anterior teeth
9. Modeling of the permanent first mandibular premolar in the modeling clay and carving of the permanent second mandibular premolar in plaster in the 1:2 ratio according to the plaster models; variations of the mandibular premolars

10. Modeling of the permanent mandibular lateral incisor in the modeling clay and carving of the permanent first mandibular molar in plaster in the 1:2 ratio according to the plaster models; essential shapes of occlusal surfaces on mandibular molars (Y, X)
11. Carving of the permanent second mandibular molar in plaster in the 1:2 ratio according to the plaster models; variations of mandibular molars
12. Drawing on the millimeter paper of details of shape of the crown, root canals and pulp chambers in various sections of mandibular anterior teeth
13. Drawing on the millimeter paper of details of shape of the crown, root canals and pulp chambers in various sections of mandibular posterior teeth
14. Identification of human permanent teeth and their sections; systematic description of teeth roots and endodontic spaces of teeth with one, two or three root canals; the size and shape of pulp chambers
15. Control modeling of one permanent tooth in the modeling clay and control carving of one permanent tooth in plaster in the 1:2 ratio without use of plaster models

## **2. component**

### **Lecture topics:**

1. Microscopic structure of a hard dental tissues – enamel, dentin, cementum; enamel – the hardest tissue in human body; - dentin – the thickest layer of the tooth; cementum – covers the root of the tooth
2. Tooth enamel – overview; physical properties; chemical properties; histological structure; incremental lines; enamel lamellae; enamel tufts; enamel spindles; surface characteristics; permeability; crystals and their orientation
3. Dentin – overview; physical properties; chemical properties; dentin classification; primary dentin; secondary dentin; reparative or tertiary dentin; predentin; tubular and intertubular relations; intratubular (peritubular) dentin; intertubular dentin; incremental lines; granular layers; odontoblastic cell processes; dentinoenamel junction; permeability; repair process
4. Dental pulp – overview; anatomy of the pulp; coronal pulp; radicular pulp; apical foramina and accessory canals, histology of the pulp – odontoblasts, fibroblasts, other pulpal cells, fibres and ground substance; vascularization of the pulp; nerves, nerve endings; pain in the pulp-dentine complex; functions of the pulp; regressive changes; fibrous changes; pulp stones; diffuse calcifications
5. The cementum – overview; role of the cementum; development of the cementum; cellular and acellular cementum; physical properties; ageing changes of cementum; cementicles; reparation of the cementum
6. The periodontal anatomy – the periodontal ligament, collagen fibres of periodontal ligament – Sharpey's fibres, Oxytalan's fibres.
7. The periodontal physiology and function – cells of the periodontal ligament, fibroblasts, cementoblasts, osteoblasts, osteoclasts, cementoclasts, epithelial cells, blood vessels and nerves of the periodontal ligament, innervation, lymphatic vessels.
8. The alveolar bone – classification of bone; supporting compact bone; supporting cancellous bone; morphology of alveolar bone; chemical properties of alveolar bone; histology of the alveolar bone; bone resorption; SEM appearance of bone surface; Sharpey's fibres; structural changes of bone
9. The oral mucosa – overview; structure of the oral mucosa; lining mucosa; free and attached gingival; junctional epithelium; interdental papillae and col; dentogingival fibres, Langerhans's cells, Merkel's cells, melanocytes, lymphocytes, leukocytes
10. The radiographs shape of jaws and teeth - The shape of upper and lower jaws, the shape of tooth sockets, dental characteristics from orthopantomograms and ordinary intraoral films. The shape and shadows of different dental tissues – enamel, cementum, dentin, shape of dental crowns, roots, pulp chamber and root canals.

11. Comparative odontography – the evolution of upper and lower jaws, teeth evolution, comparative histology of the dental tissues, aprismatic enamel, prismatic enamel, types of tooth attachment.
12. Teeth of the vertebrates – fish, amphibians and reptiles - Teeth characteristics during the phylogenetic development of species – changes in the number, differentiation and number of replacements of teeth during the life; Epidermal teeth – keratinized teeth that lack real calcification, The way teeth are attached to the jaw – acrodont, thecodont and pleurodont type; Aprismatic and prismatic enamel, differences in dentin structure; an examples of polyphyodont dentition, an example of monophyodont dentition - chameleon; teeth of serpents, poison teeth – channel in the dentin or groove on the oral side of the tooth; turtles.
13. Teeth of mammals – differences between carnivores and herbivores - Mammals that lack teeth – an example of baleen whales and anteater; Toothed whales – number of the teeth, homodont and polyphyodont dentition; Characteristics of the mammalian dentition – heterodont dentition, reduction in number, high differentiation, diastema; Molar characteristics – secodont, selenodont and lophodont type; Characteristics of the marsupial dentition – carnivore and herbivore; Characteristics of the insectivore dentition, tubercles for breaking through the hitin armour of the insects.
14. Characteristics of the teeth of permanent growth - Definition and characteristics of the permanently growing teeth, permanently growing incisors, canines and molars; Histological characteristics - enamel, dentin and predentin, deposition of the secondary and tertiary dentin, dental pulp; The influence of wear on the teeth function; Growth characteristics of the upper and lower teeth – consequences of the fracture, characteristics of the growth of the teeth that lacks the opposite one; Congenital malformations related to the teeth of permanent growth.
15. Monkey teeth; Hominid dentition

#### **Preclinical practicals topics:**

1. Generally information about deciduous dentition in relation to permanent dentition – differences in colour, dimensions, physiologic diastema, age of eruption, morphology; modeling of the deciduous first maxillary molar in the modeling clay and carving of the deciduous maxillary first incisor in plaster in the 1:2 ratio according to the plaster models
2. Modeling of the deciduous maxillary lateral incisor in the modeling clay and carving of the deciduous maxillary second molar in plaster in the 1:2 ratio according to the plaster models
3. Modeling of the deciduous maxillary canine in the modeling clay and carving of the deciduous mandibular canine in plaster in the 1:2 ratio according to the plaster models
4. Modeling of the deciduous mandibular first incisor in the modeling clay and carving of the deciduous first mandibular molar in plaster in the 1:2 ratio according to the plaster models
5. Modeling of the deciduous mandibular lateral incisor in the modeling clay and carving of the deciduous second mandibular molar in plaster in the 1:2 ratio according to the plaster models
6. Drawing on the millimeter paper of details of shape of the crown, root canals and pulp chambers in various sections of deciduous mandibular and maxillary teeth; drawing of mandibular and maxillary deciduous dental arches
7. Control modeling and carving of two permanent teeth and one deciduous tooth without use of plaster models; students get individual tasks, which are verified
8. Measurement of permanent teeth dimensions on plaster models, using sliding caliper and Korkhaus orthometer; samples of human teeth and their sections; radiologic anatomy of teeth and teeth sockets; X-ray; orthopantomogram; bitewing

<p>9. Dental occlusion and articulation – Angle classes; exercises with articulator; self-protecting features of the teeth and orofacial system; variations in tooth number; ASU system (Arizona State University) using plaster models; physiological wear of teeth – attrition, abrasion</p> <p>10. Development of the tooth – stages of development, bud stage, cap stage, bell stage, amelogenesis, dentinogenesis, development of pulp and periodontal ligament; histology of deciduous teeth; study of histological sections of different stages in teeth development; drawing of histological sections under small and large magnification</p> <p>11. Study of histological structure of dental enamel on dry samples – enamel prisms, incremental lines of Retzius, Hunter-Schreger bands, enamel lamellae, enamel tufts, enamel spindles, enamel-dentin junction, demonstration of the tooth surface with graphite method; pterykimata, demonstration of Nasymth's sheet on a fresh extracted tooth, drawing under small and large magnification</p> <p>12. Study of histological structure of dentine and dental pulp on dry and eosin-stained samples; dentinal tubules; Tomes's processes; interglobular dentine; Owen's lines; layer of odontoblasts; regions of the pulp, drawing under small and large magnification</p> <p>13. Organisation and function of periodontal ligament; acellular and cellular cementum; gingival, alveolar bone, study on dry and eosin-stained samples, drawing under small and large magnification</p> <p>14. Eruption of teeth; stages of eruption; eruption order of deciduous and permanent teeth; study of root resorption under small and large magnification; root resorption of permanent teeth</p> <p>15. Jaws and teeth of a primate; Neanderthal fossil remains from Krapina</p>
<p><b>Course leader and associates</b></p> <p>Hrvoje Brkić, DDS, PhD, Professor  Jadranka Keros, DDS, PhD, Professor  Vera Njemirovskij, DDS, PhD, Professor  Jelena Dumančić, DDS, PhD, Assistant Professor  Marin Vodanović, DDS, PhD, Assistant Professor  Zdravko Janicki, PhD, Professor (Faculty of Veterinary Medicine University of Zagreb)  Jakov Radovčić, PhD, (Croatian Museum of Natural History in Zagreb)  Ivana Savić Pavičin, DDS</p>
<p><b>Literature</b></p> <p><b>Required literature:</b></p> <ol style="list-style-type: none"> <li>1. Berkovitz B. K.B., Holland G. R., Moxham B.J., Oral Anatomy, Histology and Embryology, 3 Ed., Mosby, Edinburgh, 2002.</li> <li>2. Ash M.M. Jr., Nelson S.J., Wheeler's Dental Anatomy, Physiology and Occlusion, 8th Ed., (CD ROM inside), Saunders, St. Louis, 2003.</li> <li>3. Ten Cate A.R., Oral Histology: Development, Structure and Function, 5th Ed., Mosby Year Book, St. Louis, 1998.</li> <li>4. Berkovitz B. K. B., Moxham B. J., Self Assessment Picture in Dentistry: Oral Anatomy, Histology and Embryology, 1st Ed., Mosby Wolfe, London, 1994</li> </ol>
<p><b>Recommended literature:</b></p> <ol style="list-style-type: none"> <li>1. Web page of the Department of dental anthropology on <a href="http://www.sfzg.hr">www.sfzg.hr</a>.</li> </ol>
<p><b>Required knowledge</b></p> <ul style="list-style-type: none"> <li>• Descriptive terms in Dental Anatomy and Anthropology.</li> </ul>

- acroscopic structure of the features of the crown and the root of every permanent and deciduous tooth.
- Macroscopic structure of the characteristics of the endodontic space with particularities related to the tooth arch and the tooth kind.
- Order of eruption of permanent and deciduous teeth, and their resorption.
- Microscopic structure of human permanent and deciduous teeth
- Odontometrics, tooth trends, biological variability, asymmetry of teeth. Radiologic anatomy of the teeth and the jaws
- Genetic influences on tooth development and growth.
- Development of tooth occlusion and articulation.
- Human masticatory system, self-protective features of teeth
- Embryonal development of human teeth
- Comparative odontography (macroscopic and microscopic animal tooth structure)
- Evolutional development of the jaws (carnivores, herbivores, omnivores).

### Required skills

### Exam questions

1. Morphological characteristics of permanent upper central incisor
2. Morphological characteristics of permanent upper lateral incisor
3. Morphological characteristics of permanent lower central incisor
4. Morphological characteristics of permanent lower lateral incisor
5. Morphological characteristics of permanent upper canine
6. Morphological characteristics of permanent lower canine
7. Morphological characteristics of first upper premolar
8. Morphological characteristics of second upper premolar
9. Morphological characteristics of first lower premolar
10. Morphological characteristics of second lower premolar
11. Morphological characteristics of first permanent upper molar
12. Morphological characteristics of second permanent upper molar
13. Morphological characteristics of first permanent lower molar
14. Morphological characteristics of second permanent lower molar
15. Morphological characteristics of deciduous upper incisor
16. Morphological characteristics of deciduous lower incisor
17. Morphological characteristics of deciduous canine
18. Morphological characteristics of deciduous upper molars
19. Morphological characteristics of deciduous lower molars
20. Differences and similarities between deciduous and permanent teeth
21. Eruption order of deciduous teeth
22. Eruption order of permanent teeth
23. Characteristics of deciduous teeth
24. Orientation planes
25. Tooth distinguishing marks
26. Contact points
27. Anatomical crown and root
28. Physiological crown and root
29. Occlusion and articulation
30. Microscopic features of the dental tissues
31. Physical properties of the enamel

32. Chemical composition of the enamel
33. Histological composition of the enamel
34. Enamel spindle, enamel tuft, enamel lamella
35. Composition and function of the ameloblasts
36. Amelogenesis
37. Enamel prisms
38. Chemical composition of the dentin
39. Dentin types
40. Dentinogenesis
41. Composition and function of the odontoblasts
42. Dentinal tubules
43. Histological composition of the pulp
44. Layers of the pulp
45. Functions of the pulp
46. Innervation of the pulp
47. Development of the pulp
48. Physical properties of the cementum
49. Chemical composition of the cementum
50. Acellular and cellular cementum
51. Cementogenesis
52. Cementyle
53. Hypercementosis
54. Development of the root and periodontal ligament
55. Definition of periodont
56. Cells of the periodontal ligament
57. Blood vessels and nerves of the periodontal ligament
58. Alveolar bone
59. Fibers of the periodontal ligament
60. Stages of the tooth development
61. Stages of the tooth eruption
62. Bud stage
63. Early bell stage
64. Late bell stage
65. Reasons of the deciduous teeth root resorption
66. Root resorption stages
67. Types of the root resorption
68. Permanent teeth root resorption
69. What are calcospherites
70. Tuberculum Carabelli
71. Hertwig's sheath
72. Shovel-shaped incisors
73. Taurodontism
74. Premolarisation
75. Molarisation
76. Distinguishing marks
77. Variations of the tooth number
78. Variations of the tooth shape
79. Angle's classes
80. Angle class I
81. Angle class II
82. Angle class III
83. Dentes gemminates

84. Dentes concreti
85. Dens invaginatus
86. Self-protective features of the teeth
87. Molars mineralization during enamel maturation
88. Stage of the initial resorption
89. Stage of the advanced resorption
90. Stage of the maximal resorption
91. Duration of the resorption
92. Functions of the periodontal ligament
93. Enamel pearls
94. Hypodontia
95. Hyperdontia
96. Denticles
97. Enamel-cementum junction
98. Enamel striae of Retzius
99. Hunter-Schreger's bands
100. Salter's lines
101. Innervation of the periodontal ligament
102. Sharpey's fibers
103. Cells of the alveolar bone
104. Innervation of the dentin
105. Enamel prisms
106. Aprismatic enamel
107. Development of occlusion
108. ASU-system

### 3.2.44 Neurology

Basic information about the course					
Title		Neurology			
Code		71314	Abbreviation		311ONEUR
Total ECTS points		2.6	Status		Obligatory
Exam		Yes	Calculated in grade average		Yes
Language of teaching		Croatian	e-learning		No
Department		Chair of Neurology			
Course leader		Associate Professor Vanja Bašić Kes			
Course load					
		1			Total
Lectures		15			15
Clinical practicals		15			15
ECTS					2.5
Course description					
The purpose of the course in Neurology is providing the students with understanding of the central and peripheral nervous system functioning in states of health and disease, and teaching them the basics of neurological disorders which may be encountered by dentists in their everyday practice, and whose pathology can affect the diagnostic and therapeutic procedures in dentistry.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam	Yes	Major preliminary exam	Yes
Rules of grading and additional information					
Written exam (questions with multiple choice answers, of which only one is correct - multiple choice questions). Admittance to the oral exam is subject to passing the written exam.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Review of neurological disorders - diagnostic and therapeutic problems in dental practice					
2. How a dentist can recognize the symptoms and signs of neurological disease					
3. Dentist's view on diagnosis of neurological disorders					
4. The significance of cerebrovascular disease in dentistry					
5. Disorders of consciousness and epilepsy in the dental practice					
6. Movement disorders and extrapyramidal diseases, and their significance in dentistry					
7. Dental aspects of demyelinating diseases					

8. The importance of tumour, trauma and inflammation of the central nervous system in dentistry
9. Importance of neurodegenerative diseases and dementia in dentistry
10. Neuromuscular diseases and their significance in dental practice
11. The importance of diseases of the peripheral nervous system in the dental practice
12. Pathophysiology and treatment of pain
13. Headaches and craniofacial neuralgia
14. Disorders of swallowing (bulbar and pseudobulbar palsy)
15. Dental aspects of brain nerve disorders

#### **Clinical practicals topics:**

1. Taking the anamnesis and heteroanamnesis of a neurological patient
2. Physical examination of a neurological patient
3. Clinical examination of cranial nerves
4. Stroke and its significance in dental practice
5. Epilepsy and its significance in dentistry
6. The role that multiple sclerosis plays in the pathology of orofacial area
7. Problems of Parkinson's disease in the of the dentist's everyday work
8. The significance of dementia in the dental practice
9. Neurological causes of swallowing and chewing disorder (bulbar and pseudobulbar palsy)
10. Differential diagnosis of headache
11. The role that diseases of the peripheral nervous system play in the dental practice
12. Neuromuscular disorders and their significance in dentistry
13. Complications due to trauma and tumors of the central nervous system in the dental profession
14. Problems of neurodegenerative diseases in dentistry
15. The role of the dentist in prevention of neurological diseases, and major preliminary exam

#### **Course leader and associates**

Prof. Arijana Lovrenčić-Huzjan  
 Prof. dr. sc. Zlatko Trkanjec  
 Prof. dr. sc. Vesna Šerić  
 Doc. dr. sc. Vanja Bašić Kes

#### **Literature**

##### **Required literature:**

1. Demarin V, Trkanjec Z. Neurologija za stomatologe. Medicinska naklada, Zagreb, 2008.
2. Demarin V, Lovrenčić-Huzjan A i suradnici. Neurosonologija. Školska knjiga, Zagreb, 2009.
3. Demarin V i suradnici. Priručnik iz neurologije. Prosvjeta d.d., Bjelovar 1998.

##### **Recommended literature:**

1. Victor M, Ropper AH. Adams and Victor's Principles of Neurology. McGraw-Hill, New York 2005.
2. Demarin V. Moždani krvotok – klinički pristup. Naprijed, Zagreb 1994.

#### **Required knowledge**

During the course in neurology, through lectures, elective course the students acquire knowledge about the most common neurological disorders in dentistry. Students harvest knowledge about:

The most common neurological symptoms and syndromes

epidemiology, risk factors, clinical presentation, diagnosis, treatment, rehabilitation and prevention of cerebrovascular disease

differential diagnosis of ischemic or hemorrhagic stroke

differential diagnosis of subarachnoid hemorrhage

epidemiology, clinical presentation and differential diagnosis of transient ischemic attack (TIA)

clinical features, differential diagnosis and management of patients with disorders of consciousness

epidemiology, clinical presentation, diagnosis, treatment and classification of epilepsy

differentiation of different types of epileptic seizures and the most common injuries of the oral cavity in case of a significant epileptic seizures

differential diagnosis of movement disorders

distinction between various types of movement disorders

clinical features diagnostics, treatment and classification of extrapyramidal disease

epidemiology, clinical features, and treatment diagnostics of demyelinating disease

clinical presentation, diagnosis, and treatment of tumors of the central nervous system

epidemiology, clinical presentation, diagnosis, and treatment of central nervous system trauma

clinical presentation, diagnosis, and treatment of inflammation of the central nervous system

clinical presentation, diagnosis, and treatment of neurodegenerative diseases

epidemiology, clinical presentation, diagnosis, and treatment of dementia

Classification, differential diagnosis and treatment of headache

pathogenesis, differential diagnosis and treatment of pain syndromes

differential diagnosis of pain in the area of the face, mouth and neck

clinical features, differential diagnosis and therapy of cerebral nerve neuralgia

differential diagnosis of pathological disorders of n. facialis

differential diagnosis of pathological disorders of n. trigeminal

differential diagnosis of pathologies of bulbar nerves perturbation

clinical presentation, diagnosis, and treatment of neuromuscular diseases and diseases of the peripheral nervous system

differential diagnosis of pathological disorders of cerebral nerves

differential diagnosis of neurological disorders which affect the head and face

clinical features and diagnosis, chewing and swallowing

differential diagnosis of neuromuscular diseases that affect the orofacial area

clinical presentation and differential diagnosis of bulbar and pseudobulbar palsy

normal function and abnormal functioning of cerebral nerves

#### Required skills

Taking anamnesis and heteroanamnesis of neurological patients

Techniques of physical examination of neurological patients

Clinical examination of cerebral nerves

Distinguishing different types of speech disorder (dysarthria, motor, sensory, global aphasia)

Distinguishing paresis and plegia

Distinguishing bulbar paralysis from the pseudobulbar paralysis

Distinguishing damage of the upper motor neurons from the damage of the lower motor neurons

Defining an indication for lumbar puncture

Defining indications for neurophysiological examination

Defining indications for neurosonology examination

Defining indication for imaging examination (CT, MRI)

Basic techniques of performing and defining findings of electroencephalogram (EEG)

Basic techniques of performing and defining the findings of electroencephalogram (EMNG)  
Basic techniques of performing and defining findings of evoked potentials (VEP, BAER, SSEP)  
Basic techniques of performing and interpreting findings of neurosonology examination (CDFI color Doppler, Transcranial Doppler TCD)  
Basic interpretation method of images (CT computerized tomography, magnetic resonance imaging MRI)  
Distinguishing the peripheral from the central paresis n. facialis  
Distinguishing neuralgia Trigeminal from ordinary toothache  
Diets of patients with swallowing disorders  
Oral care of unconscious patients  
Oral care of patients with disorders of chewing and swallowing  
The procedure with the patient during epileptic seizures  
Sanation of injuries of the oral cavity and teeth caused by epileptic seizure

#### **Exam questions**

### 3.2.45 Ophthalmology

Basic information about the course					
Title	Ophthalmology				
Code	71317	Abbreviation	311OOFTA		
Total ECTS points	2.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Ophthalmology				
Course leader	Prof. Zdravko Mandić, PhD				
Course load					
	1		Total		
Lectures	15		15		
Clinical practicals	15		15		
ECTS			2.5		
Course description					
To introduce the student to the basic concepts in ophthalmology and get him familiar with common ophthalmic disorders. The student will learn to recognize and understand the treatment of the most frequently encountered ocular diseases.					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction					
2. Eyelid					
3. Orbit					
4. Conjunctiva and sclera					
5. Glaucoma					
6. Uvea					
7. Lens					
8. Retina I					
9. Retina II					
10. Neuroophthalmology					
11. Strabismus					
12. Optics and refraction					
13. Final lecture					

<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. The Ophthalmic Examination</li> <li>2. Ophthalmic Equipment</li> <li>3. Visual acuity</li> <li>4. Measuring Intraocular Pressure</li> <li>5. Slit-lamp Examination</li> <li>6. Ophthalmoscopy</li> <li>7. Ophthalmic ultrasound</li> <li>8. Examination of the Fundus</li> <li>9. Strabismus Testing</li> <li>10. Cataract Surgery</li> <li>11. Red Eye</li> <li>12. Uveal Tract Disorders</li> <li>13. Disorders of Retina</li> <li>14. Ophthalmic Plastic and Reconstructive Surgery</li> </ol>
<b>Course leader and associates</b>
Prof. Zdravko Mandić, PhD, FEBO Prof.dr.sc.Renata Iveković, PhD, FEBO Ivanka Petric Vicković, PhD
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Cerovski (gl.urednik). Oftalmologija. Udžbenik za studente medicine. Zagreb. Stega tisak 2011</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Bušić M, Kuzmanović Elabjer B, Bosnar D (urednici). Seminaria Ophthalmologica. Zagreb, Cerovski d.o.o. 2011</li> </ol>
<b>Required knowledge</b>
Anatomy and Physiology of the Eye and Orbit Optics and Refraction Oral diseases and associated eye diseases Immune eye disorders Glaucoma and glaucoma therapy Uveitis Orbital diseases
<b>Required skills</b>
Visual acuity Measuring Intraocular Pressure Ophthalmoscopy Slit-lamp Examination Red Eye Differential Diagnosis
<b>Exam questions</b>
Eye Anatomy Orbital tumours

Orbital inflammation  
Dacryocystitis  
Orbital Thyroid Disease  
Eyelids inflammation  
Entropion and Ectropion  
Conjunctivitis  
Viral Keratitis  
Iridocyclitis  
Glaucoma, differential diagnosis  
Congenital Glaucoma  
Uveal tumours  
Retinal diseases  
Diabetic Retinopathy  
Retinal detachment  
Ametropia and refractions  
Hypermetropia  
Myopia  
Astigmatism  
Strabismus

### 3.2.46 Occlusion

Basic information about the course					
Title	Occlusion				
Code	71319	Abbreviation	221OOKLU		
Total ECTS points	4.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Prosthodontics				
Course leader	assistant professor Nikša Dulčić				
Course load					
	1		Total		
Lectures	15		15		
Preclinical practicals	30		30		
ECTS			4.5		
Course description					
To enable students' understanding of basic concepts of occlusion, which they encounter during their study in the field of prosthodontics, restorative dentistry, orthodontics, pediatric dentistry, periodontics, implantology and other clinical branches of dental medicine. Introduction to general and specific rules of dental occlusion on natural and artificial teeth and their occlusal surfaces, and analysis of their correlation with functional movements and mandibular positions. Introduction to specific characteristics of different types of articulators and their application in reconstruction of occlusal relationships. Introduction to the meaning and role of anterior and posterior determinants of occlusion. Adoption of criteria for recognition of a normal, functionally healthy and compensated stomatognathic system.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	
Rules of grading and additional information					
At the end of the semester, the overall grade is given based on the assessment of several elements during the semester – assessment of knowledge (small preliminary exam), engagement and skills acquired in preclinical (laboratory) work, according to the criteria for each teaching unit, and the knowledge exam grade is added at the end of the semester, which is, together with a positive assessment of the performed practical exercises, required for admission to a higher semester.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction to the course, terminology, structure and development of the masticatory system					
2. Tooth position and occlusion, occlusal plane, compensation curves					

3. Concepts of occlusion, mutually protected occlusion
4. Different systems for tooth identification
5. Dynamics of mandibular movements
6. Articulators and their application
7. Border movements – Posselt's diagram
8. Centric relation (CR) and maximum intercuspation (MI). Difference between CR and MI.
9. Determinants of occlusal morphology
10. Wax-up
11. Methods of mandibular movement registration
12. Neuromuscular regulation and pain mechanisms
13. Criteria for optimal functional occlusion, orthopedically stable occlusion
14. Mastication, deglutition, sound pronunciation
15. Importance of occlusion for restorative and implant-prosthetic restorations

#### **Preclinical practicals topics:**

1. Wax box building and water permeability test
2. Analysis of plaster casts (upper and lower jaw), marking of buccal and lingual cusps and central fossa
3. Mounting of casts on middle value articulator. Setting of average values of condylar elements.
4. Checking of intercuspal relationships
5. Practicing of protrusive movement, meaning of anterior guidance (vertical and horizontal overlap)
6. Practicing of lateral movements – meaning of condylar guidance
7. Marking of centric contacts (three-point contacts) on occlusal tooth surfaces (supporting cusps and guidance cusps)
8. Grinding of occlusal tooth surface on the upper lateral segment (5, 6, 7) and preparation for wax-up by marking of occlusal lines (buccal and lingual cusps, central fossa and cusp tips)
9. Wax-up for maxillary buccal cusps base. Checking of height and position of cusp tips in the articulator.
10. Wax-up for maxillary palatal cusps base. Checking in the articulator.
11. Waxing of marginal contact areas, modeling and separation of interdental contact point
12. Modeling of mesial and distal inclination of cusps. Modeling of buccal and oral contours of cusps. Checking of height and movements in the articulator.
13. Modeling of inner slants and inclinations of cusps in relation to central fossa. Finishing of fissures and connections.
14. Checking of three-point contacts by means of articulation foils.
15. Correction of waxing of the upper segment.

#### **Course leader and associates**

Prof. dr. sc. Melita Valentić-Peruzović  
 Doc. dr. sc. Iva Alajbeg  
 Doc. dr. sc. Robert Ćelić  
 Doc. dr. sc. Nikša Dulčić  
 Dr. sc. Davor Illeš  
 Dr. sc. Ivica Pelivan  
 Dr. sc. Nikola Petričević

#### **Literature**

##### **Required literature:**

<ol style="list-style-type: none"> <li>Okeson J.P. Temporomandibularni poremećaji i okluzija, 1. hrvatsko izdanje, Valentić-Peruzović M., ured.hrv.izd. Medicinska naklada, Zagreb. 2008.</li> <li>Ash Jr, M. M, Nelson S.J. Wheeler's Dental Anatomy, Physiology and Occlusion, Elsevier Science, 8th ed., 2002.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>Wassell R, Naru A, Steele J, Nohl F. Applied Occlusion, Quintessence Publishing Co Ltd., London. 2008.</li> </ol>
<b>Required knowledge</b>
Understanding of basic notions of occlusion. Introduction to general and specific rules of dental occlusion of natural and artificial teeth. Correlation between functional movements and mandibular positions. Acquisition of criteria for recognition of a normal, functionally healthy and compensated stomatognathic system.
<b>Required skills</b>
During their study in the 4th semester, students need to learn to model all the details of occlusal tooth surfaces in a precise and neat manner, and to adjust the form and position of occlusal contacts to the corresponding occlusal scheme (occlusal conception) and movements in the articulator.
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>Structure of masticatory system</li> <li>Development of masticatory system</li> <li>Tooth position</li> <li>Occlusal plane</li> <li>Compensation curves – Spee's curve</li> <li>Compensation curves – Monson's curve</li> <li>Border movements – Posselt's diagram</li> <li>Concepts of occlusion</li> <li>Mutually protected occlusion</li> <li>Canine guided occlusion</li> <li>Bilaterally balanced occlusion</li> <li>Three-point contacts</li> <li>Types of cusps</li> <li>Systems for tooth identification</li> <li>Mandibular movements</li> <li>Articulators</li> <li>Application of articulators</li> <li>Border movements – Posselt's diagram</li> <li>Centric relation (CR)</li> <li>Maximum intercuspation (MI)</li> <li>Difference between CR and MI</li> <li>Horizontal determinants of occlusal morphology</li> <li>Vertical determinants of occlusal morphology</li> <li>Methods of mandibular movement registration</li> <li>Neuromuscular regulation and pain mechanisms</li> <li>Criteria for optimal functional occlusion</li> <li>Orthopedically stable occlusion</li> <li>Mastication</li> <li>Deglutition</li> </ol>

## 30. Sound pronunciation

### 3.2.47 Occlusion and Function

Basic information about the course					
Title	Occlusion and function				
Code	71318	Abbreviation	411IOKLF		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Removable Prosthetic				
Course leader	assistant professor Domagoj Žabarović				
Course load					
	1		Total		
Lectures	15		15		
Seminars	15		15		
ECTS			1.5		
Course description					
Students should master modern terminology, repeat and recognize anatomical-physiological characteristics of the components of healthy stomatognathic system, and learn the differences between occlusion concepts on natural and artificial teeth. Students must acquire knowledge of the criteria for achieving normal, functionally healthy and compensated stomatognathic system, so-called orthopedic stable occlusal relationships. They should also learn about the discrepancy between the activities of individual parts of the stomatognathic system and consequential disorders. The emphasis is put upon the importance of observing and objectively recording the function of stomatognathic system, as criterion for checking and evaluation of the health of stomatognathic system.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	
Rules of grading and additional information					
At the end of the semester the overall grade is based upon the evaluation of several elements during the semester – the commitment to study, precision and creativity at work, evaluation of knowledge (1st partial exam) while the knowledge examination grade is added at the end of the semester.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Static and dynamic occlusal contacts					
2. The main point contacts of tooth surfaces (A,B,C-contacts), contacts on natural teeth, artificial teeth and implants					
3. Occlusal concepts – classical and contemporary					

<ol style="list-style-type: none"> <li>4. Centric relation, maximal intercuspidation, methods for deprogramming and leading of mandible// mandible deprogramming and leading methods</li> <li>5. Intraoral records/registrates, methods and checkings</li> <li>6. Usage of articulators of average values in daily practice</li> <li>7. Face-bow registration and selection of reference plane</li> <li>8. Occlusal equilibration</li> <li>9. Disorder of occlusal contacts due to partial teeth loss</li> <li>10. Disorder of occlusal contacts due to abrasion of occlusal surfaces</li> <li>11. Primary and secondary occlusal trauma</li> <li>12. Intermaxillary relation registration- confirmative or changed (reorganized) concept</li> <li>13. Occlusal disorder and changes in other parts of stomatognathic system</li> <li>14. Impact of posture and changes in occlusal contacts</li> <li>15. Planning and verification of occlusion on complex prosthetic and implant supported prosthetic works</li> </ol>
<b>Seminar topics:</b> <ol style="list-style-type: none"> <li>1. Literature review and on-line exercises of setting point contacts on default models</li> <li>2. Interdependence of occlusal determinants; on-line exercises of determination and calculation of anterior and posterior occlusal determinants values</li> <li>3. Role of immediate and progressive side shift, on-line exercises with description of impact upon shape and size of cusps</li> <li>4. Opening-closing movement, rotational and translational components; on-line tasks</li> <li>5. Role of muscle and ligament impact on mandible movement; on-line analysis of active components of specific movements</li> </ol>
<b>Course leader and associates</b> Doc.dr.sc. Domagoj Žabarović Doc.dr.sc. Davor Ileš Dr.sc. Ivica Pelivan
<b>Literature</b> <b>Required literature:</b> <ol style="list-style-type: none"> <li>1. Okeson J.P. Temporomandibular Disorders and Occlusion. First Croatian edition. Valentić-Peruzović M. , edt. cro. ed. Medicinska naklada Zagreb 2008.</li> <li>2. Ash Jr, M.M, Nelson S.J. Wheeler's Dental Anatomy, Physiology and Occlusion. Elsevier Science, 8th ed., 2002</li> </ol>
<b>Recommended literature:</b> <ol style="list-style-type: none"> <li>1. Wassell R. Naru A, Steele J, Nohl F. Applies Occlusion. Quintessence Publishing Co.Ltd. London, 2008</li> </ol>
<b>Required knowledge</b> Students should learn about the importance of interrelations between active and passive components of stomatognathic system, acquire the criteria for optimal occlusal relationships and recognize the impacts of improper planning and inadequate occlusion reconstruction. Students are required to prepare the seminar in ppt and give a presentation using recent sources from domestic and foreign literature.
<b>Required skills</b> Students should acquire knowledge of the occlusal relationships in various clinical situations and positive criteria for independent decision-making upon occlusal therapy.

### Exam questions

1. Static occlusal contacts
2. Dynamic occlusal contacts
3. The main point contacts of tooth surfaces (A,B,C)
4. Occlusal contacts on natural teeth
5. Occlusal contacts on artificial teeth
6. Occlusal contacts on implants
7. Occlusal concepts – classical and contemporary
8. Centric relation
9. Maximal intercuspitation
10. Opening-closing jaw movement
11. Mandible deprogramming methods
12. Mandible leading methods
13. Intraoral records/registrates
14. Methods and tests of occlusion
15. Average values articulators
16. Face- bow registration
17. Reference plane
18. Bennet's angle
19. Bennet's movement
20. Fisher's angle
21. Propulsion
22. Laterotrusion movement
23. Immediate side shift
24. Occlusal equilibration
25. Disorder of occlusal contacts due to partial teeth loss
26. Disorder of occlusal contacts due to abrasion of occlusal surfaces
27. Primary occlusal trauma
28. Secondary occlusal trauma
29. Intermaxillary relation registration- confirmative concept
30. Intermaxillary relation registration- changed (reorganized) concept
31. Head position and changes in occlusal contacts

### 3.2.48 Oncology and Radiotherapy

Basic information about the course					
Title	Oncology and radiotherapy				
Code	71320	Abbreviation	411OONKO		
Total ECTS points	2.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Oncology and Nuclear Medicine				
Course leader	Associate Professor Ante Bolanča, PhD				
Course load					
	1		Total		
Lectures	15		15		
Clinical practicals	15		15		
ECTS			2.5		
Course description					
<p>During the course, particular stress is placed on epidemiology, prevention and diagnostics in the early stage of illness. This is followed by learning about methods of oncologic treatment as well as palliative care and psychological aspects of malignant illnesses.</p> <p>The practical part refers to learning about diagnostic procedures with the purpose of acquiring basic knowledge of oncology and familiarizing the patient with the malignant illness.</p> <p>The theoretical part of the course consists of lectures from certain areas of oncology whereas the practical part is carried out by studying case reports and direct introduction of the students to the facilities and equipment of a modern oncologic center.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>During the practical part of the exam, contact with the patient, making of a working diagnosis as well as the approach and procedures of making the diagnosis are graded.</p> <p>During the theoretical part, basic knowledge on the etiology of certain tumors, their diagnostics, treatment and follow up of the patient is required.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div><div>Introduction, epidemiology, screening</div></div> <div><div>2.</div><div>Chemotherapy, radiotherapy</div></div> <div><div>3.</div><div>Skin tumors</div></div> <div><div>4.</div><div>CNS tumors</div></div> <div><div>5.</div><div>Head and neck tumors</div></div>					

<ol style="list-style-type: none"> <li>6. Tumors of the lungs and mediastinum</li> <li>7. Tumors of the digestive tract</li> <li>8. Tumors of the urinary tract</li> <li>9. Tumors of female reproductive organs</li> <li>10. Tumors of male reproductive organs</li> <li>11. Childhood tumors</li> <li>12. Lymphomas and leukemias</li> <li>13. Breast tumors</li> <li>14. Benign tumors</li> <li>15. Sarcomas</li> </ol>
<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Medical history and status of the oncologic patient</li> <li>2. Tele and radiotherapy equipment</li> <li>3. Oncologic chemotherapy outpatient clinic</li> <li>4. Patient with a head and neck tumor</li> <li>5. Patient with a skin tumor</li> <li>6. Patient with a brain tumor</li> <li>7. Patient with lung tumor</li> <li>8. Female patient with a breast tumor</li> <li>9. Female patient with a gynecological tumor</li> <li>10. Patient with a colon or rectum tumor</li> <li>11. Patient with a thyroid tumor</li> <li>12. Patient with a urinary tract tumor</li> <li>13. Planning of brachytherapy</li> <li>14. Planning chemotherapy</li> </ol>
<b>Course leader and associates</b>
<p>Professor Ante Bolanča, PhD</p> <p>Professor Zvonko Kusić, PhD</p> <p>Assistant Professor Ana Fröbe, PhD</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Klinička onkologija, Šamija i suradnici, Medicinska naklada 2002.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1.</li> </ol>
<b>Required knowledge</b>
<p>Learning about the basic diagnostic methods in oncology (cytology, pathology, radiology, scintigraphy, endoscopy). Pathways of tumor spreading, treatment of malignoma, prognosis.</p>
<b>Required skills</b>
<p>Medical history and patient status – palpation of tumorous formations, recognizing leukoplakias, palpation of regional lymph nodes. Understanding radiological tests. Differential diagnostic findings.</p>
<b>Exam questions</b>

Carcinogenesis, tumor epidemiology, ways of tumor spreading, cytological and histological types of tumors.

Diagnostic tests in oncology in every solid malignant tumor.

Brain tumors, eye tumors, ORL tumors, skin tumors, histological types of tumors, thyroid tumors, breast tumors, tumors of the stomach, esophagus, liver, pancreas, kidney, urinary bladder, testes, penis.

Tumors of the cervix, uterus, ovaries, tumors of the colon and rectum.

Childhood tumors, lymphomas and leukemias.

Treatment of each specific tumor, sites of metastases and prognosis. Hormone therapy, radiotherapy, brachytherapy, chemotherapy, immunotherapy.

### 3.2.49 General Pharmacology

Basic information about the course					
Title	General pharmacology				
Code	71321	Abbreviation	221OOFAR		
Total ECTS points	3	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Pharmacology				
Course leader	Associate Professor Kata Rošin-Grget, DDS, PhD				
Course load					
	1		Total		
Lectures	15		15		
Laboratory practicals	15		15		
ECTS			3		
Course description					
<p>Basic pharmacology teaches general principles regarding the action of the drug, independent of the chemical structure and the type of each drug. The goal of teaching the basic pharmacology is to introduce students to the:</p> <ul style="list-style-type: none"><li>– basic physic-chemical properties of drugs,</li><li>– general principles of pharmacokinetics,</li><li>– the possible mechanisms of action of drugs-pharmacodynamics</li><li>– factors that influence the effectiveness of the drug,</li><li>– influence of some physiological conditions such as pregnancy and lactation, and age, on the drug effectiveness and possible side effects,</li><li>– adverse effects of drugs,</li><li>– drug interactions,</li><li>– dosage of medication,</li><li>– research on new drugs and clinical trials,</li></ul> <p>Additionally, one of the goals for the student is to become familiar with the basics of prescribing drugs:</p> <ul style="list-style-type: none"><li>– description and characteristics of pharmaceutical forms of drugs,</li><li>– practicing of drug prescribing - all forms of drugs in accordance with the legislation,</li><li>– practicing of drug prescribing – original, magistral and galenic preparations - on prescription.</li></ul>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
During the course, the success of prescribing drugs on given examples is evaluated, and at the end of course (end of IV semester) final exam takes place. Final exam is consisted of two parts: the					

written part of the exam (split into two parts: the prescriptions /3 default samples/ and multiple choice test with 30 questions) and oral exam.

## Weekly teaching plan

### 1. component

#### Lecture topics:

1. Definition, classification of pharmacology and origin of drugs
2. Nomenclature of drugs, types of therapy
3. Routes of drug administration
4. Absorption and bioavailability
5. Distribution and biotransformation
6. Excretion of drugs
7. Mechanisms of drug action
8. Receptors, relationship: dose/effect
9. Pharmacokinetics, accumulation
10. Factors that affect treatment outcome
11. Effect of age and pregnancy and lactation on the pharmacokinetics and pharmacodynamics of the drug
12. Drug tolerance
13. Intolerance, side effects
14. Interactions, Dosage
15. Development of new drugs, clinical trials

#### Laboratory practicals topics:

1. Prescription writing principles and dose determining
2. Solutions for internal use
3. Solutions for external use
4. Exercise in prescribing solutions
5. Dispensing/dosage of drugs to children
6. Drops for internal and external use
7. Exercise in prescribing drugs for children and drops
8. Solid drugs, powders, tablets, capsules
9. Exercise in prescribing solid drugs
10. Drugs for rectal administration, injections, ointments, pastes
11. Exercise in prescribing injections etc.
12. Drugs for oral mucosa
13. Prescribing magistral and galenic preparations in dental practice
14. Trade name drugs and exercise in prescribing
15. Exercise in prescribing of all drug forms

### Course leader and associates

Kata Rošin-Grget, DDS, PhD, Associate Professor  
 Kristina Peroš, DDS, PhD, Senior Research Fellow  
 Ivana Šutej, DDS, PhD, Senior Research Fellow  
 Krešimir Bašić, DDS, Research Fellow

### Literature

#### Required literature:

1. Ileana Linčir et all. Pharmacology for dentistry, 3rd. ed. Zagreb: Medicinska naklada; 2011.
2. Tomić D: Therapeutic doses (textbook), 6th.ed. Zagreb:Medicinska naklada;1995.

**Recommended literature:**

1. Rang HP, Dale MM, Ritter JM, Moore PK: Pharmacology(1st. Croatian edition, ed. Geber J). Zagreb: Golden marketing-Tehnička knjiga; 2006.
2. Yagiela JA, Neidle EA, Dowd FJ: Pharmacology and therapeutics for Dentistry, 5th. ed., London: Mosby; 2004.
3. Rošin-Grget K. Prescribing of magistral and galenic drugs in dental practice. In : Bradamante V, Klarica M, Šalković-Petrišić M. eds. Pharmacology textbook, 2nd. ed. Zagreb: Medicinska naklada; 2008.

**Required knowledge**

Upon completion of the course the student should know what is drug, classification of drugs and its origin, drug naming, type of therapy, routes of drug administration, absorption and bioavailability, distribution and biotransformation, excretion of drugs, possible mechanisms of drug action, receptors, and the dose/effect ratio, accumulation, factors affecting therapy outcomes, effects of age and certain physiological conditions such as pregnancy and lactation to drugs, tolerance, intolerance, side effects, interactions, dosage, research and clinical testing of new drugs. Students should know all the forms of drugs and how to properly prescribe drugs according to the Law on drugs.

**Required skills**

- learn all types of drugs used in the treatment
- be able to determine the optimal amount (dose) of drug, especially drug dosage for children
- learn properly prescribing of drugs according to the Law on drugs

**Exam questions**

1. Drug sources
2. Drug nomenclature and classification
3. Types of therapy and routes of drug administration
4. Absorption of drugs
5. Drug distribution
6. Elimination of drug
7. The mechanism of action of drugs - pharmacodynamics
8. Pharmacokinetics
9. Factors that influence the effect of the drug
10. Application of drugs to pregnant women, nursing women and the elderly
11. Tolerance
12. Intolerance
13. Undesirable effects of drugs
14. Drug interactions
15. Development of new drugs
16. Drug dosage, therapeutic index and therapeutic window
17. Drug prescription, prescription parts
18. Pharmaceutical forms of drugs
19. Brand name drugs, magistral and galenical preparations
20. Pharmaceutical forms for topical use in dentistry

### 3.2.50 General and Social Dental Medicine

Basic information about the course					
Title	General and social dental medicine				
Code	71322	Abbreviation	211IOSDM		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Paediatric and Preventive Dentistry				
Course leader	Professor Željko Verzak PhD DMD				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
<p>Movement monitoring as well as evaluation methods of oral health condition are very important for evaluation of therapeutic, planning of preventive measures needs as well as proper establishment of dental protection system. For this purpose the status index of oral health and epidemiological methods are priceless. Nowadays, in very dynamic functioning conditions of dental protection system, it is of utmost importance to be well informed about health insurance system, forms of provision of dental protection. They include knowledge of education system, postgraduate education system, specialisation system. One should be also familiar with conditions for opening private dental surgeries and leased dental surgeries (spatial, minimum technical, administrative, personnel and likewise conditions). Legal and tax aspects of successful functioning of dental health institutions should not be ignored too.</p> <p>The course task is to get students acquainted with the architecture of dental education; the very education (undergraduate and postgraduate education) and specialisation system in dental medicine. Students will get insight in the structure and form of the health insurance in Croatia as well as the ways of functioning of dental institutions within the same framework. The lesson plan will include legal framework of dental protection enforcement. Analysis of particular legal cases will be shown so that students can get an insight in legal possibilities and challenges during dental health enforcement. Students will also be acquainted with the oral health status in Croatia and Europe and improvement measures as well as monitoring of the same.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Weekly teaching plan					
1. component					

<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Preliminary lecture</li> <li>2. Oral health aspect</li> <li>3. Legal aspects of dental profession</li> <li>4. Health insurance system in Croatia</li> <li>5. Education architecture of the dental profession</li> <li>6. Specialisation system in dental medicine</li> <li>7. Enforcement of health education and preventive measures</li> <li>8. Epidemiology in dental medicine</li> <li>9. Contemporary equipment of a dental surgery</li> <li>10. Methods of state assessment and oral health movements</li> <li>11. Private dental surgery architecture I</li> <li>12. Private dental surgery architecture II</li> <li>13. Leased dental surgery architecture I</li> <li>14. Leased dental surgery architecture II</li> <li>15. Presentation of legal cases from experience</li> </ol>
<b>Course leader and associates</b>
<p>Professor Ivana Čuković-Bagić PhD DMD</p> <p>Professor Ilija Škrinjarić PhD DMD</p> <p>professor Željko Verzak PhD DMD</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Planning and evaluation of public dental health services WHO, Geneva</li> <li>2. Planning Oral Health Services WHO, Geneva</li> <li>3. Ž. Jakšić i sur. Socijalna medicina, Medicinska naklada, Zagreb, 2000.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Scientific activity and higher education Law</li> <li>2. Medical care Act</li> <li>3. Dental activity Act</li> <li>4. Medicine Law</li> <li>5. Professional names and academic degrees Act</li> <li>6. Institution Law</li> </ol>
<b>Required knowledge</b>
<p>Knowledge of education system as well undergraduate as postgraduate training. Also instruction about specialisation system in dental medicine. Acquire the principles of dental surgery functioning as well private as leased ones. Knowledge of conditions for dental surgery opening as well leased as private ones. Acquire basic knowledge about dental surgery management and legal challenges as well as preventing and solving of the same. Acquire the knowledge about identification of oral health status and its monitoring.</p>
<b>Required skills</b>
<b>Exam questions</b>
<p>Dental education (graduate, professional and scientific)</p> <p>Health insurance for dental treatments</p> <p>Rules for legal and economic business of a dental surgery</p>

Private dental surgery and leased surgery

Epidemiology in dental medicine

Oral health

Promotion of healthy life style

Addictions and their repercussions on dental health

Preventive measures in dental medicine for the whole population(children, adolescents, grown-ups)

Health information technology in dental medicine

### 3.2.51 General Radiology

Basic information about the course					
Title	General radiology				
Code	71323	Abbreviation			
Total ECTS points	2.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning			
Department	Chair of General and Dental Radiology				
Course leader	Assistant professor Dijana Zadavec, PhD				
Course load					
	1		Total		
Lectures	15		15		
Seminars	3		3		
Clinical practicals	12		12		
ECTS			2.5		
Course description					
Physics applied in radiology, equipment and process of creating analogue and digital radiological display. Method of radiological display of a pathological process according to the systems. Learning about pathomorphological radiological display in all systems. Connecting the radiological display and the patient's clinical picture. An overview of all analogue and digital radiological methods.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction					
2. Physical basics of radiological diagnostics I					
3. Physical basics of radiological diagnostics II					
4. Analogue and digital methods in radiology (radiography, ultrasound, CT, MRI)					
5. Algorithms of radiological methods					
6. Radiology of parenchymal organs (liver, pancreas, spleen)					
7. Radiology of the biliary tract					
8. Radiology of thoracic organs					
9. Radiology of the gastrointestinal tract					
10. Radiology of the urogenital tract					

<ul style="list-style-type: none"> <li>11. Diagnostics of the breast and prostate</li> <li>12. Neuroradiology</li> <li>13. Emergencies in radiology</li> <li>14. Radiology of the osteomuscular system</li> <li>15. Biological effects of radiation, doses</li> </ul>
<b>Seminar topics:</b>
<ul style="list-style-type: none"> <li>1. Technique of X-ray imaging; digital methods</li> <li>2. Thoracic organs; Gastrointestinal system; Parenchymal organs of the stomach; Biliary system</li> <li>3. Neuroradiology; Radiology of the bones; Urinary tract</li> </ul>
<b>Clinical practicals topics:</b>
<ul style="list-style-type: none"> <li>1. Analysis of radiological image</li> <li>2. Analysis of radiological image</li> <li>3. GI system, liver, spleen, pancreas</li> <li>4. GI system, liver, spleen, pancreas</li> <li>5. Thoracic organs</li> <li>6. Thoracic organs</li> <li>7. Urinary tract</li> <li>8. Urinary tract</li> <li>9. Neuroradiology</li> <li>10. Neuroradiology</li> <li>11. Clinical exercises; Musculoskeletal system</li> <li>12. Clinical exercises; Musculoskeletal system</li> </ul>
<b>Course leader and associates</b>
Professor Ivan Krolo, PhD Dijana Podoreški, PhD
<b>Literature</b>
<b>Required literature:</b>
<ul style="list-style-type: none"> <li>1. Hebrang A. Klarić R. Radiologija. Medicinska naklada Zagreb: 2001.</li> </ul>
<b>Recommended literature:</b>
<ul style="list-style-type: none"> <li>1. Janković S., Eterović D. Fizikalne osnove i klinički aspekti medicinske dijagnostike. Medicinska naklada: 2002</li> </ul>
<b>Required knowledge</b>
Basic knowledge of physics of radiological diagnostics. The process of x-ray imaging. Structure and parts of an X-ray device. A normal X-ray image according to the organ systems. X-ray images of pathological changes according to the organ systems and type of pathological changes. Complementary relationship between X-ray diagnostics and clinical work. Protection of patients and medical staff from radiation. Allowed doses of radiation. Dosimetry.
<b>Required skills</b>
The basics of radiological process of creating the final product. Differentiating pathological processes from normal findings on an X-ray image. Applied knowledge of algorithms of radiological methods in clinical practice. Use of X-ray findings in clinical practice.
<b>Exam questions</b>

Types of ionizing radiations. Origin of X-rays. Structure of atoms. Passing of radiation through matter.

Photoelectric effect. Compton's effect. Energy of bonding. Types of ionizing radiation.

Electromagnetic radiation. Cathode rays. Electrons, protons, neutrons. Ionization. Electromagnetic spectrum. X-ray tube. Anode, cathode. Focus. Heating current. Production of high speed electrons. Origin of X-rays. Characteristic radiation. Generator of X-ray apparatus. Control panel. High-voltage and low-voltage transformer. Filters. Collimator. Intensity and hardness of X-rays. Dispersed radiation, absorbed radiation. Inverse-square law. Absorption of X-ray beams in dental medicine. Structure of X-ray film. Latent image. Craniograph. Image of sinuses. Image by Schuller. Linear tomography, CT, MRI, ultrasound.

Pathology of musculoskeletal system. Pathology of nervous system. Pathology of gastrointestinal system. Pathology of thoracic organs. Angiographies.

### 3.2.52 Oral Hygiene

Basic information about the course					
Title	Oral hygiene				
Code	71324	Abbreviation	411IOHIG		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Paediatric and Preventive Dentistry				
Course leader	Professor Hrvoje Jurić				
Course load					
	1		Total		
Lectures	10		10		
Seminars	5		5		
ECTS			1.5		
Course description					
<p>The main aim is to provide a detailed insight into the meaning and methods of oral hygiene maintaining in order to achieve good oral health, as a part of achieving good general health. Teaching course content includes introductory unit that defines the terms related to oral hygiene and oral health, as well as the objectives of the World Health Organization in achieving optimal overall health. Further learning units cover a description of all population groups (from pregnancy and early infant phase through to the elderly), in consistency with the most common dental problem that carries a certain age group. Content of the seminars includes the area of oral hygiene maintaining in special needs patients.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Final mark is consisted of the mark from verbal exam and the mark from the seminar's activity.					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div></div><div>1. Objectives of the World Health Organization (Global Oral Health Programme)</div><div>2. The importance of oral hygiene for oral and systemic health</div><div>3. Mechanical plaque control</div><div>4. Chemical plaque control</div><div>5. Fluorides and chlorhexidine</div><div>6. Oral hygiene of pregnant woman and early infant</div><div>7. Oral hygiene in children with primary and mixed dentition</div><div>8. Oral hygiene in children with young permanent dentition</div></div>					

9. Oral hygiene in adolescents 10. Oral hygiene in adults
<b>Seminar topics:</b>
1. Oral hygiene in persons with mental retardation 2. Oral hygiene in persons with eating disorders 3. Oral hygiene in persons with neurological disorders 4. Oral hygiene in persons with diabetes 5. Oral hygiene in persons with respiratory disorders
<b>Course leader and associates</b> Professor Ivana Čuković-Bagić
<b>Literature</b>
<b>Required literature:</b>
1. Darby ML, Walsh MM. Dental Hygiene Theory and Practice. 2nd Ed. Saunders, 2003. – some parts
<b>Recommended literature:</b>
1.
<b>Required knowledge</b>
Students should acquire knowledge about the importance of oral hygiene for general health as well as knowledge about oral hygiene related to the overall population (healthy people and people with special needs), through the following aspects: - Oral hygiene diagnostics - Treatment plan - Oral hygiene evaluation - Oral hygiene implementation
<b>Required skills</b>
Skills include mastering level 1 i.e. only theoretical knowledge listed above.
<b>Exam questions</b>
1. Oral health evaluation 2. Methods of oral hygiene diagnostics 3. Methods of oral hygiene maintaining 4. Mechanical plaque control 5. Chemical plaque control 6. Fluorides and chlorhexidine 7. Counseling on nutrition 8. Oral hygiene and characteristics of every age group 9. Oral hygiene in special needs patients

### 3.2.53 Oral Surgery I

Basic information about the course				
Title	Oral surgery I			
Code	71325	Abbreviation	512OOKI1	
Total ECTS points	5.5	Status	Obligatory	
Exam	Yes	Calculated in grade average	Yes	
Language of teaching	Croatian	e-learning	No	
Department	Department of Oral Surgery			
Course leader	Professor Davor Katanec, PhD			
Course load				
	1	2	Total	
Lectures	15	15	30	
Special clinical practicals	30	30	60	
ECTS			5.5	
Course description				
The objective of the course is to provide the student with enough knowledge and skill to be able to independently perform minor oral surgical procedures in their future dental practice.				
The course teaches students to:				
<ul style="list-style-type: none"><li>• carry out a physical examination and obtain a patient history, especially regarding oral surgery and differential diagnosis of pathologic conditions in the oral cavity</li><li>• use different techniques of local anesthesia in the oral cavity and understand its mechanism of action and possible local or systematic adverse effects</li><li>• perform the art of tooth extraction, as well as manage complications during and after the procedure</li><li>• comprehend the etiology, clinical features, diagnosis and treatment of bacterial, fungal, and viral infections in the oral cavity, as well infection related to salivary glands</li><li>• perform intraoral incision of submucous abscess and prescribe antibiotics</li><li>• use current imaging modalities for the oral region, with emphasis on intraoral and panoramic radiographs</li><li>• recognize indications for apicectomy and surgical removal of teeth</li><li>• diagnose cysts of the oral cavity and understand the basic principles of treatment</li><li>• differentiate between benign and malignant tumors</li><li>• recognize indications within preprosthetic surgery for various procedures to improve hard and soft tissue architecture and anatomy to improve oral function and optimize prosthetic rehabilitation</li></ul>				
Criteria for taking the course exam				
The prerequisite for taking the exam is a passed exam in the course Preclinical Oral Surgery.				
What is graded				
Written exam	Yes	Oral exam		Practical exam
Seminar		Minor preliminary exam		Major preliminary exam
Rules of grading and additional information				

At the end of the course students take a written exam. The exam is a test with multiple choice questions, each having more than one correct answer. Every correct answer is worth 1 point; there are no negative points. For a passing grade, student has to score 75%.

D (2) = 75-79%

C (3) = 80-89%

B (4) = 90-94%

A (5) = 95-100%

## Weekly teaching plan

### 1. component

#### Lecture topics:

1. Radiology in oral surgery
2. Retained and impacted teeth
3. Management of retained and impacted teeth
4. Surgical tooth removal
5. Suppurative infection of jaws and surrounding tissues
6. Dental infection – presentation, diagnostics, management
7. Tooth extraction during the dental infection
8. Antibiotics and dental infection
9. Endodontic surgery
10. Endodontic surgery – surgical techniques
11. Dental trauma I
12. Dental trauma II
13. Autotransplantation of tooth
14. Maxillofacial trauma I
15. Maxillofacial trauma II

#### Clinical practicals topics:

1. Medical history and clinical examination in oral surgery
2. Dental x-ray images analysis
3. Diagnostics of pain in the oral cavity
4. Local infiltration anesthesia
5. Mandibular nerve block anesthesia
6. Tooth extraction
7. Wound management following tooth extraction
8. Post-extraction socket hemorrhage management
9. Oral mucosa hemorrhage management
10. Management of painful post-extraction socket
11. Management of pericoronitis
12. Oro-antral communication – diagnostics
13. Management of oro-antral communication
14. Submucosal abscess
15. Extraction of a tooth during the acute dental infection

### 2. component

#### Lecture topics:

1. Cysts of the maxillofacial region
2. Diagnostics of the cysts of the maxillofacial region
3. Surgical management of the cysts of the maxillofacial region
4. Non-odontogenic tumors
5. Odontogenic tumors

6. Periodontal surgery
7. Salivary gland pathology
8. Etiology and epidemiology of the oral cavity cancer
9. Precancerous lesions and early diagnostics of the oral cavity cancer
10. Preprosthetic surgery – indications and possibilities
11. Preprosthetic surgery
12. Surgical prosthetics
13. Temporomandibular disorders
14. Pain of the maxillofacial region
15. Cooperation of dental medicine doctors and oral surgeons

#### **Clinical practicals topics:**

1. Incision of the intraoral abscess
2. Odontogenic sinus tracts
3. Extraction of the wisdom tooth
4. Surgical extraction of the multirrooted teeth – upper and lower molars
5. Clinical and radiological diagnostics of the odontogenic cysts
6. Cysts puncture
7. Assisting during endodontic surgery
8. Assisting during surgical tooth extraction
9. Assisting during cystectomy
10. Biopsy
11. Assisting during extirpation of benign odontogenic tumors
12. Sialolithiasis
13. Sialoadenitis
14. Fractures of jaw
15. Dental trauma

#### **Course leader and associates**

Professor Darko Macan, PhD  
 Professor Jakša Grgurević, PhD  
 Professor Davor Katanec, PhD  
 Professor Irina Filipović-Zore, PhD  
 Professor Tihomir Kuna, PhD  
 Professor Mato Sušić, PhD  
 Associate Professor Berislav Perić, PhD  
 Davor Brajdić, PhD  
 Dragana Gabrić Pandurić, PhD  
 Ana Kotarac Knežević, MSc  
 Josip Biočić, DMD  
 Marko Granić, DMD  
 Ivan Zajc, DMD

#### **Literature**

##### **Required literature:**

1. Miše I. Oralna kirurgija. Medicinska naklada. Zagreb; 1991.
2. Knežević G. i suradnici. Oralna kirurgija 2. Medicinska naklada. Zagreb; 2003.
3. Čabov T. Oralnokirurški priručnik. Medicinska naklada. Zagreb; 2009.
4. Bagatin M., Virag M. i suradnici. Maksilofacijalna kirurgija. Školska knjiga. Zagreb; 1991.  
 pp. 1.-40. Vodič kroz stomatologiju  
 pp. 93.-118. Upale maksilofacijalne regije

pp. 119.-132. Diferencijalna dijagnoza prozračnosti čeljusti pp. 177.-206. Ozljede lica i čeljusti pp. 207.-220. Bolesti temporomandibularnog zgloba pp. 221.-236. Netumorske bolesti žlijezda slinovnica pp. 237.-250. Bol maksilofacijalnog područja 5. Macan D. O etiologiji karcinoma usne šupljine. <i>Acta Stomatol Croat</i> 1996; 30/4:275-85. 6. Macan D. Analgezija u stomatologiji i samoliječenje. <i>Hrvatski stom.vjesnik</i> 2007;14/4:9-14. 7. Macan D. Primjena antimikrobnih lijekova u stomatologiji. <i>Sonda</i> 2003; 8/9:40-1.
<b>Recommended literature:</b>
1. Hupp JR, Ellis III E, Tucker MR. <i>Contemporary Oral and Maxillofacial Surgery</i> . Mosby-Elsevier. St.Louis; 2008. 2. Little JW, Falace DA, Miller CS, Rhodus NL. <i>Dental Management of the Medically Compromised Patient</i> . Mosby. St. Louis; 2008. 3. Malamed S. <i>Handbook of Local Anesthesia</i> . Mosby. St. Louis; 2004. 4. De Leeuw R. (ur). <i>Orofacial Pain. Guidelines for Assessment, Diagnosis, and Management</i> . Quintessence. Chicago; 2008.
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Tooth extraction – complications during and after the procedure</li> <li>• Tooth extraction in medically compromised patients</li> <li>• Suture removal</li> <li>• Radiologic diagnostics in oral surgery</li> <li>• Dental infection – diagnostics and management</li> <li>• Complications of the dental infection</li> <li>• Antibiotics and dental infection</li> <li>• Periapical disease – management</li> <li>• Cysts of the oral and maxillofacial region</li> <li>• Odontogenic tumors</li> <li>• Benign tumors of the maxillofacial region</li> <li>• Possibilities of preprosthetic surgery – indications</li> <li>• Precancerous lesions</li> <li>• Early diagnostics of the oral cavity cancer</li> <li>• Biopsy</li> <li>• Differential diagnostics of pathological changes in the oral cavity</li> <li>• Differential diagnostics of pain in the oral cavity</li> <li>• Pathology of the salivary glands</li> <li>• Retained and impacted teeth</li> <li>• Management of pericoronitis</li> <li>• Surgical therapy of impacted and retained teeth</li> <li>• Orthodontic-surgical treatment of retained/impacted teeth</li> <li>• Surgical prosthetics</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• Taking medical history</li> <li>• Performing clinical examination with accent on oral surgery pathology</li> <li>• Tooth extraction</li> <li>• Tooth extraction in medically compromised patients</li> <li>• Management incidents in the dental office: vasovagal syncope, allergic reactions, cardiac arrest</li> </ul>

- Post-extraction and soft tissue hemorrhage management
- Management of painful post-extraction socket
- Cleaning and sterilization of surgical instruments
- Management of semi-impacted wisdom tooth
- Management of pericoronitis
- Suture removal
- Assisting during oral surgery procedures
- Sectioning of roots in multi-rooted teeth
- Extraction of fractured root
- Application of levers during the extraction of teeth
- Incision of an intraoral abscesses
- Suturing of wounds and flaps in the oral cavity
- Infraorbital nerve block anesthesia
- Extraction of a semi-impacted wisdom tooth with a lever

### Exam questions

1. Asepsis and antisepsis
2. Sterilization and disinfection
3. Innervation of the upper jaw
4. Innervation of the lower jaw
5. Difference between local and general anesthesia
6. Structure and properties of local anesthetics
7. Contraindications for administration of local anesthetics
8. Vasoconstrictors in local anesthetic
9. Complications related to the use of vasoconstrictor in local anesthetic
10. Vasovagal syncope
11. Allergic reaction to local anesthetic
12. Toxic reaction to local anesthetic
13. Intraoral mandibular block anesthesia
14. Mandibular block anesthesia in patients with limited mouth opening
15. Indications and techniques of infiltration local anesthesia
16. Posterior superior alveolar nerve block
17. Infraorbital nerve block anesthesia
18. Nasopalatine nerve block anesthesia
19. Greater palatine nerve block anesthesia
20. Buccal nerve block anesthesia
21. Local complications while administering local anesthetic
22. Topical anesthesia
23. Failures of local anesthesia
24. Indications for tooth extraction
25. Techniques of tooth extraction
26. Instruments for tooth extraction
27. Elevators in tooth extraction
28. Complications during tooth extraction
29. Complications following tooth extraction
30. Oroantral communication
31. Oroantral fistula
32. Displacement of the tooth or a root into the maxillary sinus
33. Displacement of the tooth or a root into the sublingual area
34. Aspiration of the tooth
35. Heimlich maneuver

36. Excessive bleeding during and immediately after the tooth extraction
37. Late postoperative hemorrhage following tooth extraction
38. Management of hemorrhage following tooth extraction
39. Painful post-extraction socket
40. Fibrinolytic alveolitis (dry socket)
41. Pain management following tooth extraction
42. Indications for tooth extraction during dental infections
43. Surgical tooth extraction
44. Wisdom tooth – techniques of extraction
45. Antibiotic prophylaxis in patients with prosthetic heart valves and other cardiac conditions
46. Extraction of tooth in patients receiving radiotherapy
47. Extraction of tooth in patients receiving chemotherapy
48. Extraction of tooth during pregnancy
49. Tooth extraction in patients with artificial joints
50. Extraction of tooth in patients with bleeding and clotting disorders
51. Extraction of teeth in children
52. Management of hemorrhage from tooth socket
53. Management of hemorrhage from oral mucosa
54. Bleeding and clotting disorders
55. Dental management of patients with hemophilia
56. Etiologic factors of dental infection
57. Suppurative infection of head and neck
57. Subperiosteal and submucosal abscesses
59. Abscesses of the upper jaw
60. Abscess of the canine fossa
61. Palatinal abscess
62. Retromaxillary space abscess
63. Cheek abscess
64. Subcutaneous abscess
65. Management of dental suppurative infection
66. Tooth extraction during the dental suppurative infection
67. Local anesthesia during the acute phase of dental infection
68. Contraindications for tooth extraction during the dental infection
69. Abscesses of the lower jaw
70. Perimandibular abscess
71. Submandibular space abscess
72. Pterygomandibular space abscess
73. Abscess of the chin and submental space abscess
74. Ludwig's angina
75. Complications and spreading of dental infection
76. Mediastinitis
77. Abscess of the orbit
78. Intracranial spread of the dental infection
79. Necrotizing fasciitis
80. Surgical management of dental infection
81. Antibiotic treatment of dental infection
82. Impacted and retained teeth – etiology, definition, treatment
83. Surgical tooth removal – techniques, indications
84. Indications for removal of impacted and retained teeth
85. Complications during and after surgical removal of teeth
86. Pericoronitis
87. Orthodontic-surgical treatment of retained/impacted teeth

88. Complications during the surgical removal of impacted teeth
89. Supernumerary teeth
90. Mesiodens
91. Autotransplantation of teeth – indications and contraindications
92. Postextraction wound healing
93. Definition and indications for apicoectomy
94. Root canal filling before apicoectomy
95. Root-end filling
96. Dental trauma
97. Dental crown fracture
98. Dental root fracture
99. Dental trauma to the periodontium
100. Tooth subluxation
101. Intrusion of the tooth
102. Extrusion of the tooth
103. Avulsion of the tooth
104. Lateral luxation of the tooth
105. Injury of the gingiva and oral mucosa
106. Fracture of the alveolar process
107. Immobilization of traumatized teeth
108. Dental trauma complications
109. Fracture of the alveolar process - complications

### 3.2.54 Oral Surgery II

Basic information about the course			
Title	Oral surgery II		
Code	71326	Abbreviation	612OOKI2
Total ECTS points	10	Status	Obligatory
Exam	Yes	Calculated in grade average	Yes
Language of teaching	Croatian	e-learning	No
Department	Department of Oral Surgery		
Course leader	Professor Darko Macan, PhD		
Course load			
	1	2	Total
Special clinical practicals	45	60	105
ECTS			10
Course description			
<p>The aim of the course is to provide the student with enough knowledge and skill to be able to independently perform minor oral surgical procedures in their future dental practice.</p> <p>The course teaches students to:</p> <ul style="list-style-type: none"><li>• carry out a physical examination and obtain a patient history, especially regarding oral surgery and differential diagnosis of pathologic conditions in the oral cavity</li><li>• use different techniques of local anesthesia in the oral cavity and understand its mechanism of action and possible local or systematic adverse effects</li><li>• perform the art of tooth extraction, as well as manage complications during and after the procedure</li><li>• comprehend the etiology, clinical features, diagnosis and treatment of bacterial, fungal, and viral infections in the oral cavity, as well infection related to salivary glands</li><li>• perform intraoral incision of submucosal abscess and prescribe antibiotics</li><li>• use current imaging modalities for the oral region, with emphasis on intraoral and panoramic radiographs</li><li>• recognize indications for apicectomy and surgical removal of teeth</li><li>• diagnose cysts of the oral cavity and understand the basic principles of treatment</li><li>• differentiate between benign and malignant tumors</li><li>• recognize indications within preprosthetic surgery for various procedures to improve hard and soft tissue architecture and anatomy to improve oral function and optimize prosthetic rehabilitation</li></ul> <p>In the 11<sup>th</sup> and 12<sup>th</sup> semester there are no more lectures. Students perform clinical practice at the Department of Oral and Maxillofacial Surgery, University Hospital Dubrava, where they are acquainted with more severe pathologic conditions of the oral cavity and more medically compromised patients. During the course students are encouraged to independently perform clinical and radiological examinations, give indications for various procedures, administer local anesthesia, perform teeth extraction and incisions of intraoral abscesses. Students assist on procedures such as surgical tooth extraction, apicectomy, surgical removal of cysts, marsupialization of cysts.</p>			
Criteria for taking the course exam			
What is graded			

Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
<b>Rules of grading and additional information</b>					
At the end of the course students take practical (radiologic diagnostics, clinical examination and tooth extraction on patient) and oral exam.					
<b>Weekly teaching plan</b>					
<b>1. component</b>					
<b>Clinical practicals topics:</b>					
<ol style="list-style-type: none"> <li>1. Medical history and clinical examination in oral surgery</li> <li>2. Dental x-ray images analysis</li> <li>3. Diagnostics of pain in the oral cavity</li> <li>4. Local infiltration anesthesia</li> <li>5. Mandibular nerve block anesthesia</li> <li>6. Tooth extraction</li> <li>7. Wound management following tooth extraction</li> <li>8. Post-extraction socket hemorrhage management</li> <li>9. Oral mucosa hemorrhage management</li> <li>10. Management of painful post-extraction socket</li> <li>11. Management of pericoronitis</li> <li>12. Oro-antral communication – diagnostics</li> <li>13. Management of oro-antral communication</li> <li>14. Submucosal abscess</li> <li>15. Extraction of a tooth during the acute dental infection</li> </ol>					
<b>2. component</b>					
<b>Clinical practicals topics:</b>					
<ol style="list-style-type: none"> <li>1. Incision of the intraoral abscess</li> <li>2. Odontogenic sinus tracts</li> <li>3. Extraction of the wisdom tooth</li> <li>4. Surgical extraction of the multirrooted teeth – upper and lower molars</li> <li>5. Clinical and radiological diagnostics of the odontogenic cysts</li> <li>6. Cysts puncture</li> <li>7. Assisting during endodontic surgery</li> <li>8. Assisting during surgical tooth extraction</li> <li>9. Assisting during cystectomy</li> <li>10. Biopsy</li> <li>11. Assisting during extirpation of benign odontogenic tumors</li> <li>12. Sialolithiasis</li> <li>13. Sialoadenitis</li> <li>14. Fractures of jaw</li> <li>15. Dental trauma</li> </ol>					
<b>Course leader and associates</b>					
Professor Darko Macan, PhD Professor Jakša Grgurević, PhD Professor Davor Katanec, PhD Professor Irina Filipović-Zore, PhD					

Professor Tihomir Kuna, PhD  
 Professor Mato Sušić, PhD  
 Associate Professor Berislav Perić, PhD  
 Davor Brajdić, PhD  
 Dragana Gabrić, PhD  
 Ana Kotarac Knežević, MSc  
 Josip Biočić, DMD  
 Marko Granić, DMD  
 Ivan Zajc, DMD

## Literature

### Required literature:

1. Miše I. Oralna kirurgija. Medicinska naklada. Zagreb; 1991.
2. Knežević G. i suradnici. Oralna kirurgija 2. Medicinska naklada. Zagreb; 2003.
3. Čabov T. Oralnokirurški priručnik. Medicinska naklada. Zagreb; 2009.
4. Bagatin M., Virag M. i suradnici. Maksilofacijalna kirurgija. Školska knjiga. Zagreb; 1991.  
 pp. 1.-40. Vodič kroz stomatologiju  
 pp. 93.-118. Upale maksilofacijalne regije  
 pp. 119.-132. Diferencijalna dijagnoza prozračnosti čeljusti  
 pp. 177.-206. Ozljede lica i čeljusti  
 pp. 207.-220. Bolesti temporomandibularnog zgloba  
 pp. 221.-236. Netumorske bolesti žlijezda slinovnica  
 pp. 237.-250. Bol maksilofacijalnog područja
5. Macan D. O etiologiji karcinoma usne šupljine. Acta Stomatol Croat 1996; 30/4:275-85.
6. Macan D. Analgezija u stomatologiji i samoliječenje. Hrvatski stom.vjesnik 2007;14/4:9-14.
7. Macan D. Primjena antimikrobnih lijekova u stomatologiji. Sonda 2003; 8/9:40-1.

### Recommended literature:

1. Hupp JR, Ellis III E, Tucker MR. Contemporary Oral and Maxillofacial Surgery. Mosby-Elsevier. St.Louis; 2008.
2. Little JW, Falace DA, Miller CS, Rhodus NL. Dental Management of the Medically Compromised Patient. Mosby. St. Louis; 2008.
3. Malamed S. Handbook of Local Anesthesia. Mosby. St. Louis; 2004.
4. De Leeuw R. (ur). Orofacial Pain. Guidelines for Assessment, Diagnosis, and Management. Quintessence. Chicago; 2008.

### Required knowledge

- Tooth extraction – complications during and after the procedure
- Tooth extraction in medically compromised patients
- Suture removal
- Radiologic diagnostics in oral surgery
- Dental infection – diagnostics and management
- Complications of the dental infection
- Antibiotics and dental infection
- Periapical disease – management
- Cysts of the maxillofacial region
- Odontogenic tumors
- Benign tumors of the maxillofacial region
- Possibilities of preprosthetic surgery – indications
- Precancerous lesions
- Early diagnostics of the oral cavity cancer

- Biopsy
- Differential diagnostics of pathological changes in the oral cavity
- Differential diagnostics of pain in the oral cavity
- Pathology of the salivary glands
- Retained and impacted teeth
- Management of pericoronitis
- Surgical procedures with impacted and retained teeth
- Orthodontic-surgical treatment of retained/impacted teeth
- Surgical prosthodontics

#### Required skills

- Taking medical history
- Performing clinical examination with accent on oral surgery pathology
- Tooth extraction
- Tooth extraction in medically compromised patients
- Management incidents in the dental office: vasovagal syncope, allergic reactions, cardiac arrest
- Post-extraction and soft tissue hemorrhage management
- Management of painful post-extraction socket
- Cleaning and sterilization of surgical instruments
- Management of semi-impacted wisdom tooth
- Management of pericoronitis
- Suture removal
- Assisting during oral surgery procedures
- Sectioning of roots in multi-rooted teeth
- Extraction of fractured root
- Application of levers during the extraction of teeth
- Incision of an intraoral abscesses
- Suturing of wounds and flaps in the oral cavity
- Infraorbital nerve block anesthesia
- Extraction of a semi-impacted wisdom tooth with a lever

#### Exam questions

1. Asepsis and antisepsis
2. Sterilization and disinfection
3. Innervation of the upper jaw
4. Innervation of the lower jaw
5. Difference between local and general anesthesia
6. Structure and properties of local anesthetics
7. Contraindications for administration of local anesthetics
8. Vasoconstrictor in local anesthetic
9. Complications related to the use of vasoconstrictor in local anesthetic
10. Vasovagal syncope
11. Allergic reaction to local anesthetic
12. Toxic reaction to local anesthetic
13. Intraoral mandibular block anesthesia
14. Mandibular block anesthesia in patients with limited mouth opening
15. Indications and techniques of infiltration local anesthesia
16. Posterior superior alveolar nerve block
17. Infraorbital nerve block anesthesia
18. Nasopalatine nerve block anesthesia

19. Greater palatine nerve block anesthesia
20. Buccal nerve block anesthesia
21. Local complications while administering local anesthetic
22. Topical anesthesia
23. Failures of local anesthesia
24. Indications for tooth extraction
25. Techniques of tooth extraction
26. Instruments for tooth extraction
27. Lever in tooth extraction
28. Complications during tooth extraction
29. Complications following tooth extraction
30. Oroantral communication
31. Management of oroantral communication
32. Displacement of the tooth or a root into the maxillary sinus
33. Displacement of the tooth or a root into the sublingual area
34. Aspiration of the tooth
35. Heimlich maneuver
36. Excessive bleeding during and immediately after the tooth extraction
37. Late postoperative hemorrhage following tooth extraction
38. Management of hemorrhage following tooth extraction
39. Painful post-extraction socket
40. Fibrinolytic alveolitis (dry socket)
41. Pain management following tooth extraction
42. Indications for tooth extraction during dental infections
43. Surgical tooth extraction
44. Wisdom tooth – techniques of extraction
45. Antibiotic prophylaxis in patients with prosthetic heart valves and other cardiac conditions
46. Extraction of tooth in patients receiving radiotherapy
47. Extraction of tooth in patients receiving chemotherapy
48. Extraction of tooth during pregnancy
49. Tooth extraction in patients with artificial joints
50. Extraction of tooth in patients with bleeding and clotting disorders
51. Extraction of teeth in children
52. Management of hemorrhage from tooth socket
53. Management of hemorrhage from oral mucosa
54. Bleeding and clotting disorders
55. Dental management of patients with hemophilia
56. Etiologic factors of dental infection
57. Suppurative infection of head and neck
57. Subperiosteal and submucosal abscesses
59. Abscesses of the upper jaw
60. Abscess of the canine fossa
61. Palatinal abscess
62. Retromaxillary space abscess
63. Cheek abscess
64. Subcutaneous abscess
65. Management of dental suppurative infection
66. Tooth extraction during the dental suppurative infection
67. Local anesthesia during the acute phase of dental infection
68. Contraindications for tooth extraction during the dental infection
69. Abscesses of the lower jaw
70. Perimandibular abscess

71. Submandibular space abscess
72. Pterygomandibular space abscess
73. Abscess of the chin and submental space abscess
74. Ludwig's angina
75. Complications and spreading of dental infection
76. Mediastinitis
77. Abscess of the orbit
78. Intracranial spread of the dental infection
79. Necrotizing fasciitis
80. Surgical management of dental infection
81. Antibiotic treatment of dental infection
82. Impacted and retained teeth – etiology, definition, treatment
83. Surgical tooth removal – techniques, indications
84. Indications for removal of impacted and retained teeth
85. Complications during and after surgical removal of teeth
86. Pericoronitis
87. Orthodontic-surgical treatment of retained/impacted teeth
88. Complications during the surgical removal of impacted teeth
89. Supernumerary teeth
90. Mesiodens
91. Autotransplantation of teeth – indications and contraindications
92. Post-extraction wound healing
93. Definition and indications for endodontic surgery
94. Endodontics and endodontic surgery
95. Root-end filling
96. Dental trauma
97. Dental crown fracture
98. Dental root fracture
99. Dental trauma to the periodontium
100. Tooth subluxation
101. Intrusion of the tooth
102. Extrusion of the tooth
103. Avulsion of the tooth
104. Lateral luxation of the tooth
105. Injury of the gingiva and oral mucosa
106. Fracture of the alveolar process
107. Immobilization of traumatized teeth
108. Dental trauma complications
109. Fracture of the alveolar process
110. Sectioning of multirrooted teeth
111. Temporomandibular joint luxation
112. Repositioning of dislocated temporomandibular joint
113. Subcutaneous or submucosal emphysema
114. Displaced tooth in the maxillary sinus
115. Atrophy of the alveolar ridge
116. Hypertrophy of the oral mucosa
117. Torus palatinus
118. Torus mandibularis
119. Exostoses
120. Frenectomy
121. Maxillary labial frenectomy
122. Lingual frenectomy

123. Denture-induced fibrous hyperplasia
124. Fibrous hyperplastic retromolar tuberosity
125. Papillary hyperplasia of the palate
126. Gingival fibromatosis
127. Principles of biopsy
128. Excisional biopsy
129. Incision biopsy
130. Fine needle aspiration biopsy
131. Prophylactic and therapeutic use of antibiotics in oral surgery
132. Oral flora
133. Penicillin
134. Clindamycin
135. Prophylactic use of antibiotics
136. Prophylaxis of bacterial endocarditis
137. Perioperative chemoprophylaxis
138. Osteomyelitis
139. Sclerosing osteomyelitis
140. Proliferative periostitis
141. Osteoradionecrosis
142. Actinomycosis
143. Noninflammatory arthropathies
144. Inflammatory arthropathies
145. Primary osteoarthritis
146. Secondary osteoarthritis
147. Synovitis
148. Capsulitis
149. Rheumatoid arthritis
150. Juvenile rheumatoid arthritis
151. Psoriatic arthritis
152. Ankylosing spondylitis
153. Developmental non-neoplastic growth disorders of the condyle (hyperplasia, hypoplasia, dysplasia)
154. Acquired non-neoplastic growth disorders of the condyle (condylolysis)
155. Synovial chondromatosis
156. Nonarticular disorders
157. Muscle spasm (strain)
158. Myofascial pain and dysfunction
159. Fibromyalgia
160. Myositis ossificans progressiva
161. MR and CAT scan of temporomandibular joint

### 3.2.55 Oral Medicine I

Basic information about the course					
Title	Oral medicine I				
Code	147971	Abbreviation	511OOME1		
Total ECTS points	3	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Oral Medicine				
Course leader	Associate Professor Vanja Vučićević Boras				
Course load					
	1		Total		
Lectures	15		15		
Preclinical practicals	15		15		
ECTS			3		
Course description					
<p>Preparation of dental students for clinical (practical) work on patients with oral diseases and salivary gland diseases either locally or systemically induced, their recognition, conduction of diagnostic and therapeutic procedures together with oral disease prevention.</p> <p>The aim of this subject is to teach students upon oral medicine basics which are integral part of general dentist's knowledge and to form professional attitudes and responsibility towards patients with oral diseases with respect towards ethical principles and professional codex.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div><div>Anatomic and functional characteristics of the oral mucosa, blood supply and innervation of the oral mucosa. Distribution of oral mucosa, the variety within its structure according to its function. Microbial flora in the oral cavity: specificity of the microbes in the oral cavity, species according to the region, the most frequent oral microbiota.</div></div> <div><div>2.</div><div>Microscopic image of the oral cavity: structure and layers together with their characteristics.</div></div> <div><div>3.</div><div>Physiological processes of the oral mucosa: mechanical protection, selective permeability, taste sensitivity.</div></div> <div><div>4.</div><div>Pathological lesions of the oral mucosa, microscopically and macroscopically: macula, papula, pustula, vesicle, bula, erosions, ulcerations, nodulus.</div></div>					

5. Genetic and developmental anomalies of the oral mucosa-tongue, lips, palate and combined, classification and syndromes which consist of, frequency, therapy, need for consultant approach to the patient.
6. Protective factors within oral cavity- structural properties of the oral mucosa, protective salivary mechanisms, cellular and humoral immunity.
7. Pathological lesions and lip inflammation-histology of the lips, genetic lip anomalies, noninflammatory lip changes, inflammatory lesions of the lips.
8. Etiology, diagnostics and therapy of all pathologic lip conditions.
9. Pathological lesions and tongue inflammation
10. Pathological lesions and palate inflammation: anomalies, inflammation, hyperkeratosis, denture stomatitis and smoker's palate.
11. Pigmentations and injuries of the oral mucosa: etiology, clinical manifestations, diagnostics and therapy.
12. Adverse drug reactions on the oral mucosa: unwanted side effects, drug interactions, fixed drug eruption, multiforme erythema, lichenoid reaction, ulcerations, haemorrhagias, infections, lip inflammation, hyperplasias, coated tongue, pigmentations, xerostomia, taste disturbances.
13. Diseases and disorders of salivary glands: etiology, classification, diagnosis, therapy, xerostomia and ptyalism.
14. Burning and painful syndromes, taste disorders-atypical facial pain, burning mouth symptoms and syndrome: causes, classification, diagnostics, therapy, need for consultation. Dysgeusia, ageusia and hypogeusia.
15. Specific and nonspecific oral bacterial infections: tbc, syphilis, gonorrhea, streptococcal and staphylococcal infections, ulcerative, diphtherial, actinomycosis, noma-oral manifestations, diagnostics and therapy.
16. Viral infections of the oral cavity: herpes simplex, herpes zoster, cytomegalovirus, Epstein-Barr, papilloma viruses, adenoviruses, Coxsackie, mumps.
17. Fungal infections of the oral cavity: oral candidal infection, epidemiology and significance, etiology and systemic preconditions, clinical candidal entities, diagnostics and therapy. Orofacial manifestations of aspergilosis, blastomycosis, cryptococosis, mucormycosis, paracoccidioidosis.
18. Oral lesions in patients with haematological disorders: oral mucosa in anaemia, Plummer-Vinson syndrome, Hunter's glossitis. Oral mucosa in leukemias: gingival hyperplasia, oral haemorrhagias, ulcerations. Multiple myeloma. Dental treatment in patients with haematological disorders.
19. Oral lesions in patients with respiratory and cardiovascular diseases: oral mucosal lesions in upper and lower respiratory infections, pyogenic inflammation of the paranasal sinuses, pneumonias, destructive respiratory conditions and obstructive respiratory diseases. Clinical oral manifestations correlated with ischemic heart disease, infective endocarditis, etc. Dental treatment of risk patients.
20. Oral manifestations in patients with esophageal and duodenal diseases, small and large intestine diseases, liver diseases, differential diagnosis in dysphagia, oral manifestations of coeliac disease, Mb. Crohn, ulcerative colitis, Peutz-Jeghers syndrome.
21. Oral manifestations of nutritional deficiencies, protein loss, fatty acid absence, oral pathological changes in anemia, vitamin A, B complex and C deficiency.
22. Pathological oral lesions in kidney disease: systemic and oral manifestations of kidney diseases, uremic syndrome, dental treatment of patients on haemodialysis and before and after kidney transplantation.
23. Oral lesions in psychiatric and neurological diseases. Oral manifestations of psychological disorders: biting of the oral mucosa, artificial injuries. Oral manifestations of bulimia and anorexia. Basics about atypical orofacial pain: diagnostic and therapeutic protocol in patients with orofacial pain.

24. Oral manifestations in endocrine and metabolic disorders: dental aspect in diseases of the pituitary and adrenal gland, thyroid and parathyroid glands. Changes in the orofacial structures and oral symptoms during pregnancy and menopause. Oral manifestations of diabetes mellitus and modifications of dental care in patients with diabetes.
25. Oral lesions in systemic autoimmune diseases. Classification and clinical presentation of systemic autoimmune diseases: rheumatoid arthritis, juvenile chronic arthritis, Feltys syndrome, lupus erythematosus, systemic sclerosis, dermatomyositis/polymyositis, mixed connective tissue disease, Sjögrens syndrome. Basic diagnostic and therapeutic procedures in systemic autoimmune diseases.
26. Recurrent aphthous ulcerations-possible causative factors, classification, correlation with systemic diseases, diagnosis and therapy. Syndromes correlated with recurrent aphthous ulceration.
27. Lichen ruber planus-classification, etiology, histopathology, clinical manifestations, treatment. Lichenoid reaction.
28. Oral bullous diseases: pemphigus, pemphigoid, mechanisms of autoimmune reaction on the cellular level, epidemiology, etiology, genetic background, clinical manifestations, clinical and laboratory diagnostics, treatment options.
29. Oral allergic reactions: types of allergic reactions and corresponding oral symptoms diagnosis and treatment.
30. Oral precancerous lesions: leukoplakia, erythroplakia, oral submucous fibrosis.
31. Oral manifestations of immune deficiencies and HIV: primary and acquired immune deficiencies. HIV-correlated oral diseases: infections, tumours, nonspecific changes. Dental treatment of HIV infected patients.
32. The role of the dentist in the treatment of patients with transplanted organs/bone marrow. Dental treatment of the patient before and after transplantation, oral complications connected with transplantation.
33. Oral complications of malignant diseases treatment and corresponding therapy. Oral mucositis, xerostomia, osteoradionecrosis.

#### **Preclinical practicals topics:**

1. Detailed medical history
2. Inspection of the healthy oral mucosa
3. Histological characteristics of the oral mucosa
4. Pathological characteristics of the oral mucosa
5. Oral tests in diagnostics
6. Salivary tests
7. Laboratory tests for the diagnosis of oral diseases
8. Histopathological and cytological tests in oral diseases
9. Microbial tests in oral diseases
10. Oral focal infection testings
11. Therapeutic principles of oral diseases 1
12. therapeutic principles of oral diseases 2
13. Therapeutic principles of oral diseases 3
14. Therapeutic principles of oral diseases 4
15. Diagnosis and documentation of oral diseases

#### **Course leader and associates**

Prof.dr.sc. Ivan Alajbeg  
 Prof.dr.sc. Marinka Mravak Stipetić  
 Prof.dr.sc. Vanja Vučićević Boras  
 Doc.dr.sc. Vlaho Brailo

Dr.sc. Danica Vidović Juras  
 Dr.sc. Marinka Baričević  
 Dr. Božana Lončar  
 Dr. Ana Andabak

## Literature

### Required literature:

1. Cekić-Arambašin A. Oralna medicina. Školska knjiga 2005

### Recommended literature:

1. Vučićević Boras V. Handbook of oral diseases. Medicinska naklada 2005.
2. Greenberg MS, Glick M. Burkets oral medicine. Medicinska naklada 2006.
3. Laskaris G. Oral medicine. Naklada Slap 2005.

## Required knowledge

- To understand the basic principles for future clinical work on patients with oral diseases.
- To understand principles of diagnostics of oral diseases based on the knowledge from basic medical and dental subjects.
- Learn clinical manifestations of oral pathological conditions according to the etiological disease factors.
- Learn specific protective oral mechanisms.
- Learn principles of therapy in patients with oral diseases.

## Required skills

- To take detailed medical history and its significance when diagnosing oral diseases.
- To acquire skills for the examination of all regions of the oral cavity.
- To recognize pathological lesions of the oral mucosa.
- To know how and when to use appropriate oral and laboratory tests.
- To understand therapeutic options for the treatment of oral mucosal diseases.

## Exam questions

1. Histological structure and functional characteristics of the oral mucosa.
2. Protective factors in the oral cavity.
3. Salivary glands and saliva.
4. Histopathological and morphological mucosal changes.
5. Lip examination-inflammation of the lips.
6. Examination of the tongue-inflammation of the tongue.
7. Examination of the vestibule and buccal mucosa.
8. Examination of the palate-palatal infection.
9. Examination of the sublingual area-function of the salivary glands.
10. Palpatory finding of regional lymph nodes.
11. Diagnostic tests in oral medicine.
12. Toluidine test
13. Biopsy of the oral mucosa-indications, contraindications and techniques
14. Clinical and radiologic diagnostics of oral focal infection.
15. Confirmatory clinical tests for oral focal infection
16. Imaging technics for the diagnosis of salivary gland diseases
17. Therapeutic principles of oral diseases.
18. Antiseptic therapy-classification of the antiseptic agents.
19. Vitamins in the treatment of oral diseases.
20. Therapy of aerobic and anaerobic oral infections.

21. Therapy with antifungals.
22. Therapy with antivirals.
23. Therapy with immunemodulatory drugs.
24. Therapy of orofacial pain.
25. Therapy for xerostomia.
26. Therapy for oral focal infection.

### 3.2.56 Oral Medicine II

Basic information about the course					
Title	Oral medicine II				
Code	71327	Abbreviation	612OOME2		
Total ECTS points	7.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Oral Medicine				
Course leader	Associate Professor Vanja Vučićević Boras				
Course load					
	1	2	Total		
Lectures	15		15		
Special clinical practicals	30	45	75		
ECTS			7		
Course description					
Teaching of dental students for clinical (practical) work on patients with oral diseases and salivary gland diseases either locally or systemically induced, their recognition, conduction of diagnostic and therapeutic procedures together with prevention.					
The aim of this subject is to teach students upon oral medicine basics which are integral part of general dentist's knowledge and to form professional attitudes and responsibility towards patients with oral diseases with respect towards ethical principles and professional codex.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
The exam is computer based and students may approach test during winter, summer and autumn exam periods according to the university calendar which will be seen on web pages of the Department of oral medicine.					
Weekly teaching plan					
1. component					
Lectures					
Special clinical practicals topics:					
Diagnostic and therapeutic procedures in patients with haematological and cardiovascular diseases.					
2. component					
Special clinical practicals topics:					

Theme of special clinical practicals  
 Therapeutic procedures in patients with oral diseases.  
 Use of analgesics and anaesthetics in therapy of oral diseases and symptoms.  
 Dealing with patients with oral diseases.

#### **Course leader and associates**

Prof.dr.sc. Ivan Alajbeg  
 Prof.dr.sc. Marinka Mravak Stipetić  
 Prof.dr.sc. Vanja Vučićević Boras  
 Doc.dr.sc. Vlaho Brailo  
 Dr.sc. Danica Vidović Juras  
 Dr.sc. Marinka Baričević  
 Dr. Božana Lončar  
 Dr. Ana Andabak

#### **Literature**

##### **Required literature:**

1. Cekić-Arambašin A. Oralna medicina. Školska knjiga 2005.

##### **Recommended literature:**

1. Vučićević Boras V. Handbook of oral diseases. Medicinska naklada 2005.
2. Greenberg MS, Glick M. Burkets oral medicine. Medicinska naklada 2006.
3. Laskaris G. Oral medicine. Naklada Slap 2005.

#### **Required knowledge**

- acquiring procedures of oral diseases diagnostics
- acquiring practical work on patients with oral diseases, caused either locally or systemically together with their diagnostics, therapy and prevention.
- updating of skills regarding clinical procedures on patients with oral diseases, gaining the knowledge by use of detailed medical history, oral examination and documentation when diagnosing oral diseases and adjusting the therapy accordingly.
- acquiring procedures of diagnosing oral diseases on the basis of previously gained knowledge from the basic medical and dental subjects.
- learning about clinical manifestations of pathological changes of the oral mucosa with regard to the etiological factors of the disease.
- learning to interpret histopathological, cytological, microbiological, immunological, biochemical, radiological and other laboratory tests when diagnosing oral diseases.
- learning to connect systemic diseases and oral health in the functioning of stomatognathic system by knowing clinical presentation and subjective symptoms in genetic, cardiovascular, respiratory, blood, gastrointestinal, renal, hormone, immunological, neurological, psychogenic and other systemic diseases.
- learning about specific protective mechanisms in the oral cavity.
- be able to differ between disease specificities of the oral mucosa in younger and older populations.
- learning the differences between diagnostics of oral precancerous lesions and oral malignancies.
- recognizing paraneoplastic diseases and symptoms in the oral cavity
- obtaining data regarding differences in clinical findings when dealing with various salivary gland diseases.
- learning to differentiate between various infective diseases in the oral cavity.
- recognizing immunological diseases which have oral manifestations.

- understanding orofacial pain syndromes, burning symptoms, taste disturbances and dry mouth.
- adopting principles of therapeutic procedures in oral diseases
- understanding prevention and social impact in oral diseases

#### Required skills

- to acquire detailed medical history taking and its significance when obtaining the diagnosis
- to perform detailed examination of all oral regions and recognize pathological lesions in the oral cavity
- to gain knowledge between correlation of oral lesions and local i.e. systemic symptoms.
- to gain knowledge upon diagnostic possibilities on the basis of oral, oral and laboratory and laboratory findings.
- to know indications for laboratory tests based on oral disease
- to determine need for radiological and ultrasound diagnostics in oral diseases.
- to diagnose oral diseases, salivary gland diseases and oral pathological symptoms
- to learn diagnostics and therapeutic principles of oral focal infection
- to be able to treat oral diseases according to their diagnosis
- to determine which oral diseases are treatable in primary dental setting and which are to be treated by specialist or in the hospital
- to differ between oral precancerous lesions and malignant lesions
- to recognize paraneoplastic oral symptoms
- to prevent oral diseases and their complications

#### Exam questions

1. Histological structure and functional characteristics of the oral mucosa.
2. Protective factors in the oral cavity.
3. Salivary glands and saliva.
4. Histopathological and morphological mucosal changes.
5. Developmental anomalies of the lips, tongue and palate.
6. Mechanical mucosal injuries.
7. Chemical mucosal injuries.
8. Thermal mucosal injuries.
9. Galvanic mucosal injuries
10. Oral mucositis.
11. Oral allergic reactions.
12. Oral adverse drug reactions
13. Erythema multiforme
14. Recurrent aphthous ulcerations.
15. Burning mouth syndrome.
16. Non dental orofacial pain-causes and types.
17. Endogenous and exogenous oral pigmentations.
18. Leukoplakia.
19. Erythroplakia.
20. Early detection of oral cancer
21. Nonspecific bacterial infections in the oral cavity-clinical characteristics and differential diagnosis.
22. Specific bacterial infections in the oral cavity.
23. Fungal infections-classification and clinical presentation.
24. Candidal infection.
25. Viral infections during childhood.
26. Oral infections with herpes simplex virus.

27. Oral infections with varicella zoster virus.
28. Oral infection with coxsackie viruses.
29. Oral infection with EBV and CMV.
30. Oral infection with HPV.
31. Oral infection with HIV and AIDS.
32. Sialoadenitis-classification and clinical presentation.
33. Sialoadenosis.
34. Sialolithiasis.
35. Disturbances in salivary secretion.
36. Diagnostic procedures in oral medicine.
37. Lip examination-inflammation of the lips.
38. Examination of the tongue-inflammation of the tongue.
39. Examination of the vestibule and buccal mucosa.
40. Examination of the palate-palatal infection.
41. Examination of the sublingual area-function of the salivary glands.
42. Palpatory finding of regional lymph nodes.
43. Diagnostic tests in oral medicine.
44. Toluidine test
45. Biopsy of the oral mucosa-indications, contraindications and techniques
46. Clinical and radiologic diagnostics of oral focal infection.
47. Confirmatory clinical tests for oral focal infection
48. Imaging technics for the diagnosis of salivary gland diseases.
49. Oral indications for complete blood count analysis.
50. Oral indications for serum iron test.
51. Oral indications for blood glucose test.
52. Oral indication for liver enzymes, urea and creatinine.
53. Oral indications for mycological testing.
54. Oral indications for bacterial analysis and antibiogram.
55. Oral indications for serological testing.
56. Oral indications for immunofluorescent testing.
57. Therapeutic principles of oral diseases.
58. Antiseptic therapy-classification of the antiseptic agents.
59. Vitamins in the treatment of oral diseases.
60. Therapy of aerobic and anaerobic oral infections.
61. Therapy with antifungals.
62. Therapy with antivirals.
63. Therapy with immunomodulatory drugs.
64. Therapy of orofacial pain.
65. Therapy for xerostomia.
66. Therapy for oral focal infection.
67. Dental treatment of patients before and after organ transplantation.
68. Treatment and prevention of oral complications due to irradiation and chemotherapy.
69. Oral manifestations of the respiratory diseases and treatment of such patients accordingly.
70. Oral manifestations of the gastrointestinal and nutritional diseases.
71. Oral manifestations of haematological diseases and treatment of such patients accordingly.
72. Oral manifestations of the liver and biliary diseases and treatment of such patients accordingly.
73. Oral manifestations of the blood clotting diseases and treatment of such patients accordingly.
74. Oral manifestations of kidney diseases and dental treatment of patients receiving haemodialysis.

75. Oral manifestations of diabetes mellitus.
76. Oral manifestations of endocrine disorders.
77. Oral manifestations of psychological and neurological disorders.
78. Precancerous lesions.
79. Behcet syndrome.
80. Lichen planus.
81. Pemphigus.
82. Pemphigoid.
83. Autoimmune diseases.
84. Sjögren's syndrome.
85. Melkersson-Rosenthal' syndrome.
86. Immune deficiencies-classification and clinical characteristics.

### 3.2.57 Orofacial Genetics

Basic information about the course					
Title	Orofacial genetics				
Code	71328	Abbreviation	321IOROF		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Paediatric and Preventive Dentistry				
Course leader	Professor Domagoj Glavina, PhD				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
<p>Orofacial Genetics is clinical dental discipline dealing with normal and pathological variations of dental and orofacial structures in humans. A large number of craniofacial malformations and dental abnormalities are genetically conditioned. All chromosomal abnormalities and 50% of all multifactorial diseases are manifested in the craniofacial region. According to the catalogue of genetic diseases by V. McKusicka (1986), out of 4000 genetic disorders accompanying mendelian mode of transmission, about 25% or about 1000 of them are manifested on the craniofacial structures. More than 50% of all malformations which can be observed in man are localized in the craniofacial region. Knowledge of Orofacial Genetics is needed for evaluation, diagnostics and treatment of patients with genetic disorders. The dentist is first to observe, recognize and diagnose a series of genetic disorders of orofacial structures and subsequently evaluate objectively by using various available techniques. Not only is knowledge of Orofacial Genetics needed for diagnostics and treatment but also for prevention of genetic disorders.</p> <p>The aim of Orofacial Genetics course is to offer knowledge on the most common genetic abnormalities of teeth and orofacial structures, on assessment methods of patients with genetic disorders, on genetic disorders and possibilities for prevention through genetic counseling. Craniofacial abnormalities often demand interdisciplinary approach and dentist takes part in a team for diagnostics, treatment and rehabilitation of such patients. Therefore, the dentist should possess appropriate knowledge of Orofacial Genetics, that is, be familiar with principles and features of genetic disorder heredity, their clinical picture, medical history taking, including heredographs.</p> <p>Knowledge of Orofacial Genetics should provide: a) complete care about the patient including diagnostics, treatment and prognosis, or a correct assessment of condition and referral to the adequate health institution; b) the assessment of inheritance role in disorders of dental and orofacial structures, making of a thorough treatment plan; c) encourage further advancement of competences and skills related to Orofacial Genetics.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	

<b>Rules of grading and additional information</b>
Grade is based on number of correct answers (points) obtained by written exam. If the student fails the exam, he should repeat the written part of the exam. The final grade is based on written and oral exam.
<b>Weekly teaching plan</b>
<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Orofacial genetics: history and importance.</li> <li>2. Population genetics and epidemiology of craniofacial malformations.</li> <li>3. Changes in morphology of craniofacial structures.</li> <li>4. Methods in medical genetics.</li> <li>5. Examination and evaluation of craniofacial region.</li> <li>6. Genetic anomalies in teeth.</li> <li>7. Genetic defects of enamel and dentin.</li> <li>8. Syndromes of dysplasia.</li> <li>9. Genetic disorder of periodontal structures.</li> <li>10. Dysmetabolic syndromes and craniofacial structures.</li> <li>11. Neurocutaneous syndromes and orofacial structures.</li> <li>12. Chromosomal syndromes in craniofacial region.</li> <li>13. Cleft lip, cleft palate.</li> <li>14. Genetics of frequent dental diseases.</li> <li>15. Genetic counseling in dental medicine.</li> </ol>
<b>Course leader and associates</b>
Professor Domagoj Glavina PhD Professor Ilija Škrinjarić, PhD
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Škrinjarić I: Orofacijalna genetika. Zagreb: Školska knjiga, 2004.</li> <li>2. Škrinjarić I: Orofacijalna genetika, teaching materials, 2003.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Mooney MP, Siegel MI: Understanding craniofacial anomalies. New York: Wiley-Liss, 2002.</li> <li>2. Gorlin RJ, Cohen MM Jr, Hennekam RCM: Syndromes of the head and neck. Oxford: Oxford University Press, 2001.</li> <li>3. Stewart RE, Prescott GH: Oral facial genetics. Saint Louis: The C.V. Mosby Company, 1976.</li> <li>4. Melnick M, Shields ED, Burzynski NJ: Clinical dysmorphology of oral-facial structures. London: John Wright - PSG Inc, Boston, Bristol, 1982.</li> <li>5. Jorgenson RJ: Dentition: genetic effects. March of Dimes, Birth Defects Fondation: Original Article Series, Vol. 19, No. 1, Alan R. Liss, Inc., 1983.</li> </ol>
<b>Required knowledge</b>
Become familiar with the role of genetic factors in a normal development of teeth and orofacial structures. Become familiar with a role of inheritance in the development of different disorders of teeth and orofacial structures. Master the principles of examination, analysis and diagnostics of genetic disorder of teeth and craniofacial region. Be able to apply the principles of genetics and genetic methods to diagnostics of genetic abnormalities of the orofacial region. By using knowledge, methods of genetics and dental procedure, to be able to take part in the

multidisciplinary approach to diagnostics and treatment of patients with genetic disorders of dental and orofacial structures. Master knowledge on the most significant genetic disorders of the craniofacial region, thus being able to integrate the acquired knowledge in clinical practice of various dental disciplines in terms of identification, diagnostics, counseling and treatment of patients with craniofacial disorders.

#### Required skills

Student should master the principles of examination, analysis and diagnostics of genetic disorders of teeth and craniofacial structures. They are expected to apply the acquired knowledge to the identification of certain frequent entities involving dental and orofacial structures and, also, take part in a multidisciplinary team for the purpose of diagnostics and treatment planning of patients with genetic disorder of dental and craniofacial structures.

#### Exam questions

1. Representation of malformations in the craniofacial region.
2. Branches of medical genetics and its contents.
3. Definitions and aims of Orofacial Genetics.
4. Population genetics and measures for genetic disorders in population.
5. Hardy – Weinberg law.
6. Genetic population load.
7. “Genetic death” in population.
8. Load of craniofacial malformations in population.
9. Prevalence of orofacial malformations in population.
10. Methods in medical genetics.
11. Family studies in medical genetics.
12. Twin studies in genetics.
13. Significance of population studies in medical genetics.
14. Dermatoglyphs in medical genetics.
15. Importance of heredographs in medical genetics and their design.
16. Types of morphogenesis disorders.
17. Malformation, deformation, disruption.
18. Definition and types of genetic syndromes.
19. Major and minor malformations.
20. Malformation syndrome.
21. Genetic significance of minor anomalies.
22. Genetic anomalies of tooth shape.
23. Gemination and fusion of tooth.
24. Genetic anomalies of the number of teeth (hypo- and hyperdontia)
25. Syndromes including hypodontia.
26. Syndromes including hyperdontia.
27. Theory of ‘developmental dental fields’.
28. Natal and neonatal teeth.
29. Genetic disorders of hard dental tissues structures.
30. Amelogenesis imperfect.
31. Dentinogenesis imperfect.
32. Odontodysplasia.
33. Taurodontism and its genetic significance.
34. Chromosomal syndromes and craniofacial structures.
35. Oral and dental finding in Down syndrome.
36. Fragile X syndrome: Martin-Bell syndrome.
37. Prader-Willi syndrome

38. Turner and Klinefelter syndromes.
39. Dysmetabolic syndrome and orofacial structure.
40. Mucopolysaccharidoses and orofacial structures.
41. Lesch-Nyhan syndrome.
42. Hypophosphatasia and dental structures.
43. Genetic disorders of periodontal structures.
44. Hereditary fibromatosis of the gingiva.
45. Syndromes with fibromatosis of the gingiva.
46. Papillon-Lefevre syndrome.
47. Syndromes of dysplasia.
48. Syndromes with early tooth loss.
49. Ectodermal dysplasia and classification.
50. Mesodermal dysplasia and syndromes.
51. X-related hypohidrotic ectodermal dysplasia (Christ-Siemens-Touraine syndrome)?
52. Methods of indentifying women who are carriers of HED gene.
53. Rieger syndrome.
54. Hamartoneoplastic syndromes.
55. Neurofibromatosis type I
56. Tuberous sclerosis.
57. Cleft lip and palate: classification and genetics.
58. Van der Woude syndrome.
59. Types of risks in genetic disorders.
60. Genetic counseling in orofacial anomalies.

### 3.2.58 Orthodontics

Basic information about the course				
Title	Orthodontics			
Code	71329	Abbreviation	612OORTO	
Total ECTS points	13	Status	Obligatory	
Exam	Yes	Calculated in grade average	Yes	
Language of teaching	Croatian	e-learning	Yes	
Department	Department of Orthodontics			
Course leader	Professor Mladen Šljaj, DDM, D.Sc			
Course load				
	1	2	Total	
Seminars	15	15	30	
Clinical practicals	60	45	105	
ECTS			13	
Course description				
The aim of this course is to teach future general dental practitioner to have broad academic knowledge and suitable clinical experience for future polyvalent clinical work. Students must gain knowledge in diagnostic procedures in craniofacial growth and development disorders which include skeletal, dental and functional anomalies in order to refer patients to further specialist treatment				
Criteria for taking the course exam				
Passed exam from Preclinical orthodontics is mandatory for application on Orthodontic subject				
What is graded				
Written exam	Yes	Oral exam	Yes	Practical exam
Seminar		Minor preliminary exam		Major preliminary exam
Rules of grading and additional information				
Student knowledge is tested at all phases on midterm exams during teaching period. Orthodontic exam is taken in written and oral form. Taking the exam is possible in regular examination terms: winter, summer and autumn according to University calendar and exceptional examination terms which are held every week during academic year and do not include regular examination terms. During two teaching semesters permanent examination of engagement, knowledge and skills in laboratory and clinical work will be held. At the end of first semester midterm exam will be held in order to estimate knowledge from the seminars which took place that semester, which is condition for enrolment in next semester together with positive grade from preclinical practice. After teaching period students take exam; content of orthodontic exam respond to all held seminars and preclinical and clinical practice				
Weekly teaching plan				
1. component				
Seminar topics:				
1. Concept of growth and development				

2. Prenatal growth and development
3. Postnatal growth and development
4. Aetiology of orthodontic malocclusions
5. Orthodontic diagnosis , problem list development
6. Anamnesis and orthodontic clinical assessment, function analysis and occlusion
7. Diagnostic procedures (procedures and standard documentation)
8. Dental cast analysis (and digital dental casts)
9. Radiographic diagnostic procedures in orthodontics (indication, dose radiation)
10. Biological basis of orthodontic treatment (periodontal anatomy and function, response on normal function, periodontal role in eruption and tooth stabilization )
11. Biological control of tooth movement, pressure and tension theory, piezoelectric theory, force magnitude, distribution, action and decay
12. Types of tooth movement
13. Anchorage (Anchorage situation and anchorage appliances)
14. Adverse side effects of orthodontic treatment
15. Force source in orthodontics (wires, elastics and adjuvant elements)

#### **Clinical practicals topics:**

1. Diagnostic procedures: growth assessment(hand wrist analysis and cervical vertebrae)
2. Students analyze dental development on panoramic radiographs using Nolla theory
3. Analysis of dental casts in three dimensions
4. Diagnostic procedures: space analysis in mixed and permanent dentition
5. Anthropometric measurement of head and face, dento-alveolar discrepancies (Bolton analysis)
6. Analysis of panoramic radiographs
7. Diagnostic procedures : cephalometric analysis and Zagreb 82 MOD analysis
8. Diagnostic procedures : photography analysis and face aesthetics
9. 3D radiographic diagnostic procedures
10. Adverse side effects of orthodontic treatment
11. Problem of based learning, resolution of clinical querying, diagnostic procedures, therapy planning

## **2. component**

### **Seminar topics**

1. Preventive and interceptive procedures in orthodontics
2. Crowding
3. History and treatment options with removable appliances
4. History of fixed orthodontic techniques (from Angle to Andrews)
5. Modern orthodontic techniques (Roth, Alexander, MBT, self ligating)
6. Class I malocclusion
7. Open bite (skeletal and dentoalveolar)
8. Class II malocclusion (class II/1, class II/2)
9. Class III malocclusion
10. RPE, quad helix and face mask
11. Cleft lip and palate
12. Orthognatic surgery
13. Orthodontic treatments and collaboration with dental general practitioner
14. Orthodontic treatments of patients with periodontal disease, pre prosthodontic orthodontics
15. Retention and relaps

<b>Clinical practical topics</b>
Problem of evidence based learning (case based learning), resolution of clinical querying, diagnostic procedures, therapy planning
<b>Course leader and associates</b>
Professor Mladen Šlaj Professor Marina Lapter Varga Professor Senka Meštrović Professor Jadranka Štefanac Papić Assistant Professor Sandra Anić Milošević Assistant Professor Martina Šlaj Assistant Professor Mihovil Strujić
<b>Literature</b>
<b>Required literature:</b>
1. Proffit WR, Fields HW, Sarver DM. Ortodoncija, 1. hrvatsko izdanje. Jastrebarsko: Naklada Slap; 2010. 2. Proffit WR, Fields HW, Sarver DM. Contemporary orthodontics, 4 <sup>th</sup> edition. St. Louis: Mosby; 2006. 3. e-learning content
<b>Recommended literature:</b>
1. McLaughlin RP, Bennett JC, Trevisi H. Systemized Orthodontic Treatment Mechanics. Mosby; 2001. 2. Nanda R, Kapila S. Current Therapy in Orthodontics. St Louis: Mosby; 2009 3. Nanda R. Biomechanics and Esthetic Strategies in Clinical Orthodontics. Philadelphia:Elsevier Saunders;2005. 4. Lapter V et al.Ortodontske naprave: konstrukcija, namjena, djelovanje. 2th Edition Zagreb, Školska knjiga; 1992. 5. Lapter V. Ortodoncija za praktičara. 2th Edition Zagreb: Školska knjiga;1979.
<b>Required knowledge</b>
1. Concept of growth and development (sites, centres, controls and dynamics) 2. Prenatal growth and development 3. Postnatal growth and development 4. Aetiology of orthodontic malocclusions 5. Orthodontic diagnosis , problem list development 6. Anamnesis and orthodontic clinical assessment, function analysis and occlusion 7. Diagnostic procedures (procedures and standard documentation) 8. Dental cast analysis (and digital dental casts) 9. Radiographic diagnostic procedures in orthodontics (indication, dose radiation) 10. Biological basis of orthodontic treatment (periodontal anatomy and function, response on normal function, periodontal role in eruption and tooth stabilization ) 11. Biological control of tooth movement, pressure and tension theory, piezoelectric theory, force magnitude, distribution, action and decay 12. Types of tooth movement 13. Anchorage (Anchorage situation and anchorage appliances) 14. Adverse side effects of orthodontic treatment 15. Force source in orthodontics (wires, elastics and adjuvant elements) 16. Preventive and interceptive procedures in orthodontics 17. Crowding

18. History and treatment options with removable appliances
19. History of fixed orthodontic techniques (from Angle to Andrews)
20. Modern orthodontic techniques (Roth, Alexander, MBT, self-ligating)
21. Class I malocclusion
22. Open bite (skeletal and dentoalveolar)
23. Class II malocclusion (class II/1, class II/2)
24. Class III malocclusion
25. RPE, quad helix and face mask
26. Cleft lip and palate
27. Orthognatic surgery
28. Orthodontic treatments and collaboration with dental general practitioner
29. Orthodontic treatments of patients with periodontal disease, pre prosthodontic orthodontics
30. Retention and recidive

### Required skills

1. Diagnostic procedures: growth assessment(hand wrist anaysis and cervical vertebrae)
2. Students analyze dental development on panoramic radiographs using Nolla theory
3. Analysis of dental casts in three dimensions
4. Anomalies of number and shape of teeth, occlusion disorders
5. Diagnostic procedures: space analysis in mixed and permanent dentition
6. Anthropometric measurement of head and face, dento-alveolar discrepancies (Bolton analysis)
7. Analysis of panoramic radiographs
8. Diagnostic procedures : cephalometric analysis and Zagreb 82 MOD analysis
9. Diagnostic procedures : photography analysis and face aesthetics
10. 3D radiographic diagnostic procedures
11. Adverse side effects of orthodontic treatment
12. Problem of evidence based learning, resolution of clinical querying, diagnostic procedures, therapy planning

### Exam questions

1. Concept of growth and development (sites, centres, controls and dynamics)
2. Prenatal growth and development
3. Postnatal growth and development
4. Aetiology of orthodontic malocclusions
5. Orthodontic diagnosis , problem list development
6. Anamnesis and orthodontic clinical assessment, function analysis and occlusion
7. Diagnostic procedures (procedures and standard documentation)
8. Dental cast analysis (and digital dental casts)
9. Radiographic diagnostic procedures in orthodontics
10. Indication for radiographic diagnostic procedures and doze radiation
11. Diagnostic procedures: growth assessment(hand wrist anaysis and cervical vertebrae)
12. Students analyze dental development on panoramic radiographs using Nolla theory
13. Analysis of dental casts in three dimensions
14. Anomalies of number and shape of teeth, occlusion disorders
15. Diagnostic procedures: space analysis in mixed and permanent dentition
16. Anthropometric measurement of head and face, dentoalveolar discrepancies (Bolton analysis)
17. Analysis of panoramic radiographs
18. Diagnostic procedures : cephalometric analysis and Zagreb 82 MOD analysis

19. Diagnostic procedures : photography analysis and face aesthetics
20. 3D radiographic diagnostic procedures
21. Adverse side effects of orthodontic treatment
22. Biological basis of orthodontic treatment
23. Periodontal anatomy and function, response on normal function, periodontal role in eruption and tooth stabilization
24. Biological control of tooth movement, pressure and tension theory, piezoelectric theory, force magnitude, distribution, action and decay
25. Types of tooth movement
26. Anchorage (Anchorage situation and anchorage appliances)
27. Force source in orthodontics (wires, elastics and adjuvant elements)
28. Preventive and interceptive procedures in orthodontics
29. Crowding
30. History and treatment options with removable appliances
31. History of fixed orthodontic techniques (from Angle to Andrews)
32. Modern orthodontic techniques (Roth, Alexander, MBT, self-ligating)
33. Class I malocclusion
34. Open bite (skeletal and dentoalveolar)
35. Class II malocclusion (class II/1, class II/2)
36. Class III malocclusion
37. RPE, quad helix and face mask
38. Cleft lip and palate
39. Orthognatic surgery
40. Orthodontic treatments and collaboration with dental general practitioner
41. Orthodontic treatments of patients with periodontal disease, pre prosthodontic orthodontics
42. Retention and relaps

### 3.2.59 Fundamentals of Esthetics in Dentistry

Basic information about the course					
Title	Fundamentals of esthetics in dentistry				
Code	71330	Abbreviation	6111ESTE		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Removable Prosthodontics				
Course leader	assoc. prof. Dubravka Knezović Zlatarić, DDM, MSD, PhD				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
<p>This program gives the lessons on basics of esthetic dentistry considering esthetic smile analysis and achievement of the best results in designing conservative or prosthetic restoration. It is also important to keep in mind that certain face and smile parameters, such as proper teeth width/length ratio, gingival simetry and their relation to face and teeth midline, upper lip line in rest and in smile, should be considered. Harmony of all the mentioned parameters is achieved if the proper planning and preparing, such as esthetic periodontal, surgical, of orthodontic procedures, is carried out.</p> <p>This course instructs the students in selecting proper conservative or prosthodontic restorations dependent on patient's objective condition as well as subjective needs. It also encloses the knowledge about clinical and laboratory procedures in fabrication of different restorations. Relationship between dentist's clinical work, dental laboratory work, as well as patient's participation in the process of carrying out the final restoration is also emphasised. This coloboration finaly results in mutual (patient's and therapist's) satisfaction.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>The knowledge from the course is tested through the exam. Each answer in the exam is evaluated and the grades from the correct answers are added.</p> <p>Final evaluation uses the following criteria:</p> <p>The students who correctly answered 100-91% of the questions in the exam will be assessed with the grade 5.</p> <p>The students who correctly answered 90-81% of the questions in the exam will be assessed with the grade 4.</p> <p>The students who correctly answered 80-71% of the questions in the exam will be assessed with the grade 3.</p>					

The students who correctly answered 70-61% of the questions in the exam will be assessed with the grade 2.

The students who correctly answered less than 60% of the questions in the exam will not pass.

### Weekly teaching plan

#### 1. component

##### Lecture topics:

1. First lecture. Definition of esthetics in dentistry, subjective and objective criteria of the assessment, esthetics and function, patient's personal expectation, media and fashion trends influence.
2. Face parameters: facial midline, length, width and symmetry of the face, interpupilar, intercanthal, interalar and intercomissural line, length and width of the nose, lip length, smile width.
3. Smile parameters: teeth midline, incisal length, gingival zeniths, central tooth axis, interdental contact points and lines, incisal and gingival free spaces, teeth proportions, shape, position and the colour of the teeth, symmetry and balance of the dental arch, smile line, lip line.
4. Colour: Munsell's colour analysis, four parameters of the colour: shade, chroma, hue, translucency, types of the colour, colour perception, contrasts, assessment of the colour.
5. Esthetic procedures: teeth bleaching – diagnosis and the planning, bleaching techniques for vital, nonvital and tetracycline discoloured teeth.
6. Adhesion and adhesive techniques: basic principles of adhesion, different adhesive techniques in achieving enamel and dentin adhesion, as well as adhesion of ceramic material.
7. Periodontal preliminary procedures: relationship of gingiva and anatomic tooth crown, alveolar crest, cement-enamel junction and gingival margin as well as the highest point of the interdental line, different periodontal of surgical procedures in preparation for the final esthetic restoration.
8. Orthodontic preliminary procedures: the basics of tooth movements, types of orthodontic appliances, different orthodontic procedures – extrusion, intrusion, free gingival margin adjustments, space preservation, papilla reshaping, rotation, inclination and torque tooth movements, orthodontic retention.
9. Esthetic deviation analysis, esthetic wax-up, silicon key, esthetic mock-up.
10. Esthetic procedures: pathological teeth wear – diagnosis and planning, vestibular surface wax-up, prosthetic plan setting, occlusal surface wax-up, composite fillings, anterior guiding setting (directly, indirectly), fabrication of final restoration.
11. Esthetic procedures: closing diastema - diagnosis and planning, diagnostic casts, diagnostic wax-up, silicon key, composite mock-up, esthetic reshaping and reduction, impression, laboratory procedures (materials and techniques), try-in, cementation.
12. Esthetic procedures: „Gummy smile“ - relationship of gingiva and anatomic tooth crown, diagnosis and planning, periodontal and surgical procedure, diagnostic casts, diagnostic wax-up, silicon key, composite mock-up, esthetic reshaping and reduction, impression, laboratory procedures (materials and techniques), try-in, cementation.
13. Esthetic procedures: esthetic ceramic veneers - - diagnosis and planning, diagnostic casts, diagnostic wax-up, silicon key, composite mock-up, esthetic reshaping and reduction, impression, jaw relationship, temporary restorations, laboratory procedures (materials and techniques), try-in, cementation.
14. Esthetic procedures: full ceramic crowns: indications, characteristics, types of the ceramic material and laboratory techniques, reduction, impression, try-in, cementation.
15. Final lecture, recapitulation.

<b>Course leader and associates</b>
assoc. prof. Dubravka Knezović Zlatarić, DDM, MSD, PhD
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Gürel G. Znanje i vještina u izradi estetskih keramičkih ljuski. Zagreb; Quintessence Publishing, 2009.</li> <li>2. Estetska stomatologija, Godišnjak 2009. Zagreb; Quintessence Publishing, 2010.</li> <li>3. Shillinbgburg HT i sur. Osnove fiksne protetike. Zagreb; Quintessence Publishing, 2008.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Magne P, Belser U. Bonded porcelain restorations in the anterior dentition. A Biomimetic approach. Chicago; Quintessence Publishing, 2002.</li> <li>2. Fradeani M. Esthetic rehabilitation in fixed prosthodontics. Volume 1. Eshtetic analysis: a systematic approach to prosthetic treatment. Chicago; Quintessence Publishing, 2004.</li> <li>3. Fradeani M. Esthetic rehabilitation in fixed prosthodontics. Volume 2. Prosthetic treatment: a systematic approach to esthetic, biologic and functional integration. Chicago; Quintessence Publishing, 2008.</li> <li>4. Chiche GJ, Aoshima H. Smile design. A Guide for clinician, ceramist, and patient. Chicago; Quintessence Publishing, 2004.</li> <li>5. Bartlett D, Brunton PA. Aesthetic dentistry. London; Quintessence Publishing, 2005.</li> <li>6. Kelleher MGD. Dental Bleaching. London; Quintessence Publishing, 2008.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• face and smile parameter analysis in planning of the final restoration</li> <li>• understanding of the adhesion and adhesive procedures</li> <li>• understanding of the natural tooth and restoration colour assessment procedures</li> <li>• understanding of selection of different types of esthetic restoration dependent on clinical and radiological condition of the teeth in upper and lower jaw</li> <li>• esthetic periodontal, surgical and orthodontic preliminary procedures</li> <li>• stages in fabrication of esthetic preliminary wax-up and mock-up</li> <li>• stages of teeth bleaching, pathological tooth wear, closing physiological and pathological diastema as well as „gummy smile“</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• tooth width/length ratio assessment</li> <li>• tooth gingival zenith position assessment</li> <li>• colour assessment using different types of shade guides</li> <li>• detailed esthetic restoration planning</li> </ul>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. physiological range of face and smile parameters – spatial position of gingival zeniths, tooth width/length ration, position of the smile line</li> <li>2. colour parameters – colour analysis, the impact on the final appearance of the restoration, assessment techniques</li> <li>3. cementation procedures in different types of conservative and prosthetic retorations dependant on the fabrication material</li> <li>4. knowledge of adhesive procedures in cementation of conservative and prosthetic restorations</li> <li>5. impact of the adhesive cement on the final appearance of the restoration</li> </ol>

6. types of the esthetic restorations
7. types of the materials used to fabricate esthetic restorations
8. the aims of the esthetic preliminary periodontal, surgical and orthodontic procedures
9. the aims and techniques of wax-up
10. the aims and techniques of composite mock-up
11. different tooth bleaching techniques – indications and contraindications
12. clinical procedures for physiological of pathological diastema
13. clinical procedures for pathological tooth wear
14. clinical procedures fo „gummy smile“

### 3.2.60 Basics in Use of Computers

Basic information about the course					
Title	Basics in use of computers				
Code	71331	Abbreviation	121IORRA		
Total ECTS points	1.5	Status	Elective		
Exam	Da	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Orthodontics				
Course leader	Professor Silvana Jukić Krmek				
Course load					
	1		Total		
Seminars	10		10		
Laboratory practicals	15		15		
ECTS			1.5		
Course description					
<p>The aim of the course Basics in Use of Computers is to teach students in the first year of the dental program about general practices of IT and use of computers in everyday work and in the learning process. Furthermore, intention is to help them in adaptation to contemporary way of data acquisition and verification. After completion of this course, student must be able to use basic office applications in the Windows environment, to know how and where he can find scientific information and to know how to forward these information to colleagues, teachers and other interested.</p>					
Criteria for taking the course exam					
<p>Students must demonstrate appropriate level of knowledge and understanding of basic IT principles. If he shows that he is not able to follow other colleagues, he will have to make seminars or additional program assigned by course head.</p>					
What is graded e					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Students must complete all required tasks according to this program (database queries, data verification, scientific text formatting and sending it to the course head by e-mail.</p>					
Weekly teaching plan					
1. component					
Seminar topics:					
1. Introduction to IT and informatics					
2. Computer hardware – types of computers and their components					
3. Computer software – Operation Systems					
4. Basics of Text Formatting					
5. Spreadsheets					
6. Presentations and tools					

<ul style="list-style-type: none"> <li>7. Internet</li> <li>8. E-mail, communication techniques and services</li> <li>9. General and specialized databases</li> <li>10. Internet security</li> </ul>
<b>Laboratory practical topics:</b>
<ul style="list-style-type: none"> <li>1. Computer hardware and components</li> <li>2. Windows, Mac and Open Source operating systems</li> <li>3. MS Office Word – text formatting</li> <li>4. MS Office Excel – spreadsheets and calculations</li> <li>5. MS PowerPoint – creating of presentations</li> <li>6. Basics in use of the Internet</li> <li>7. E-mail, web-mail</li> <li>8. Communication systems</li> <li>9. Searching and finding information in the Internet</li> <li>10. Searching and finding information in specialized scientific databases</li> <li>11. Use of PubMed, OVID and Synergy databases</li> <li>12. E-learning system</li> <li>13. E-learning system</li> <li>14. Creation of MS Word and MS Excel document based on information found in the Internet, text formatting and data processing</li> <li>15. Creation of MS PowerPoint presentation based on information found in the Internet, creation of Excel graphs and modern visually attractive documents</li> </ul>
<b>Course leader and associates</b>
Ass. Prof. Mihovil Strujic Ivica Pelivan, DDM PhD Tomislav Čohar, M.C.S.
<b>Literature</b>
<b>Required literature:</b>
Materials from the e-learning
<b>Recommended literature:</b>
CARNet Instructions on Use of Computers MS Office for Dummies
<b>Required knowledge</b>
The basics of IT, Internet and communication systems
<b>Required skills</b>
Use of the computers in everyday practice Database queries, searching for literature and finding sources of the information Communicating by e-mail and web applications E-learning Text formatting in MS Word Data processing in MS Excel Creating presentations in MS PowerPoint
<b>Exam questions</b>
The exam is created individually and it is based on this program.



### 3.2.61 Otorhinolaryngology

Basic information about the course					
Title	Otorhinolaryngology				
Code	71332	Abbreviation	511OOTOR		
Total ECTS points	3	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Otorhynolaringology				
Course leader	assistant professor Davor Vagić, MD, PhD				
Course load					
	1		Total		
Lectures	10		10		
Seminars	15		15		
Clinical practicals	20		20		
ECTS			3		
Course description					
<p>Otorhinolaryngology (ORL, ENT) is the branch of medicine that deals with diagnosis and treatment of diseases of the ear, nose, and throat. The aim of the ORL study is to educate students of dentistry and provide them with knowledge of the role of otorhinolaryngology in a general pathology, to acquaint students with diseases, clinical symptoms, current diagnostics, treatment and prophylaxis in ear, nose and throat, and to give necessary skills in the clinical examination of the ENT organs. Case related demonstration of diseases in otorhinolaryngology has been given, including modern aspects of diagnosis and therapy. The dentistry student is shown surgical procedures as well as functional diagnostic tools especially audiometry, neurotology, vestibular function and sonography. The accompanying lecture deals with basic knowledge, needed in the practical course.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	Yes
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	Yes
Rules of grading and additional information					
<p>Study subject tests - examination in practical investigation of ENT organs with instruments, patient examination, discussions of diseases, medical history, test procedures, case studies, and participation in seminars. At the end of the course written and oral exam.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div><div>Introduction in Otorhinolaryngology and Head and Neck Surgery</div></div> <div><div>2.</div><div>Applied Anatomy and Physiology of External, Middle and Inner ear. Methods of Investigation; Inspection, Palpation, Otoscopy, Microscopy</div></div>					

3. Hearing Impairment and Deafness, Diseases of the Vestibular System, Cochlear Implants, Classic and Implantable Hearing Aids, Hearing Rehabilitation, Vestibular exercises.
4. Applied Anatomy and Physiology of the Nose and Nasal Sinuses, Diseases of the Nose and Nasal Sinuses, Upper Respiratory Tract Inflammations, Diagnosis and Differential Diagnosis and Treatment of Diseases of the Nose and Nasal Sinuses, Hyperreactive Rhinopathies
5. Epistaxis, Surgery of the Nose and Nasal Sinuses
6. Head and Neck Plastic and Reconstructive Surgery
7. Otorhinolaryngology in Children, Tonsillar Problem, Subglottic Laryngitis
8. Applied Anatomy and Physiology of the Mouth and Pharynx, Diseases of the Mouth and Pharynx, Methods of Investigation; Inspection, Palpation and Oropharyngoscopy
9. Tumors of the Mouth and Oropharynx, Surgical Treatments, Methods of Reconstruction
10. Surgery of Hypopharynx and Larynx, Neck Dissections, Surgery of Thyroid and Parathyroid Gland

#### **Seminar topics:**

1. Diseases of the Ear – Methods of Investigation, Otoscopy and Microscopy
2. Analysis of the Pure Tone Audiometry (PTA) and Electronystagmography (ENG)
3. Methods of Investigation in Rhinology
4. Diagnostics in Rhinology – Radiology, Lavage, Ultrasound, CAT scan, MRI, Rhinomanometry, Allergy Testings
5. Symptoms in Rhinology
6. Allergic Rhinitis. Rhinosininitis and Nasal Polyps
7. Diseases of the Mouth – Co-operation between Dental Medicine Doctor and Otorhinolaryngologist
8. Tonsillar Problem
9. Crossing Between Breathing and Feeding Ways – the Specific Area
10. Acute diseases of the Larynx and Congenital Anomalies of the Larynx
11. Speech, Articulation, Resonance and Phonation – Diagnosis and Therapy in Phoniatrics
12. Symptoms in Otorhinolaryngology – Tinnitus, Cough, Hiccup
13. Emergency in Otorhinolaryngology
14. Foreign Bodies of the Oropharynx and Esophagus
15. Foreign Bodies of the Trachea and Bronchies

#### **Clinical practicals topics:**

1. Otorhinolaryngologic Working Place
2. Otorhinolaryngologic Anamnesis and Methods of Investigation
3. Otoscopy
4. Testing the hearing Without an Audiometer
5. Audiometry
6. Vestibulometry
7. Investigation of the Face
8. Anterior and Posterior Rhinoscopy
9. Sinusoscopy
10. Epipharyngoscopy
11. Anterior and Posterior Nasal Packing
12. Oropharyngoscopy
13. Indirectoscopy
14. Directoscopy
15. Laryngomicroscopy
16. Laryngostroboscopy
17. Conicotomy

18. Tracheotomy 19. Bronchoscopy 20. Esophagoscopy
<b>Course leader and associates</b>
Prof. Robert Trotić, MD, PhD Ass. Prof. Davor Vagić, MD, PhD Dr. Goran Geber, MD, PhD
<b>Literature</b>
<b>Required literature:</b>
1. Skripta iz otorinolarinologije za studente stomatologije, authors: prof. dr.sc. Livije Kalogjera, Doc.dr.sc. Robert Trotić, dr.mr.sc. Mirko Ivkić, Znanje, Zagreb, 2001., ISBN 953-195-174-8
<b>Recommended literature:</b>
1. Otorinolarinologija, authors: Bumber Ž, Katić V, Nikšić Ivančić M, Pegan B, Petric V, Šprem N i suradnici, Naklada Ljevak, Medicinska biblioteka, Zagreb 2004. 2. Otorhinolaryngology and Head and Neck Surgery, authors: James Snow, John Jacob Ballenger, BC Decker, USA, 2009. 3. Otorhinolaryngology: Head and Neck Surgery, authors: Charles Cummings, Bruce Haughey, Regan Thomas, Lee Harker, Paul Flint, Elsevier Mosby, USA, 2009. 4. Atlas of Head and Neck Surgery – Otorhinolaryngology, authors: Byron Bailey, Karen Calhoun, Norman Friedman, Lippincott Williams & Wilkins, USA, 2001.
<b>Required knowledge</b>
Throughout the study dentistry students will master: <ol style="list-style-type: none"> <li>1. Clinical anatomy of external, middle and internal ear, age peculiarities and their role in the development of ear diseases and complications; physiology of the hearing and vestibular system; examination methods of the ear; radiological examination; complications of ear diseases, treatment.</li> <li>2. The clinical anatomy, physiology, investigation methods of nose and paranasal sinuses. Diseases, their complications, treatment.</li> <li>3. Clinical anatomy, physiology, lymphatic structure of the pharynx. Examination methods, diseases, their complications, treatment.</li> <li>4. Clinical anatomy, physiology, examination methods of the larynx, diseases, their complications (acute and chronic stenosis, tracheotomy), treatment.</li> <li>5. Anatomy of the trachea and esophagi, examination methods, foreign bodies, chemical burns.</li> </ol> <p>Knowledge acquired throughout the study process about the content of the study course - clinical anatomy, aetiology, pathogenesis, clinical symptoms, diagnostics and treatment of diseases of frequent occurrence, traumatic lesions, tumours.</p>
<b>Required skills</b>
As a result of mastering the study course dentistry students will be able to examine ENT organs, they will have acquired skills for assessing severity of diseases, and they will be able to make primary diagnosis, and advise patients to other specialists, providing them with the right treatment, as well as first aid in cases of emergency.
<b>Exam questions</b>
1. Congenital Malformations of the Ear

2. Foreign Bodies of the External Ear Canal
3. Lavage of the External Ear Canal
4. External Ear Inflammation
5. Ear Vax
6. Function of the Eustachian Tube
7. Acute Middle Ear Inflammation
8. Chronic Middle Ear Inflammation
9. Cholesteatoma
10. Tune Fork Tests and Audiometry
11. Complications of the Ear Inflammation
12. Otosclerosis
13. Meniere Disease
14. Syndrome Costen
15. Deformations of the Nose
16. Physiology of the Nose and Breathing
17. Nose Polyps
18. Allergic Rhinitis
19. Vasomotor Rhinitis
20. Acute Sinusitis
21. Chronic Sinusitis
22. Caldwell-Luc Sinus Operation
23. Tumors of the Maxilla
24. Epistaxis
25. Anterior and Posterior Nasal Packing
26. Furuncle of the Upper Lip and Nose
27. Tumors of the Nose
28. Tumors of the Salivary Glands
29. Tumors of the Mouth and Pharynx
30. Acute Tonsillitis
31. Tonsillar Problem
32. Peritonsillar Abscess
33. Parapharyngeal Abscess
34. Adenoids
35. Indications for Tonsillectomy
36. Indications for Adenoidectomy
37. Juvenile Angiofibroma
38. Malignant Tumors of Nasopharynx
39. Physiology of the Larynx
40. Congenital Malformations of the Larynx
41. Acute and Chronic Laryngitis
42. Subglottic Laryngitis
43. Thyroid Gland Diseases
44. Acute Respiratory Insufficiency
45. Conicotomy
46. Tracheotomy
47. Partial and Total Laryngectomies
48. Malignant tumors of Larynx and Hypopharynx
49. Foreign Bodies of the Esophagus
50. Foreign Bodies of the Trachea and Bronchies

### 3.2.62 Pathophysiology

Basic information about the course				
Title	Pathophysiology			
Code	71333	Abbreviation	312OPFIZ	
Total ECTS points	6	Status	Obligatory	
Exam	Yes	Calculated in grade average	Yes	
Language of teaching	Croatian	e-learning	No	
Department	Chair of Patophysiology			
Course leader	Professor Stjepko Pleština, MD, PhD			
Course load				
	1	2	Total	
Lectures	15	15	30	
Laboratory practicals	15	30	45	
ECTS			6	
Course description				
To introduce the concepts and principles underlying natural development of disease, organ dysfunction and accompanying overall body performance alterations, as a foundation for understanding, clinical elaboration and treatment of diseases.				
* To introduce etiological frameworks of disease processes and their interactions with defensive, adaptive, self-maintaining and reparatory processes within the pathogenesis of diseases' classes.				
* To enable integration of morphological, biochemical, physiological and propedeutical knowledge into plausible etiopathogenetic mechanisms which incorporate and develop a synthetic view of pathobiological basis of the disease.				
Criteria for taking the course exam				
What is graded				
Written exam	Yes	Oral exam	Yes	Practical exam
Seminar	No	Minor preliminary exam	Yes	Major preliminary exam
				Yes
Rules of grading and additional information				
The exam consists of a written and an oral part. Passed written exam is the prerequisite for the oral exam. 2. Written exam is based on 60 multiple choice questions. In order to pass the written exam, students must have 55% or more correct answers. 3. Oral exam is based on randomly drawn 5 questions out of 120. The list of questions will be handed to students during the course of Pathophysiology in a written form.				
Exam grade is a summary of results on written and oral exam. Students who pass both colloquia (1st and 2nd component) are exempt from the written exam. On oral exam they may answer to a higher grade.				
Weekly teaching plan				
1. component				
Lecture topics:				

<ol style="list-style-type: none"> <li>1. Introduction to pathophysiology. Disease, Health, Death. General principles of organ systems function evaluation. Disorders of homeostatic mechanisms</li> <li>2. Disorders of energy metabolism, Disorders of subcellular structures</li> <li>3. Disorders of carbohydrate metabolism</li> <li>4. Disorders of lipids metabolism, Atherosclerosis. Disorders of protein metabolism.</li> <li>5. Endocrinopathies</li> <li>6. Disorders of water and electrolytes. Pathogenesis of oedema.</li> <li>7. Acute and chronic inflammation. Vascular and metabolic changes during inflammation.</li> <li>8. Pathophysiology of pain</li> <li>9. Disorders of connective tissue structure and function</li> <li>10. Pathophysiology of malignant transformation and tumour growth. Physical, chemical and biological carcinogenesis</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Disorders of DNA structure and function. Disorders of gene expression regulation.</li> <li>2. Hypoenergenesis with clinical cases</li> <li>3. Mechanisms of cellular damage and death</li> <li>4. Pathophysiology of diabetes mellitus and hypoglycaemia</li> <li>5. Atherogenesis, atherosclerosis and its consequences</li> <li>6. Pathophysiology of starvation. Hypovitaminoses.</li> <li>7. Disorders of pituitary, thyroid, parathyroid, and adrenal glands.</li> <li>8. Disorders of calcium, phosphate, magnesium and fluorid transport. Disorders of bone development and dentition.</li> <li>9. Immune hypersensitivity and autoimmunity, immunodeficiency</li> <li>10. Disorders of thermoregulation. Pathogenesis of fever</li> </ol>
<b>2. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Pathophysiology of shock I</li> <li>2. Pathophysiology of shock II</li> <li>3. Disorders of heart minute volume</li> <li>4. Heart overload and pathogenesis of cardiac insufficiency</li> <li>5. Coronary disease</li> <li>6. Pathogenesis of respiratory insufficiency</li> <li>7. Disorders of glomerular and tubular function</li> <li>8. Impairment of acid-base balance</li> <li>9. Disorders of throat, oesophageal and gastric function</li> <li>10. Liver function disorders. Portal hypertension and consequences</li> <li>11. Malabsorption and disorders of exocrine pancreas</li> <li>12. Pathophysiology of anaemia</li> <li>13. Hematologic and metabolic changes in infection</li> <li>14. Exogenous chemical noxis</li> <li>15. Physical etiologic factors</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Evaluation of organic system functional ability. General pathogenesis of cardiovascular disorders</li> <li>2. Disorders of heart rhythm. Basics of ECG</li> <li>3. Orthostatic and physical overload; Schellong-Luderitz tests I and II</li> <li>4. Pathophysiology of heart decompensation</li> <li>5. Disorders of pulmonary ventilation, diffusion and perfusion</li> </ol>

6. Arterial hypertension and hypotension
7. Acute and chronic renal failure
8. Acid-base disorders- clinical cases
9. Icterus- pathogenesis. Ascites-pathogenesis.
10. Small and large intestine function disorders. Vomiting and diarrhoea- pathophysiology
11. Disorders of cerebral blood flow. Pathophysiology of increased intracranial pressure.
12. Disorders of blood clotting
13. Infection- clinical cases
14. Chemical intoxication- clinical cases
15. Disorders of thermoregulation- clinical cases

#### Course leader and associates

Stjepko Pleština, MD, PhD, Professor of Pathophysiology  
 Borislav Belev, MD, PhD, Senior Assistant of Pathophysiology  
 Natalija Dedić Plavetić, MD, PhD, Senior Assistant of Pathophysiology  
 Davorin Herceg, MD, Assistant of Pathophysiology

#### Literature

##### Required literature:

1. Gamulin S., Marušić M., Kovač Z. i suradnici: Patofiziologija, VII izdanje, Medicinska naklada, Zagreb, 2011.

##### Recommended literature:

1. Kovač Z, Gamulin S. Patofiziologija-Zadatci za problemske seminare III.-izdanje Medicinska naklada Zagreb 2011.
2. McPhee SJ, Lingappa VR, Ganong WP. Pathophysiology of disease. An introduction to clinical medicine. Lange Medical Books/McGraw Hill, New York.
3. Silbernagel S, Lang F. Atlas of Pathophysiology. Georg Thieme Verlag, Stuttgart.

#### Required knowledge

##### Pathophysiologic definition of health and disease.

Relations of health and disease. Principles of normal and altered homeostasis

Positive and negative feedback mechanism

##### Principles of pathogenetic mechanisms and development of the disease

Aetiology, pathogenesis and etiologic factors

Development of pathological process, interactions of inheritance, environment and risk factors

Etiopathogenetic characteristics of disease as nosologic entity

Definition of death and end-stage disease

Functional tests in assessment of functional reserve of organs and organ systems.

General principles of biological system assessment, role of clinical-laboratory tests, normal range and referral values

##### Disorders of macromolecular structure and function

Disorders of DNA structure and function, DNA damage, disorders of DNA repair mechanisms, disorders of DNA quantity, Disorders of DNA synthesis

Principles of chromosomal disorders

Disorders of gene expression

Disorders of protein synthesis and degradation (disorders of transcription and translation, disorders of intracellular protein degradation)

Mutation. Pathophysiological principles of disease and syndrome inheritance. Molecular basis of dominant and recessive inheritance and inheritance and expression of nosogenic mutations.

Principles of development of inherited metabolic diseases

**Impairment of structure and function of subcellular elements**

Disorders of cell membrane function

Disorders of mitochondrial function

Disorders of lysosome function

Disorders of nuclear, ribosomal and endoplasmic function

Integrated response on cell injury

Pathogenesis of cell death.

**Pathophysiology of malignant transformation of somatic cells**

Role of cell cycle disorders and genome instability in carcinogenesis

Biological carcinogenesis

Chemical carcinogenesis

Physical carcinogenesis

Oncogenes and tumour suppressors, transformation of proto-oncogenes into the oncogenes

Complexity of etiopathogenetic factors of human cells malignant transformation

Malignant cells characteristics

Major gene disorders in malignant cells

Kinetics of tumour growth and metastasing

Etiopathogenesis of hereditary tendency for tumour growth

Clonal tumour growth, local factors that influence tumour growth and metastasis and paraneoplastic disorders

**Impairment of energy metabolism**

The biochemical basis of the energy metabolism disorders

Hypoxic hypoenergenesis, disenzymatic hypoenergenesis, substrate hypoenergenesis and evaluation of the energy metabolism

Adaptation to hypoenergenesis

Classification and examples of hypoxic hypoenergenesis

Pathogenetic types of cyanosis

Decoupling of oxidative phosphorylation

Classification and examples of disenzymatic hypoenergenesis

Classification and examples of substrate hypoenergenesis

Pathogenetic consequences of hypoenergenesis in tissues and organs

Energy balance

**Impairment of the basic metabolic substances**

Disorders of carbohydrate metabolism, hypoglycaemia, hyperglycaemia, diabetes mellitus

Disorders of lipids, lipoproteins and lipid disposal

Atherosclerosis

Obesity

Disorders of protein anabolism and catabolism, protein lack and loss, the effects of protein deficiency

Malnutrition

Starvation

Nitrogen balance disorders

**Impairment of turnover of specific metabolic substances**

General principles of the pathogenesis of specific metabolic substances disorders

Disruption of vitamin transport, hypervitaminosis, hypovitaminosis, development and consequences

Disruption of purine and pyrimidine bases transport

Porphyrin metabolism disorders

Disruption of trace elements transport

Disruption of iron transport

Disruption of iodine transport

**Disorders of water, electrolytes, hydration and osmolality turnover**

Pathophysiology of hydration and osmolality disorders

Disruption of body water and salt transport

Disturbances in the distribution of body fluids, transudates and exudates. Pathogenetic types of oedema

General pathogenesis of electrolyte disorders

Hyperhydration and hypohydration as etiopathogenic factor

Hyperosmolality and hypoosmolality as a etiopathogenic factor

Relationships of hydration and volemia

Potassium metabolism disorders

Disruption of calcium transport

Disruption of phosphate and magnesium transport

The consequences of excess and deficiency of electrolytes

### **Impairment of acid-base balance**

Pathophysiological factors of acid-base balance disorders and the role of compensatory mechanisms

Pathogenesis of metabolic and respiratory acidosis and alkalosis

Acute and chronic, compensated and decompensated disturbances of acid-base balance

Assessment of forms and degree of disturbance and their effects on different organ systems

Concept of additional, subtractional and retention disorders of bases or acids. The importance of assessing the anion deficit

Etiopathogenic effects of acid-base balance disorders on molecular, plasmatic, organic and organism level

### **Endocrinopathies**

General principles of endocrinopathies, hyper and hypo-functional, primary, secondary and tertiary

Causes of endocrinopathies

Disorders of hormones regulation and secretion, disorders of target tissue, damage and inflammation of endocrine glands

Hormones controlled by feedback equalization, hormones controlled by its metabolites

Pituitary dysfunction

Disorders of thyroid function

Dysfunction of the gonads

Functional disorders of adrenal gland

Function disorders of gastrointestinal hormones

Etiopathogenesis of pancreatic endocrine disorders

Importance of endocrine disorders in the complete response of the organism

### **Endogenous biological compounds in pathophysiologic processes**

Pathophysiological role of biogenic amines, derivatives, phospholipids, renin-angiotensin system, cytokines, gastro-intestinal hormones and neuropeptides, atrial natriuretic peptide, endothelin, nitric oxide, oxygen radicals Etiopathogenic role of plasmakinin and complement system

Nitric oxide and oxygen radicals in the physiological processes

Endogenous biological compounds in the context of etiopathogenesis

### **Disorders of thermoregulation**

Homeostatic mechanisms and disorders of thermoregulation

Pathogenic mechanisms of thermogenic and thermolytic processes

Sweating disorder as a mechanism for issuing heat

Pathogenic types of fever

Molecular, cellular, organ, and organismic response to fever

Pathogenesis and stages of hypothermia

Clinical significance of hypothermia in patients in certain situations

Response of the organism to environmental temperature changes

**The pathophysiological basis of pain**

Pain receptors, types and causes of pain

Chemical, physical and other mediators of pain

Nociceptive and neuropathic pain

Parietal, visceral and reflected pain

Etiopathogenesis of parietal, visceral, reflected and phantom pain

Heart pain, pleural pain, peritoneal pain, headaches and toothaches

**Immunopathophysiology**

Etiopathogenesis of congenital and acquired disorders in immunoreactivity

Cytokine regulation of immunity

Pathogenic importance of cytokine routing (asymmetric) immune response

General pathogenesis of atopy

Immunopathogenic role of HLA

Pathogenic basis of the increased relative risk associated with a particular HLA allomorphs

Etiopathogenesis of tissue- transplantation reaction

Disorders of immune homeostasis

Pathophysiology of autoimmunity with examples

Pathophysiology of immunological incompetence with examples

Classification of immunological incompetence

Immune hypersensitivity and its pathogenic consequences

**Inflammation**

The basic properties of inflammation

Proinflammatory and anti-inflammatory mechanisms

Kinetics and natural course of the inflammatory response

Adverse effects of inflammation in the body

Changes of organ reactivity in inflammation

Groups of mediators of the inflammatory response

Self-regulating inflammation level

Etiopathogenesis of acute and chronic inflammation

Endogenous and exogenous inflammatory noxes

Systemic reaction to inflammation

Relationship and pathogenic communication between local and systemic inflammatory

**Integral organismic reactivity to noxious agents**

The strategy of systematic pathobiologic response, reversible and irreversible processes

Structure-function relationship, the relationship between stress, inflammation, fever and catabolic reactions at the level of the whole organism

Systemic inflammatory response and multi-system organ failure

Reversible and irreversible pathogenic processes

Acute phase response of CNS and liver

Pathogenesis of catabolic reactions and hyper metabolism

Pathogenesis of multi-system organ dysfunction and failure (SIRS, MODS, MOFS, CARS)

Processes of healing in the body

Conditions that affect the integrity of the organism to respond

Etiopathogenesis of fibrosis

Assessment of stress response and acute phase response

**Etiopathogenesis of hemodynamic shock**

Pathogenic mechanisms in circulatory shock

Etiopathogenesis of cardiogenic shock

Etiopathogenesis of hypovolemic shock

Etiopathogenesis of vasohypotonic shock

Compound circulatory shock

Compensated and decompensated shock and manifestations of circulatory shock in certain organs

Describe the outcomes of shock at the level of the organism

Etiopathogenesis of septic and toxic circulatory shock

**Mechanisms and degrees of consciousness disorders**

Basics of awareness and wakefulness maintaining and stages of consciousness

Etiopathogenesis of coma caused by dysfunction of brain structure and brain membranes

Etiopathogenesis of metabolic-toxic coma

Etiopathogenesis of coma caused by decompensation of some systems

Etiopathogenesis of disturbances of awareness caused by electrolytes, intoxication, thermoregulation and endocrine disorders

Pathogenesis of syncope

**Physical etiological factors**

Etiopathogenesis of the trauma and injuries

Pathogenesis of gunshot wounds

Pathophysiological effects of ultrasound

Pathogenesis of pathological fractures

Pathogenesis of burn disease

Pathophysiology of extensive tissue contusions

Etiopathogenic effects of electromagnetic and particulate radiation

Etiopathogenesis effects of electric current

**Chemical etiological factors**

The etiological importance of biotransformation of xenobiotic

Pathogenic effects of xenobiotic

Pathogenic importance of enzyme induction and biotransformation

Etiopathogenesis of life-style habits and addictions (alcohol, smoking, drugs)

Selectivity of xenobiotic effects in the body

Etiopathogenic effects of drugs

**Biological etiological factors**

Etiological properties of infective organisms (invasiveness, toxicity, etc.)

Pathophysiological mechanisms of infectious diseases

Pathogenic relationship of host and infectious factors

Overview of inflammatory immune, endocrine and metabolic responses during infection

Secondary pathogenic processes initiated by infection (viral carcinogenesis, autoimmunity, immunological incompetence)

Pathogenesis outcomes of infectious disease

**Disorders of the structure and function of blood and blood-forming organs**

Disturbances in the formation and function of erythrocytes, leukocytes and platelets

Pathogenesis of anaemia and polycythaemia

Disorders of the immune cells, phagocytes.

Pathogenesis of malignant transformation of myelopoiesis and lymphopoiesis

Disturbances in blood clotting and etiopathogenesis of tendency to bleeding and blood clotting

Occurrence of disturbances in the plasma, and the plasma protein composition

Disturbances in the function of the spleen, the causes and consequences of hypersplenism

The pathogenesis of splenomegaly

**Disorders of the heart**

Electrophysiological mechanisms of disorders of the heart stimulation

Mechanisms of disorder of cardiac output, cardiac contraction

Disorders of myocardial function

Hemodynamic consequences of damage to the heart valves

Heart rhythm disturbances

Disturbances in the filling of the heart

Disorders of the coronary circulation and pathogenesis of ischemic heart disease

Electrophysiological consequences of ischemia

Congenital Heart Disease

Mechanisms of adaptation to the cardiac load

Pathogenic mechanisms of heart failure

Differences between compensated and decompensated heart

Mechanisms and symptoms of unilateral and global heart failure

Disturbances in body hydration in cardiac decompensation

**Disorders of blood pressure and blood flow**

Disorders of cardiac output

Pathogenesis of arterial hypertension and hypotension

Differences between essential and secondary disorders

Pathogenesis of the disorder in the arterial and venous pulse

Disturbances in local tissue perfusion

Pathogenic consequences of hypertension

Consequences of disorders of peripheral arterial and venous outflow

**Respiratory disorders**

Lung ventilatory disorders

Pathogenesis of disorders of diffusion of gases and disruption of fluids traffic and circulation in the lungs

Breathing rhythm disorders

Hypercapnic and hypoxic respiratory failure

Pathogenic importance of ventilation-perfusion relationships

Etiopathogenesis of pneumothorax

Etiopathogenesis of pulmonary hypertension and cor pulmonale

Metabolic disorders of lung function

**Disorders of kidney function**

Etiopathogenesis of pre renal, renal and post renal kidney failure

Compensatory mechanisms to maintain normal glomerular filtration rate and blood flow through the kidney

pathogenesis of glomerulonephritis

The pathogenesis of nephrotic syndrome

The pathogenesis of tubulointerstitial disease

Pathogenesis of acute and chronic renal failure

Etiopathogenesis of diabetes insipidus

Etiopathogenic mechanisms of polyuria

Etiopathogenesis proteinuria

Changes in the amount and composition of urine

**Pathophysiology of gastrointestinal system**

Disorders of voluntary motor function of pharynx and oesophagus

Function disorders, stomach, small and large intestine

Etiopathogenesis ulcer

Pathogenesis vomiting, motor secretion and osmotic diarrhoea

Basic forms of ileus, pathogenesis and consequences

Etiopathogenesis of acute and chronic pancreatitis

**Hepatobiliary disorders**

General etiopathogenesis of liver disorders

Metabolic disorders, detoxification, excretional and protective functions of the liver

Changes in the composition of bile and the circulation of bile salts

Pathophysiologic consequences of portal hypertension and the effects of hepatic dysfunction in other organ systems

Etiopathogenesis ascites

**Disorders of the structure and function of connective tissue and bone**

Mechanisms of metabolic bone disease

The pathogenesis of osteomalacia, rickets and osteoporosis

Mechanisms of degenerative diseases of bones and joints

Etiopathogenesis of fractures and healing processes

**Disturbances of motor and sensory functions of the nervous system**

General pathogenesis of nerve transmission and neuromuscular disorders

Etiopathogenesis of motor and sensory disorders, and epilepsy

**Disorders of brain function**

Basics of qualitative and quantitative brain dysfunction

Circulatory disorders of the brain

Pathogenesis of ischemic brain damage

Metabolic function of the central nervous system

Disorders of fluid and hemato-cerebrospinal fluid barrier

**Required skills**

**General competences:** Integrative recognition and interpretation of etiopathogenic process.

Vertical and horizontal integral interpretation of etiopathogenic processes from noxious agents, molecules and genes to symptoms, signs and dysfunction and parallel processes in organ systems and organismic reactions. Recognition of branching points (primary, secondary, etc. pathogenesis)

Quantitative analysis of laboratory, experimental and clinical data and process indicators. Analysis and interpretation of graphic presentations and descriptions (reading of curves, kinetic relations).

Inductive-deductive and systematic analysis of etiopathogenic processes at different hierarchy levels (from molecule to organism). Positive and negative regulatory mechanisms (feedback regulation, counteracting systems) and anticipatory mechanisms in etiopathogenesis. Relativity of deviation from normal values with regard to age, constitution, reactivity and time course, and relativity of etiologic noxae, distressors, stressors and stimuli. Etiopathogenic processes and conditions causing a diversity of outcomes at organ and organismic level. Assessment of functional reserve using static and dynamic tests. Solving etiopathogenic problems and matrix simulated models and development of critical data evaluation.

**Specific competences:** Principles of performance and interpretation of laboratory and clinical tests, and evaluation of the state of organism, reactivity, and significance of reference values.

Schellong test in orthostatic. Schellong-Luderitz test in physical exertion. Electrocardiological alterations in rest and during exercise. Valsalva and Muller experiment. Erythrocyte sedimentation rate. Anion gap alterations with clinical examples. Oxygenation of forearm at individual stages of blood pressure measurement with sphygmomanometer. Quantitative blood gas analysis.

Pathophysiologic basis of clinical alterations of the creatine clearance. Basic etiopathogenic types of edema in individual organ systems. Etiopathogenic types of jaundice in patient. Pathogenic mechanisms of development of ascites in a patient. Etiopathogenic types of electrolyte imbalance in a patient. Analysis and calculation and interpretation of indices of acid-base clinical disorders. Manipulation and basic surgical procedures in experimental animals (egg, laparotomy, surgical suturing, etc). Ether anaesthesia in experimental animals and basis of anesthesiological procedures. Hypothermia, hyperkalaemia and ligation of biliary ducts, and pathophysiologic effects of obstructive icterus in experimental animals.

**Exam questions**

1. Disease (general factors, development and outcome)
2. Homeostatic mechanism dysfunction
3. Reactivity, constitution and adaptation
4. Principles of functional system assessment
5. Etiological factors and pathogenic mechanisms
6. Heredity, environment and pathological process
7. Disorders of DNA structure and function

8. Disorders of DNA repair
9. Disorders of the chromosome structure
10. Disorders of the chromosome number
11. Disorders of genomic expression
12. Disorders of transcription and translation
13. Hereditary enzymopathies, Hereditary defects of transport, receptor and structural proteins
14. Cell membrane and cell organelle dysfunction
15. Integral cellular reaction to injury and pathogenesis of cell death
16. Disorders of energy metabolism
17. Hypoxia and cyanosis
18. Dysenzymatic hypoenergenesis
19. Substrate hypoenergenesis
20. Carbohydrate metabolism disorders
21. Hyperglycaemia and pathophysiology of the diabetes mellitus
22. Hypoglycaemia
23. Disorders of the lipoprotein metabolism
24. Pathogenesis and consequences of atherosclerosis
25. Pathophysiology of malnutrition and obesity
26. Disorders of the protein metabolism
27. Protein deficiency- pathogenesis and consequences
28. Etiopathogenic role of specific metabolic compounds
29. Hypovitaminosis
30. Disorders of osmolality and hydration of the organism
31. Disorders of fluid movements through capillary membrane. Types of oedema
32. Mechanisms of oedema development in specific system dysfunctions
33. Disorders of potassium metabolism
34. Disorders of calcium metabolism
35. Imbalance of magnesium and phosphate metabolism
36. Pathophysiological factors of the acid-base imbalances
37. Respiratory acidosis and alkalosis
38. Metabolic acidosis and alkalosis
39. Disorders of the endocrine system regulation
40. Endocrinopathies due to target tissue dysfunctions
41. Pituitary dysfunction
42. Thyroid gland dysfunction
43. Adrenocortical dysfunction
44. Parathyroid gland dysfunction
45. Pathophysiological significance of biogenic amines, plasmin-kinin system and complement
46. Pathophysiological significance of prostaglandins and leukotrienes
47. Growth factor and cytokine role in the pathophysiological processes
48. Pathophysiological significance of nitric-monoxide and free oxygen radicals
49. Aetiology and classification of neurovegetative disorders
50. Aetiology and pathogenesis of the pain sensation
51. Types of pain
52. Thermoregulatory dysfunctions
53. Hypothermia
54. Pathogenesis and types of fever
55. Immune hypersensitivity
56. Pathogenic mechanisms of the autoimmunity
57. Etiopathogenic mechanisms of the innate and acquired immunodeficiencies
58. Pathophysiology of the acute inflammatory reaction

59. Chemical mediators of the acute inflammatory reaction
60. Integral acute-phase response and multiple organ failure
61. Pathophysiology of the chronic inflammation
62. Pathogenic types of hemodynamic shock
63. Pathophysiological course of the circulatory shock
64. Dysfunction of specific organ systems in hemodynamic shock
65. Etiopathogenic mechanism and stages of consciousness impairment
66. Pathogenesis of the syncope
67. Chemical, physical and biological carcinogenesis
68. Cellular oncogenes and anti-oncogenes
69. Etiopathogenic factors in malignant transformation
70. Mechanical injury and wound healing mechanisms
71. Pathophysiology of the massive conqasation (crush syndrome) and explosive trauma
72. Thermal and electrical injury
73. Pathophysiologic effect of ultra-short waves and optical radiation
74. Pathophysiologic effects of the ionizing radiation
75. Pathophysiology of the acute and chronic radiation sickness
76. Relationship between xenobiotic and the organism
77. Hematologic and metabolic alterations caused by infectious agent activity
78. Immunological alterations in infection. Focalosis. Microbial endocarditis
79. Disorders of the collagen structure and function
80. Metabolic disorders of the skeletal system
81. Anaemia – general pathogenesis and consequences
82. Disorders of erythrocytopoiesis and erythrocyte maturation
83. Disorders of haemoglobin synthesis and structure
84. Hemolytic and posthaemorrhagic anemia
85. Impairment of the leukocyte quantity and function
86. Impairment of the thrombocyte quantity and function
87. Disorders of plasma coagulation factors
88. Bleeding tendency
89. Thrombosis and thromboembolism
90. Myocardial contractility dysfunction
91. Cardiac preload and heart valve dysfunctions
92. Impairment of the heart electrical impulse generation and conduction
93. Ischemic myocardial damage
94. Dynamics and consequences of the cardiac hypertrophy
95. Pathogenesis of the insufficiency and compensatory mechanisms in heart insufficiency
96. Development and consequences of the heart failure
97. Pathophysiology of the arterial hypertension
98. Pathophysiology of the essential hypertension
99. Pathogenesis of the respiratory insufficiency
100.       Obstructive and restrictive disorders of the alveolar ventilation
101.       Disorders of the ventilation/perfusion ratio
102.       Impairment of the pulmonary gas exchange
103.       Imbalance of fluid distribution and pulmonary circulation
104.       Pathophysiology of the acute renal insufficiency
105.       Pathophysiology of the chronic renal insufficiency
106.       Impairment of the glomerular function
107.       Proteinuria and nephrotic syndrome
108.       General and specific disorders of tubular function
109.       Pharyngeal and oesophageal dysfunction
110.       Gastric dysfunction and pathogenesis of the peptic ulcer disease

- |      |  |
|------|--|
| 111. | Dysfunction of the small intestine. Malabsorption syndrome |
| 112. | Dysfunction of the exocrine pancreas                       |
| 113. | Pathophysiological types of constipation and diarrhoea     |
| 114. | Pathophysiology of ileus                                   |
| 115. | Hepatic metabolic function impairment                      |
| 116. | Pathogenesis of jaundice                                   |
| 117. | Viral hepatitis  |
| 118. | Enterohepatic bile salt recirculation disturbances         |
| 119. | Impairment of the hepatic blood flow                       |
| 120. | Liver dysfunction influence on the other organs            |

### 3.2.63 Pathology

Basic information about the course				
Title	Pathology			
Code	71334	Abbreviation	212OPATO	
Total ECTS points	10.5	Status	Obligatory	
Exam	Yes	Calculated in grade average	Yes	
Language of teaching	Croatian	e-learning	No	
Department	Chair of Pathology			
Course leader	Associate Professor Hrvoje Čupić			
Course load				
	1	2	Total	
Lectures	30	45	75	
Seminars	15	15	30	
ECTS			10.5	
Course description				
<p>The aim is to acquire knowledge about pathogenesis, pathophysiology of pathologic processes, as well as about morphological substrate of pathologic processes on the level of macroscopic, microscopic and molecular developments. This course also introduces methodologies of pathoanatomic, basic histochemical and immunohistochemical analyses of tissue pathology, through chapters on general pathology, and through applying the know-how about general pathologic developments on special tissues and organs, in the chapters of special pathology. Morphology of pathological processes in the mouth takes a special place in the course, as does acquirement of skills necessary for providing tissue samples for pathohistological analysis.</p>				
Criteria for taking the course exam				
What is graded				
Written exam		Oral exam	Yes	Practical exam
Seminar		Minor preliminary exam		Major preliminary exam
				Yes
Rules of grading and additional information				
<p>Candidates must present satisfying level of competency (grades 2-5) in the field of general and special pathology, as well as pathology of oral cavity, according to the matter presented through lectures, seminars, and mandatory literature. Students may take the major preliminary exam in general pathology (P1), having attended the winter semester and fulfilled their academic obligations, after which, in the summer term, they may take the major preliminary exam in special pathology and pathology of oral cavity (P2). Having passed both P1 and P2 is equivalent to having passed the pathology exam.</p>				
Weekly teaching plan				
1. component				
Lecture topics:				
<div>1. Autopsy as a working method in pathology - video presentation</div> <div>2. Position and importance of biopsy in dentistry</div>				

3. Hemodynamic disorders
4. Hyperaemia
5. Haemorrhage
6. Stress – phases of its development
7. Pathophysiology and morphology of shock
8. Types of shock
9. Causes and mechanisms of thrombosis development
10. Thrombogenesis and morphology of thrombus
11. Consequences of thrombosis and DIK
12. Embolism: pathogenesis and types
13. Peculiar types of embolism
14. Infarct; anaemic and haemorrhagic
15. Oedema
16. Introduction to oncology
17. General oncology 1; definition of tumour, tumour growth
18. General oncology 2; metastasis, means and ways;
19. General oncology 3; kinetics of tumour growth
20. General oncology 4; oncogenes and mutations
21. General oncology 5; tumour suppressor genes
22. Molecular proceedings during cellular growth
23. Nomenclature, properties of benign and malignant tumours
24. TNM classification, »Grading» and «Staging» of tumours
25. Carcinogenic agents and their cellular interactions
26. Tumour immunity – host's defence
27. Clinical properties of tumour growth
28. Laboratory diagnostics of tumour
29. Techniques of work in pathology I
30. Techniques of work in pathology II

#### **Seminar topics:**

1. Cellular damage and adaptation; (introduction, definitions, causes)
2. Ischemic cellular damage; the role of free radicals in cellular damage
3. Other mechanisms of cellular damage (chemical, damage caused by radiation, aging of cells)
4. Types of acute cellular damage (reversible damage, necrosis, apoptosis)
5. Sub-cellular response to cellular damage.
6. Cellular adaptation to growth and differentiation (atrophy, hypertrophy, hyperplasia, metaplasia)
7. Intracellular uptake; Pathologic calcification; Syalolithiasis
8. Inflammation - introduction
9. Acute inflammation – changes in flow and permeability, exudation, fagocytosis and degranulation
10. Chemical mediators of inflammation
11. Chronic inflammation; properties and types. Morphologic types of inflammatory reaction
12. Specific inflammations; Tuberculosis
13. Reparation. Regeneration
14. Immune mechanisms and tissue damage
15. Autoimmune diseases

#### **2. component**

#### **Lecture topics:**

1. Development of oral cavity
2. Terminology and morphology of pathological developments in oral mucous membrane
3. Malformations of the oral cavity - fissures
4. Malformations of the oral cavity – heterotopic development
5. Cysts of teeth and jaw
6. Oral mucous membrane inflammation – etiopathogenesis
7. Oral mucous membrane inflammation – non-specific stomatitis
8. Oral mucous membrane inflammation – specific stomatitis
9. Periapical disease
10. Changes in oral mucous membrane during system diseases
11. Benign tumours and diseases related to cancer
12. Precancerous developments in the oral cavity
13. Oral carcinoma
14. Odontogenic tumours 1
15. Odontogenic tumours 2
16. Oesophagus diseases
17. Stomach inflammation, ulcer
18. Stomach tumours
19. Bowel development disorders, mechanical and vascular bowel disorders
20. Infectious enterocolitis
21. Ulcerative colitis, Crohn's Disease
22. Bowel polyps, colorectal carcinoma
23. Appendix diseases
24. Diseases of peritoneum
25. Pancreas diseases
26. Tumours of nose, paranasal sinuses and nasopharynx
27. Larynx: inflammatory and preneoplastic developments
28. Larynx: neoplastic developments
29. Inflammation and tumours of salivary glands
30. Inflammatory and neoplastic developments in the ear
31. Respiratory system, types of pulmonary diseases
32. Pulmonary diseases of vascular origin
33. Obstructive disease of lungs
34. Restrictive lung diseases
35. Pulmonary infections; pneumonia
36. Pulmonary tumours
37. Cerebrovascular diseases
38. Cerebral tumours
39. Fibrocystic breast disease
40. Breast tumours
41. Pathology of uterus
42. Pathology of the ovary
43. Epithelial and mesenchymal skin tumours
44. Changes in skin pigmentation; nevus
45. Skin melanoma

#### **Seminar topics:**

1. Cardiovascular system, introduction
2. Innate heart diseases
3. Heart decompensation
4. Ischemic heart disease I

<ol style="list-style-type: none"> <li>5. Ischemic heart disease II</li> <li>6. Cor pulmonale</li> <li>7. Endocardium and valves diseases</li> <li>8. Myocardium diseases</li> <li>9. Pericardium diseases</li> <li>10. Arteriosclerosis I</li> <li>11. Arteriosclerosis II</li> <li>12. Aneurisms</li> <li>13. Venous diseases</li> <li>14. Lymphatic diseases</li> <li>15. Tumours of blood vessels</li> </ol>
<b>Course leader and associates</b>
Prof. dr. sc. Hrvoje Čupić Doc. dr. sc. Drinko Baličević Doc. dr. sc. Majda Vučić
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Kumar V, Cottrian RS, Robbins SI. Osnove Patologije, prema 5. Američkom izdanju, Školska knjiga, Zagreb, 1994.</li> <li>2. Regezi JA, Sciubba JJ, Jordan RCK. Oral pathology, Clinical pathologic correlations, Saunders 4th ed. 2003.</li> <li>3. Cawson RA, Odell EW: Essential of oral pathology and oral medicine, 6th ed. Churchill Livingston, London, Edinburg, New York, Philadelphia, San Francisco, Sydney Toronto, 1998.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Kumar V, Abbas AK, Fausto N. Robins pathologic basis of disease, 7th ed. Elsevier Saunders, 2005.</li> <li>2. Damjanov I, Jukić S, Nola M. Patologija, 2 izdanje Medicinska naklada, Zagreb, 2008.</li> <li>3. Zapisi s predavanja, seminara, vježbi.</li> </ol>
<b>Required knowledge</b>
<p>The course aims at enabling students to understand and acquire knowledge of causes and pathogenesis, as well as morphological symptomatology of pathological processes. Acquisition of knowledge about pathomorphologic base of given medical conditions which are subject of general medical and dentistry courses.</p> <p>Acquisition of knowledge of general and special pathology classification, together with learning the terminology of pathological processes.</p> <p>Introducing students to the importance of morphological diagnosis of pathological developments (intraoperative and permanent biopsy), necropsy, cytology, as well as the method of collecting and processing tissue samples for histopathologic diagnosis in the laboratory and with the additional ability to use bioptic specimens in scientific research analysis.</p>
<b>Required skills</b>
<p>While recognizing and describing of pathological processes, the student should know the answer to the question: why has a certain pathological process developed (the cause or the supposed causes), the sequence of changes in the tissue and in the organism following the initial influence of</p>

the cause, define the morphological substrate of the resulting changes, and classify those pathological changes.

### Exam questions

Causes and mechanisms of cell damage  
Ischemic and hypoxic cell damage  
The role of free radicals in cell damage  
Dry cell damage  
Viral cell damage  
Apoptosis  
Sub-cellular response to damage  
Atrophy / metaplasia  
Hypertrophy / hyperplasia  
Diabetes  
Pigmented lesions - nevi, melanoma  
Hepatitis  
Dystrophy and metastatic calcifications  
Gallstones  
Urinary stones  
Sialolithiasis  
Necrosis - Definition and classification  
Acute and passive hyperaemia  
Changes in organs in the state of chronic cyanosis  
Stasis  
Thrombosis  
Embolism - Pathogenesis and classification  
Infarction - anaemic and hemorrhagic  
Bleeding - the method and type of  
Oedema  
Shock - Pathogenesis and classification  
Shock - The underlying mechanisms  
Shock - morphology  
Definition and causes inflammation  
Division of inflammation  
Characteristics of acute inflammation  
Characteristics of chronic inflammation, chemical mediators of inflammation  
Permeability changes in inflammation and circulation  
Cellular events in acute inflammation  
Inflammatory granulation tissue  
Chronic inflammation  
Purulent  
Ulcerative inflammation  
Characteristics of specific inflammation  
Differences between specific and non-specific inflammation  
TB

Syphilis  
 Structure of tubercles and tuberculous gumma - differences  
 Actinomycosis  
 Rhinoscleroma  
 Leprosy  
 Toxoplasmosis  
 Regeneration and repairing  
 Repairing connective tissue  
 Wound healing - healing mechanisms  
 Types of immune responses - division  
 Autoimmune diseases - mechanisms of  
 Primary and secondary immune deficiency syndromes  
 Pathology of AIDS  
 Amyloidosis  
 Cytogenetic abnormality  
 Autosomal disorders  
 Disorders of sex chromosomes  
 Definition and basic features of tumour growth, tumour nomenclature  
 Characteristics of benign tumours  
 Characteristics of malignant tumours  
 Metastasis – ways and means of expansion  
 "Grading" and "staging" the tumour, TNM classification  
 Morphologic diagnosis of the tumour - biopsy (emergency and routine)  
 Extracting and processing of biopsy samples  
 Acquired disorders newly generated / precancerous lesion /  
 Oncogenesis, gene suppressors and oncogenes cancer  
 Biology and kinetics of tumour growth  
 Tumour immunity  
 Supporting tissue tumours - benign  
 Sarcomas  
 Tumours of epithelial tissue - benign  
 Carcinoma  
 Carcinoma in situ  
 B Test questions in pathology (P)  
 Congenital Heart Disease  
 Congestive heart failure (heart failure)  
 Ischemic heart disease  
 Angina pectoris  
 Myocardial infarction  
 Cor pulmonale  
 Endocarditis (classification, types, consequences)  
 Cardiomyopathy, myocarditis  
 Atherosclerosis - pathogenesis, morphology  
 Aneurysms blood vessel  
 Anaemia - division

Malignant lymphomas  
Hodgkin's disease  
Acute Leukaemia  
Chronic leukaemia  
Plasmacytoma, multiple myeloma  
Cancer of the larynx  
Chronic Bronchitis  
Bronchiectasis  
Emphysema  
Bronchial Asthma  
Atelectasis and pulmonary collapse  
Pulmonary thromboembolism and pulmonary infarction  
Pulmonary oedema  
Acute bacterial pneumonia - division  
Lobar pneumonia  
Bronchopneumonia  
Primary atypical / interstitial / pneumonia  
Bronchogenic carcinoma  
Pathogenesis of primary glomerular diseases  
Nephritic Syndrome  
Acute proliferative glomerulonephritis  
Chronic glomerulonephritis  
Acute pyelonephritis  
Chronic pyelonephritis  
Kidney tumours  
Cancer of the oesophagus  
Gastritis  
Peptic Ulcer  
Stomach cancer  
Enterocolitis  
Crohn's disease  
Ulcerative Colitis  
Intestinal polyps  
Colorectal Cancer  
Appendicitis  
Peritonitis  
Viral Hepatitis  
Cirrhosis of the liver  
Intrahepatic portal hypertension  
Primary liver tumours  
Bladder cancer stage a sad  
Acute Pancreatitis  
Pancreatic islet cell tumours  
Pancreatic cancer  
Cancer of the cervix

Endometrial cancer  
 Ectopic pregnancy  
 Ovarian tumours - division  
 Prostatic hyperplasia  
 Prostate Cancer  
 Testicular Cancer  
 Struma glandulae thyreoideae  
 Thyroid cancer  
 Fibrocystic breast disease  
 Benign breast tumours  
 Breast Cancer  
 Suppurative osteomyelitis  
 Giant cell tumour  
 Osteosarcoma  
 Skin cancers  
 Cerebral myocardial  
 Subarachnoid hemorrhage  
 Traumatic intracranial hemorrhage  
 Cerebral edema  
 Tumours of the nervous centres, types  
 Gliomas  
 Meningioma  
 Tumours of peripheral nerves  
 C Test questions from the pathology of the oral cavity (P)  
 Deformities of the oral cavity  
 Fissures in the facial region (disrafije)  
 Cysts of teeth and jaws - the division and the generation  
 Odontogenic cysts  
 Follicular cysts in teeth  
 Radicular cysts in teeth  
 Theories of radicular teeth  
 Neodontogenic cysts  
 Etiology stomatitis  
 Division of stomatitis  
 Nonspecific stomatitis  
 Purulent stomatitis  
 Viral stomatitis  
 Specific stomatitis  
 Mucosal changes in systemic diseases  
 Noma  
 Periapical Disease  
 Leukoplakia oris  
 Epulis  
 Odontogenic tumours - General characteristics and classification  
 Oral premalignant lesions

Lichen ruber planus

Ameloblastoma

Cancer of the lip

Carcinoma of the tongue

Throat cancer

Inflammation of the salivary gland

Tumours of the salivary gland

Pleomorphic adenoma, Warthin's tumour Carcinoma adenoides cysticum (cylindroma

### 3.2.64 Pediatrics

Basic information about the course					
Title	Pediatrics				
Code	71335	Abbreviation	411OPEDI		
Total ECTS points	2.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Pediatric Chair				
Course leader	assistant professor Gordana Stipančić				
Course load					
	1		Total		
Lectures	15		15		
Clinical practicals	15		15		
ECTS			2.5		
Course description					
<p>The program of pediatric education of dental school students has a total of 15 hours of lectures and 15 hours of clinical exercises. The program has general pediatric themes as well as all other specific pediatric fields, with a special attention on diseases and pathological states concerning the work of a dentist. Students shall receive general information on specific thematic parts during lectures, followed by clinical exercises regarding information and knowledge received through lectures. Clinical exercises include work with pediatric patients related to their characteristics based on age, gender and pathological substrate. Exercises will relate to all other practical aspects of working with pediatric population, team work, and communication skills needed in working with children, as well as multidisciplinary approach to ill child. We expect active involvement of students during lectures, and especially in clinical exercises. Besides skills of clinical exam of the child, taking anamnesis and hetero-anamnesis information for the ill child, interpretation of normal and pathological findings in different kinds of diagnostics, recognizing and treating most common childhood diseases, a special accent will be given to preventive measures in pediatric population.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Pediatric knowledge will be evaluated during oral exam. For the exam, students should prepare through listed mandatory literature, lectures and clinical exercises. Students shall be given a total of 45 exam questions for the oral exam. Questions cover all segments, or themes mentioned and studied through lectures and clinical exercises. At the exam the student first has the practical part of the exam during which the quality and content of taken anamnesis/hetero-anamnesis information, and specially the elements of the clinical exam of the child specific to child’s age. Further we analyze the diagnostic and therapeutic algorithm in treating the patient. A passing grade is given if the student was able to use the anamnesis information and clinical exam of the</p>					

child to construct the etiology factors of the disease, to foresee the differential diagnosis and plan basic diagnostic and therapeutical elements. After the successful clinical part, the student approaches the oral part of the exam.

The student shall be asked three questions from the given list, and he/she will randomly pick the questions by drawing them from the pre-made cards.

### Weekly teaching plan

#### 1. component

##### Lecture topics:

1. Growth and development in infant and toddler age
2. Inheritable diseases, congenital and conatal anomalies
3. Respiratory tract diseases
4. Feeding in children
5. Vitamines and their meaning, hypovitaminoses
6. Newborn age, peri- and neonatal age, physiology, ill states, premature newborn
7. Heart and large vessels diseases
8. Blood and hemostasis diseases
9. Malignant diseases of child age
10. Digestive tract diseases
11. Kidney and bladder diseases
12. Nervous system diseases
13. Endocrinology diseases
14. Allergies and immunodeficiencies
15. Accidents and poisoning in child age

##### Clinical practicals topics:

1. Growth and development in infant and toddler age
2. Inheritable diseases, congenital and conatal anomalies
3. Respiratory tract diseases
4. Feeding in children
5. Vitamines and their meaning, hypovitaminoses
6. Newborn age, peri- and neonatal age, physiology, ill states, premature newborn
7. Heart and large vessels diseases
8. Blood and hemostasis diseases
9. Malignant diseases of child age
10. Digestive tract diseases
11. Kidney and bladder diseases
12. Nervous system diseases
13. Endocrinology diseases
14. Allergies and immunodeficiencies
15. Accidents and poisoning in child age

### Course leader and associates

Prof.dr.sc.Ljerka Cvitanović-Šojat

Mr.sc.Iva Mihatov-Štefanović

Prof.dr.sc.Zora Zakanj

### Literature

#### Required literature:

1. Fabečić-Sabadi V, Hajnžić T.F. I sur. Pedijatrija. Školska knjiga, Zagreb, 1999.

**Recommended literature:**

1. Mardešić D. I sur. Pedijatrija, Školska knjiga, Zagreb, 2002.

**Required knowledge**

- Leading causes of morbidity in children by age group in developing and developed countries
- Define terms perinatal and neonatal morbidity, infant mortality rate
- Explain why is humanisation of children's hospital wards and other treatment facilities for children needed
- List and define children's social services
- List and explain accommodation problems for preschool children in child day care centers
- Explain terms monogenic and polygenic inheritance
- List most common autosomal dominant, recessive and sex-linked diseases
- Define genetic background, clinical features, procedure and possibility of teaching life skills to child with Down syndrome
- Describe most common birth defects and clinical features of sex chromosome abnormalities (Turner syndrome, Klinefelter syndrome)
- Explain the term and importance of invasive and noninvasive prenatal diagnostic procedures
- List most common teratogenic agents and their effects on humans
- List age ranges and characteristics of different periods of childhood
- List most important endogenic and exogenic factors affecting child growth and development
- Explain stages of psychomotor development in infants
- Define and describe sexual development in girls and boys
- Define terms newborn, premature, postmature baby, small for gestational age
- Describe adaptation to extrauterine life phases in newborn
- Describe blood circulation in fetus and newborn
- Define and explain physiologic and pathologic hyperbilirubinemia
- Describe and explain preventive measures in delivery room and maternity unit
- List sequence of newborn resuscitation procedures
- List causes of perinatal asphyxia
- Cite the most common birth injuries and their consequences
- List and explain the most common neonatal and premature infants pathology
- Explain dynamics and physiology of lactation
- List and explain the most common congenital anomalies that need urgent surgical care
- Define energy and fluid requirements for children
- Explain differences between formula and breast milk
- List differences and recommendations for introducing solid foods to infant nutrition
- List clinical features of most prevalent children hypovitaminosis
- Define clinical presentation of acute diarrhea and oral rehydration principle
- List and differentiate acute and chronic nutritional disturbances in children
- List characteristics, signs, symptoms and laboratory diagnostic tools for diabetes type 1
- List causes, pathogenesis and clinical features of most common thyroid diseases in children
- Explain terms precocious and delayed puberty
- List most common causes of short stature in children
- Classification of immunodeficiency diseases in children
- Describe pathogenesis, clinical features and treatment of childhood asthma
- List etiology, differential diagnosis and treatment of urticaria

- Explain differences between immunisation in active and passive manner, recommended immunisation schedule in Croatia
- Describe pathogenesis, clinical features and treatment of chicken pox
- Describe pathogenesis, clinical features and treatment of infectious mononucleosis
- Describe pathogenesis, clinical features and treatment of Streptococcal angina
- Describe pathogenesis, clinical features and treatment of rheumatic fever
- Describe pathogenesis, clinical features and treatment of juvenile rheumatoid arthritis
- List and explain characteristics of etiology, clinical features, diagnostic tools and treatment of childhood purulent meningitis
- List and explain characteristics of etiology, clinical features, diagnostic tools and treatment of childhood encephalitis
- Describe criteria for typical and atypical febrile convulsions in children
- Describe clinical types and characteristics of convulsions in children
- List principle of multidisciplinary management and treatment of childhood epilepsy
- Describe etiology, clinical features, diagnostic tools and treatment of childhood headache
- Define the variant clinical forms, etiology and differential diagnosis of cerebral palsy
- List symptoms and basic treatment of diseases of the upper respiratory tract
- List and differentiate the most common diseases of bronchi and the lungs (inflammations, TBC, tumors, foreign bodies)
- Differentiate cyanotic and acyanotic heart defects (symptoms, diagnostic procedure, prognosis)
- Name and list characteristics of clinical features, diagnostic tools and treatment of arrhythmias in childhood
- Explain and list basic characteristics of diseases and anomalies of the esophagus and stomach
- Explain and list basic characteristics of diseases of small and large intestines
- Explain and list basic characteristics of inflammations of urinary tract
- Describe pathogenesis, clinical features and treatment of acute hepatitis
- Describe pathogenesis, clinical features and treatment of different grade of vesico-urethral reflux
- Describe pathogenesis, clinical features and treatment of nephrotic syndrome
- Describe clinical features and the most common reasons of anemia during childhood
- Define the most common diseases of hemostasis in children
- List and distinguish the most common malignant and hematologic diseases of childhood
- Explain principles of basic caring for vitally endangered child (anaphylactic shock, poisoning, polytrauma)

#### Required skills

- Principles of collecting anamnestic and heteroanamnestic data in child population
- Drawing a family tree of the examinee
- Identifying an autosomal-recessive, autosomal dominant and sex-linked inheritance from family tree
- Evaluation of the basic anthropometric data with the help of tables and growth curves in percentiles
- Clinical examination of the child by systems and organs, depending on the age of the child
- Assessment of skeletal development of the child based on X-ray image of the wrist
- Evaluation of development of primary and first permanent molar teeth in children
- Assessment of the vitality and the term of newborn
- Teaching mother nursing skills
- Calculation of daily energy needs of a healthy child

- Assessment of dehydration degree of the child
- Interpretation of basic biochemical and hematological tests in children
- Interpretation of basic radiologic findings in children
- Interpretation of basic electrophysiological findings in children
- Recognition of conditions that endanger the child's life
- Knowledge of the basic principles of antibiotic and anti-shock therapy in children

#### Exam questions

1. Statistical markers of children's health (natality, mortality)
2. Chromosomal disorders
3. Anomalies of sex chromosomes
4. Structural anomalies of chromosomes
5. Division and basic characteristics of certain periods of growth and development in children
6. Means of following growth and development in children
7. Physiologic characteristics of newborn age
8. Most common pathologic states and disturbances in premature child and newborn
9. Birth trauma and consequences
10. Congenital anomalies that require immediate surgery after birth
11. Feeding in newborn and infant period (energetic needs, natural and artificial foods, additional foods)
12. Acute and chronic feeding disturbances
13. Vitamins and their meaning, hypovitaminoses
14. Diabetes in childhood
15. Thyroid diseases
16. Low stature in childhood
17. Premature puberty
18. Primary and acquired immunodeficiencies
19. Asthma in childhood
20. Hives
21. Vaccination in childhood (types, calendar, indications, contraindications)
22. Chicken pox
23. Infectious mononucleosis
24. Streptococcal angina
25. Rheumatic fever
26. Juvenile rheumatoid arthritis
27. Inflammatory diseases of the central nervous system
28. Febrile convulsions
29. Epilepsies of childhood
30. Headaches in childhood
31. Cerebral palsy
32. Diseases of the upper respiratory tract
33. Diseases of the lungs and bronchi (inflammations, TBC, tumors, foreign bodies)
34. Innate heart defects
35. Arrhythmias in childhood
36. Diseases and anomalies of the esophagus and stomach
37. Diseases of small and large intestines
38. Acute hepatitis
39. Vesico-urethral reflux
40. Nephrotic syndrome
41. Inflammations of urinary tract
42. Anemia in childhood

43. Bleeding diseases

44. Malignant and hematologic diseases of childhood

45. Basic principles of caring for vitally endangered child (anaphylactic shock, poisoning, polytrauma)

### 3.2.65 The Management in Dental Medicine

Basic information about the course					
Title	The management in dental medicine				
Code	71336	Abbreviation	621IPOSŁ		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Endodontics and Restorative Dentistry				
Course leader	Associate Professor Paris Simeon, Ph.D., D.M.D.				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
<p>This education is aimed for students as a course of the last year of the undergraduate programme of dental medicine studies. It is targeted to help students learn basics of organization and management, specially the organization and management of the health system and services management as a tool of adaptation which forms demand of medicine services market. Modern forms of management emerged under combined influence of economics, entrepreneurship, information technology, psychology, sociology and law science. Management in dentistry is supposed to gather this knowledge and use it as a platform to communicate on an elevated level with a patient on one hand and on the other to be able to manage, integrate and adapt to the needs of profit and nonprofit organizations. Therefore students should learn about health policies, functioning of health systems, services and its clinics. Also the purpose of the course would be to teach the professional and social behavior of doctors of dental medicine to exhibit service properly according to economics and law basics. Finally student should learn its perspective and possibilities of practice in Republic of Croatia. Due to the basic combination of economy and other specialties (as medicine) and the constant evolution and globalization of the medical services market it is necessary to have knowledge of management to be and to stay competitive in management of the health system, its institutions and its resources. Therefore public and private, profit and nonprofit organizations should necessitate specified student knowledge and activities in order to apply it to the practice of the health system.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Each different course object will be properly evaluated and student should have all necessary information to prepare a seminar presentation. Student self-initiative work is going to be valued. Written seminary and oral presentations will be a benefit for the final exam.</p>					
Weekly teaching plan					

<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Course overview; Methodology of Course; Introduction to Management and Organization; Why Study Management?; The Universality of Management; Team Selection; Team Building and Bonding</li> <li>2. Management basics; Definition of Management, Managers and Organization; Difference between Management, Governance and Leadership; Management Functions; Decision Making and Problem Solving throughout Management Levels</li> <li>3. Management in Health services; Management in Dentistry; Dentist as Manager – the Reality of Work; Necessary Roles and Skills for Efficient Management; Importance of Human Factor in Dentistry; Synergic Effect of Team Performance; Importance of Team as Managerial Tool; Examples from Practice – Dentist as Entrepreneur and Manager</li> <li>4. Organization of Health Care Institutions; System Approach to Organization; Factors that are Influencing Organization; Centralization and Formalization in Small and Big Systems; Types of Organizational Structures; Organizational Design Decisions in dentistry</li> <li>5. Management of dental office and Contingency Factors; External and Internal Analysis; Techniques for Assessing Environment; Flexibility, Innovation and Creativity as Key Development Factors; Forecasting and Change Management; Competitive Advantage of dental office through Knowledge Management</li> <li>6. Total Quality Management in Dentistry; Importance and Role of Quality in Dental services Management; Factors; Quality as Reputation Management Tool in Dentistry</li> <li>7. Customer Relationship Management; Active Role of Patient and Customer Tailored Service; Active Role of Patient in Modern Organization; Building Patient's Satisfaction Management Measurements; Examples from World Practice; Health Secretary recommendations</li> <li>8. Psychology Basics; Profiling Patient; Behavioral and Motivation Theories; Current Issues in Motivation</li> <li>9. Patient management; Management as Patient Focus Process in a dental office and in a specialist dental office;</li> <li>10. Clinical governance in Specialization (Protocol)</li> <li>11. Managerial and Employee Ethics in Dentistry; Differences and Connections; Improving of Ethical Behavior; Professionalism and Value Surplus (Maximization of Profit); Social Responsibility of Health Institutions; Life Long Learning vs. Life-time Employment Concept</li> <li>12. Legal Aspects of Dental Medicine; Law and Reason; Health Care Insurance as Bulding Block of Health Care System</li> </ol>
<b>Course leader and associates</b>
Associate Professor Paris Simeon, Ph.D., D.M.D.
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Kovačić, L. (ed.). Organization and Management in Health Care, Zagreb, Medicinska naklada 2003.</li> <li>2. Sikavica, P, Novak, M.: Business Organization 3rd edition, Zagreb, Informator 1999.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Weichrich H, Koontz H. Menadžment. Zagreb: MATE; 1998.</li> <li>2. Lewis KJ. Practice Management for Dentists. London: Wright; 1989.</li> <li>3. Buck D. Economic evaluation and dentistry. Dent Update 2000;27(2):66-73.</li> <li>4. Ujano R. Launching a successful financial plan. NYS Dent J 2002;68(4):24-5.</li> </ol>

5. Bronson CM. Financial planning 101. Money management for new dentists. NYS Dent J 2002;68(4):38-40.
6. Levin RP. The dental management pyramid: Part 4 – Strategic planning. Pract Proced Aesth Dent 2002;14(8):655-7.
7. Schwartz S. Managing practice statistics for practice success. J Contemp Dent Pract 2002;1(3):55-68
8. Mitchell DA, Mitchell L. Oxford handbook of clinical dentistry. Oxford: Oxford University Press; 1996.
9. Bahtijarević-Šiber F, Sikavica P. (ed.): Lexicon of Management, Zagreb, Masmedia, 2001.
10. Nowicki M. Financial Management of Hospitals and Healthcare Organizations. Chicago: Health Administration Press; 1999.
11. Buchanan D, Huczynski A. Organizational behaviour – an introductory text. 3rd ed. Prentice Hall; 1997

#### Required knowledge

Organization and management in dental medicine; Management of the dental practice; Management of the dental team; Marketing in dental medicine; Social responsibility of the dental medicine practice; Entrepreneurship in dental medicine; Foundation, arrangement and organization of the dental practice; Patient administration management; Accounting basics; Health law basics; Competitiveness and employment possibilities

#### Required skills

#### Exam questions

### 3.2.66 History of Dental Medicine

Basic information about the course					
Title	History of dental medicine				
Code	71337	Abbreviation	221IPOVI		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Dental Anthropology				
Course leader	assistant professor Jelena Dumančić				
Course load					
	1		Total		
Lectures	7		7		
Seminars	8		8		
ECTS			1.5		
Course description					
<p>The History of Dentistry is a course which provides understanding of origins and development of dentistry thus helping dental students to evaluate contemporary events in society and future development of dental profession.</p>					
<p>Primary Aims</p> <ul style="list-style-type: none"><li>• Explore the evolution of the concept of dental diseases and their treatment</li><li>• Explore the origins and development of dentistry</li><li>• Improve appreciation of dentistry as a learned profession.</li></ul>					
<p>The history of mankind is also a history of disease. The pathological conditions of the teeth and jaws – severe abrasion and periodontal disease - are evident in pre-Neanderthals and Neanderthals. Carious process was rare among paleolithic races but the incidence of caries increase to the early Stone Age along with the need for dental treatment. The oldest recorded procedures of this kind are found in Egyptian papyrus scrolls and on Babylonian clay tablets. Achievements in dental medicine are described according to the sources and remnants of ancient peoples worldwide until the turning point in the 18th century when the era of modern dental medicine started. The achievements of pioneers of dental profession and progress in dental disciplines based on natural sciences and technological advances are described along with research and education in dental medicine.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	

<b>Rules of grading and additional information</b>	
Students are obliged to choose one of the offered seminar topics at the beginning of the semester, prepare it in the form of an oral presentation (in MS Power Point) for the colleagues and write a written work. Final grade depends on the quality of the written work but oral presentation is a prerequisite. Students are offered consultations during preparation of the seminars.	
<b>Weekly teaching plan</b>	
<b>1. component</b>	
<b>Lecture topics:</b>	
<ol style="list-style-type: none"> <li>1. Dental medicine of pre-historic and ancient populations who belonged to archaic extra-European cultures.</li> <li>2. Dental medicine of classical Greeks and Romans, Islamic health care.</li> <li>3. Medieval dental medicine</li> <li>4. Awakening of natural sciences in 16th and 17th century</li> <li>5. 18th century - autonomy of dental medicine</li> <li>6. Pierre Fauchard, the father of modern dental medicine</li> <li>7. Dentistry in the Industrial Age</li> </ol>	
<b>Seminar topics:</b>	
<ol style="list-style-type: none"> <li>1. Krapina Neanderthals; Saint Apollonia; Leonardo da Vinci and dental medicine</li> <li>2. A. van Leeuwenhoek &amp; treponema denticola 1683; History of dental amalgam</li> <li>3. W. C. Röntgen, X- rays and utilization in dentistry; Dental caries theories; Restorative dentistry materials</li> <li>4. Development of pediatric dentistry in Croatia and worldwide; History of pain management in dentistry: H. Wells and nitrous oxide, History of the fluoride application in dentistry</li> <li>5. Development of oral surgery in Croatia; Development of dental drill; Development of dental units</li> <li>6. Development of orthodontics in Croatia and worldwide; E.H. Angle; Radiographic cephalometry in diagnostics and treatment of the craniofacial disorders</li> <li>7. Development of oral medicine in Croatia and worldwide; Development of periodontology in Croatia and worldwide</li> <li>8. Development of dental education in Croatia; History of dental medicine in Croatia; Eduard Radošević, pioneer of university education in dentistry in Croatia</li> </ol>	
<b>Course leader and associates</b>	
Doc. dr. sc. Jelena Dumančić	
<b>Literature</b>	
<b>Required literature:</b>	
<ol style="list-style-type: none"> <li>1. Dental History, A History of the Profession and Practice of Dentistry (2003), Developed by American College of Dentists, Multimedia Dental History Resource, Gaithersburg, Maryland, USA</li> <li>2. Walter Hoffmann-Axthelm, History of Dentistry (1981), Quintessence Publishing Co., Chicago</li> <li>3. Zvonimir Kaić, Razvoj stomatologije u Hrvatskoj, Acta Stomatol Croat 2002; 36:5-18.</li> <li>4. Ljetopis: Stomatološki fakultet Sveučilište u Zagrebu: 1948. - 1993., gl. ur. Goran Knežević, Zagreb, Stomatološki fakultet Sveučilište u Zagrebu (1994), 8-29, od str. 234 prilozi zaključno sa slikom 45.</li> </ol>	

**Recommended literature:**

1. Zvonimir Kaić, Stomatologija u Hrvatskoj od 1874. - 1995., Znanost u Hrvata: prirodoslovlje i njegova primjena: 19. lipnja - 31. listopada 1996. Gl. ur. Greta Pifat Mrzljak. Katalog izložbe. Tiskara Puljko, Zagreb, 324-338.  
<http://public.carnet.hr/zuh/od1874/mznan/stomatok.htm>
2. Ante Škrobonja, Amir Muzur, Vlasta Rotschild, Povijest medicine za praktičare (2003), Adamić, Rijeka

**Required knowledge**

Students are provided with the information on evolution of the dental and oral diseases and development of the therapeutic methods, technology and materials; development and pioneers of dental profession; history of education in dental medicine.

**Required skills**

Knowledge and understanding of the origins and development of dentistry helps dental students to evaluate contemporary events in society and future development of dental profession. Engagement in preparing oral presentation and written work develops conceptual and personal skills of the students and independent learning.

**Exam questions**

Seminar topics are offered to students' choice for preparation of an oral presentation and a written work.

### 3.2.67 Preclinical Endodontics

Basic information about the course					
Title		Preclinical endodontics			
Code		71338	Abbreviation		421OPEND
Total ECTS points		3.5	Status		Obligatory
Exam		Yes	Calculated in grade average		Yes
Language of teaching		Croatian	e-learning		Yes
Department		Department of Endodontics and Restorative Dentistry			
Course leader		Professor Silvana Jukić Krmek PhD			
Course load					
		1			Total
Lectures		15			15
Preclinical practicals		30			30
ECTS					3.5
Course description					
Preclinical Endodontics course teaches students about etiology and treatment of diseases of pulp and periradicular region, teeth and jaw trauma, materials and drugs used in endodontic treatment and endodontic surgery.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam			Practical exam
Seminar		Minor preliminary exam			Major preliminary exam
Rules of grading and additional information					
The exam in Preclinical Endodontics is taken after the 8th semester in the written form. Students answer the question by marking the offered answers. If the student gives positive answers to 76% of questions or more, the written part of the exam is considered a pass. 76% to 80% - equals sufficient grade (2), 80% to 86% - equals good grade (3), 86% to 92% - equals very good grade (4), 92% to 100% - equals excellent grade (5).					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction in endodontics					
2. Histology and physiology of the dental pulp. Mechanisms of dentinal and pulpal pain					
3. Etiology, course of the disease, symptomatology and diagnosis of pulp diseases					
4. Classification of pulp diseases and acute pulpitis					
5. Chronic pulpitis					
6. Pulpal necrosis and dental pulp gangrenae					
7. Pulp-periodontal complex, pathological course in periapical and periradicular area, diagnosis of periradicular diseases					
8. Periodontitis apicalis acuta					

9. Periodontitis apicalis chronica
10. Pulp-periodontal diseases (syndrome)
11. Morphology of endodontic complex I
12. Morphology of endodontic complex II
13. Sterilization, disinfection, dry working field
14. Shaping of endodontic cavity, access cavity
15. Endodontic instruments (hand, rotary, ultrasonic)

#### **Preclinical practicals topics:**

1. History taking, dry working field and rubber dam placement
2. Endodontic instruments, apex locators
3. Diagnosis and interpretation of panoramic and intraoral x-ray images
4. Access cavity preparation in incisors of upper and lower jaws
5. Access cavity preparation in canines and premolars of upper and lower jaws
6. Access cavity preparation in molars of upper and lower jaws
7. Measuring of the working length, root canal preparation on endo-blocks and one-rooted extracted teeth
8. Root canal preparation on two-rooted teeth and chemical debridement of root canals
9. Root canal preparation on multi-rooted teeth and intracanal medicaments
10. Root canal obturation on endo-blocks and materials for root canal filling
11. Root canal obturation of one-, and two-rooted teeth with cold lateral condensation technique
12. Root canal obturation of multi-rooted teeth with cold lateral condensation technique
13. Outcome evaluation of endodontic treatment and retreatment of one-rooted teeth
14. Complications in endodontic treatment and retreatment of two-rooted teeth
15. Retreatment of multi-rooted teeth

#### **Course leader and associates**

Professor Ivica Anić, PhD  
 Associate Professor Nada Galić, PhD  
 Professor Silvana Jukić-Krmek, PhD  
 Associate Professor Marina Katunarić, PhD  
 Professor Ivana Miletić, PhD  
 Professor Goranka Prpić-Mehićić, PhD  
 Associate Professor Božidar Pavelić, PhD  
 Associate Professor Katica Prskalo, PhD  
 Associate Professor Tonči Staničić, PhD  
 Associate Professor Sanja Šegović, PhD  
 Professor Zrinka Tarle, PhD  
 Assistant Professor Bernard Janković, PhD  
 Associate Professor Zoran Karlović, PhD  
 Assistant Professor Alena Knežević, PhD  
 Associate Professor Vlatko Pandurić, PhD  
 Associate Professor Paris Simeon, PhD  
 Ivona Bago, DMD  
 Anja Baraba, DMD, PhD  
 Eva Klarić, DMD  
 Jurica Matijević, DMD  
 Danijela Matošević, DMD, PhD

#### **Literature**

<b>Required literature:</b>
1. Torabinejad M, Walton RE. Endodontic: načela i praksa; Naklada Slap. Zagreb 2010.
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Andreasen JO, Andreasen FM. Essential of traumatic injuries to the teeth; Munksgaard, Copenhagen 1990.</li> <li>2. Ingle JI &amp; Bakland LK. Endodontics. BC Decker Inc, Hamilton, London, 2002.</li> <li>3. Cohen S &amp; Burns RC. Pathways of the pulp. VII ed. CV, Mosby Inc. St. Louis, 2002. Johnson WT. Color atlas of Endodontics. WB Saunders Co.; 2002</li> <li>4. Arens DE, Torabinejad M, Chivian N, Rubinstein R. Practical lessons in endodontic surgery. Quintessence Publishing Co, Inc. Chicago, Berlin. London Tokyo, 1998.</li> <li>5. Trope M, Debelian G. Priručnik iz endodoncije za praktičara. Quintessence, Publishin Co, Ltd, Chicago, Berlin. London Tokyo 2009.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Induction and development of pulp-dentinal complex</li> <li>• Histology of pulp-dentinal complex</li> <li>• Morphology of endodontic space</li> <li>• Classification pulpal and periapical diseases</li> <li>• Access openings</li> <li>• Endodontic instruments</li> <li>• Determination of working length</li> <li>• Step-back technique of root canal preparation</li> <li>• Cold lateral condensation technique of root canal obturation</li> <li>• Sterilization, disinfection, dry working field</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• Access openings of all teeth</li> <li>• To determine root canal working length on extracted teeth</li> <li>• To prepare and obturate root canals of extracted one-rooted teeth</li> <li>• To prepare and obturate root canals of extracted multi-rooted teeth</li> <li>• To perform retreatment on extracted tooth</li> <li>• To interpret panoramic and intraoral x-ray images</li> <li>•</li> </ul>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. Induction and development of pulp-dentinal complex</li> <li>2. Histology of pulp-dentinal complex</li> <li>3. Dental pulp cells</li> <li>4. Circulation and innervations of dental pulp</li> <li>5. Physiology of pulp-dentinal complex</li> <li>6. Morphology of endodontic space</li> <li>7. Classification of pulpal and periradicular diseases</li> <li>8. Indications and contraindications for endodontic treatment</li> <li>9. Access opening</li> <li>10. Hand endodontic instruments (basic instruments, classification, ISO standardization)</li> <li>11. Working length measurement</li> <li>12. Techniques of root canal instrumentation - Step-back techniques</li> <li>13. Techniques of root canal obturation – cold lateral condensation</li> <li>14. Sterilization and disinfection in endodontics</li> </ol>

15. Dry working field

### 3.2.68 Preclinical and Laboratory Fixed Prosthodontics

Basic information about the course				
Title	Preclinical and laboratory fixed prosthodontics			
Code	71339	Abbreviation	312OPLFP	
Total ECTS points	9	Status	Obligatory	
Exam	Yes	Calculated in grade average	Yes	
Language of teaching	Croatian	e-learning	No	
Department	Department of Fixed Prosthodontics			
Course leader	assistant professor Marko Jakovac			
Course load				
	1	2	Total	
Lectures	15	15	30	
Preclinical practicals	30	45	75	
ECTS			9	
Course description				
The course of "Preclinical and Laboratory Fixed Prosthodontics" will give students biomedical and technological knowledge and skills for clinical therapy of damaged and lost teeth. They will also get skills in the dental laboratory for the purpose of better understanding the connection between clinical and laboratory practice. With knowledge and skills developed in this course, the students will understand complexity of the prosthodontics therapy and influence of dental laboratory in overall success.				
Criteria for taking the course exam				
What is graded				
Written exam	Yes	Oral exam		Practical exam
Seminar		Minor preliminary exam	Yes	Major preliminary exam
Rules of grading and additional information				
The exam will be in written form and the time for the exam will be 45 minutes. Students will have five choices for the right answer with no negative points. For pass in this exam, students should have minimally 60% right answers. For each better grade they should have 10% more right answers.				
Weekly teaching plan				
1. component				
Lecture topics:				
1. Introduction. Definition, purpose and scope of fixed prosthodontics. Preclinical and laboratory working place with instruments and devices.				
2. First checkup-anamnesis, clinical examination, planning and factors for planning the fixed prosthodontics therapy.				
3. Study and diagnostic casts – purpose and significance. Temporary fixed partial dentures (FPD).				
4. Preprosthetic teeth and gingiva therapy.				

5. Burs for tooth preparation. Anesthesia in fixed prosthodontics. Teeth and gingiva protection during tooth preparation.
6. Biomechanical principles of tooth preparation. Fixed prosthetic therapy and periodontal system-placement of the preparation margin.
7. Dental crowns- classification, indication and contraindication. Clinical and laboratory aspects.
8. Temporary and immediate crowns; Acrylic and composite crowns. Clinical and laboratory aspects. Mechanical protection of prepared tooth.
9. Full metal crown. Clinical and laboratory aspects. Basic clinical and laboratory aspects.
10. Partial veneer crown. Clinical and laboratory aspects.
11. Metal-ceramic crown. Basic clinical and laboratory aspects.
12. Full ceramic crown. Basic clinical and laboratory aspects.
13. Cast post and core. Clinical and laboratory aspects.
14. Post and core (metal, composite fiber reinforced).
15. Final lecture. Recapitulation.

#### **Preclinical practicals topics:**

1. Preclinical working place and demonstration of the work on phantom.
2. Incisor preparation for crown with chamfer finish line (part I).
3. Incisor preparation for crown with chamfer finish line (part II).
4. Canine preparation for crown with chamfer finish line (part I).
5. Canine preparation for crown with chamfer finish line (part II).
6. Premolar preparation for crown with chamfer finish line (part I).
7. Premolar preparation for crown with chamfer finish line (part II).
8. Molar preparation for crown with supra gingival chamfer finish line.
9. Molar preparation for crown with sub gingival chamfer finish line.
10. Incisor preparation for crown with shoulder finish line.
11. Tooth preparations for inlay, onlay and overlay.
12. Tooth preparation for veneers.
13. Tooth preparation for cast post and core.
14. Modeling of cast post and core.
15. Final practice. Recapitulation.

## **2. component**

#### **Lecture topics:**

1. Modified crowns. Attachments, precise connectors for partial mobile dentures. Clinical and laboratory aspects.
2. Telescopic systems. Telescopic and cones crowns. Clinical and laboratory aspects.
3. Inlay, onlay, overlay. Veneers. Clinical and laboratory aspects.
4. Impression techniques. Types and classification of impression materials.
5. Working casts. Characteristics, classification and die systems. (Gypsum in dental labor).
6. Interocclusal relationship and articulators. Mounting casts on semi adjustable articulator.
7. Wax modeling of fixed prosthetic constructions. Basic of investing, preheating, heating and casting (expansion and contraction).
8. Characteristics of dental alloys (Au, AgPd, CoCr, NiCr and titanium) and application in fixed prosthodontics.
9. Thermal procedures of dental alloys. (Melting, casting, recrystallization, homogenization and precipitation of dental alloys). Joining technology of same and/or different alloys.
10. Classification, characteristics and application of esthetic materials (ceramics, polymers) in fixed prosthodontics. Color and tooth shape.
11. Ceramic systems and laboratory procedures. Metal-ceramic systems.

12. Ceramic systems and laboratory procedures. Full ceramic systems. 13. Implant-prosthetic therapy of partially edentulous patients. Specifics in laboratory procedures. 14. Final treatment of fixed prosthodontic constructions (polishing, glazing). Contact point control, interocclusal record. Final adaptation (dental office/laboratory). 15. Final lecture. Recapitulation.
<b>Preclinical practicals topics:</b>
1. Incisor preparation for bridge with chamfer finish line (parallelization). 2. Canine preparation for bridge with chamfer finish line (parallelization). 3. Premolar preparation for bridge with chamfer finish line (parallelization). 4. Molar preparation for crown with chamfer finish line (parallelization). 5. Alginate impression of maxilla/mandibula; Analysis of impression accuracy. Die casting. 6. Analysis of preparation parallelization on study casts. Preparation correction. 7. Two phase impression of maxilla/mandibula. Analysis of impression accuracy. Die casting in extra hard gypsum and cast evaluation. Gypsum classification and indications. Gypsum mixing in vacuum mixer. Pindex system. 8. Interocclusal records. Introduction to average value articulators; Mounting casts on articulator (demonstration). 9. Mounting casts on a nonadjustable hinge articulator articulator. Die preparation and coping fabrication (ADAPTA). Wax pattern fabrication for full metal, partially veneered and metal-ceramic single crowns. Pontic wax pattern fabrication; full metal and metal ceramic restorations (laboratory demonstration). 10. Wax pattern fabrication for full metal crown on a molar. Wax pattern fabrication for a modified crown for removable partial dentures retainers. 11. Wax pattern design for a partially veneered crown on an incisor. Choices and sizes of casting rings. Vacuum preparation of the investment material (one-faze/two-faze investing). Cast ring burnout technique; Casting; Cleaning the cast (laboratory demonstration) 12. Wax pattern fabrication for a partially veneered crown on a canine. Finishing of the cast. Preparation of the cast for try-in, soldering (laboratory demonstration) 13. Pontic wax pattern design I. Application and modeling of the polymer veneering material to the metal base. Pressure polymerization; UV light polymerization. Polymer veneer FPD finishing (laboratory demonstration). 14. Pontic wax pattern design II. Application and modeling of ceramic veneering material to the metal base. Metal-ceramic FPD finishing (laboratory demonstration). 15. Final practice. Recapitulation.
<b>Course leader and associates</b>
Prof.dr.sc. Adnan Ćatović Prof.dr.sc. Dragutin Komar Prof.dr.sc. Ketij Mehulić Prof. dr.sc. Jasmina Stipetić Prof.dr.sc. Denis Vojvodić Prof.dr.sc. Jasenka Živko Babić Doc.dr.sc. Amir Ćatić Doc.dr.sc. Marko Jakovac Doc.dr.sc. Andreja Carek Joško Viskiće, dr. med. dent Slađana Milardović, dr. med. dent. Lana Bergman, dr. med .dent.
<b>Literature</b>
<b>Required literature:</b>

<ol style="list-style-type: none"> <li>1. Čatović A. at all. Clinical Fixed Prosthodontics. Exemination text. School of Dental Medicine, 1999.</li> <li>2. Shillnburg H T at all. Fundaments of Fixed Prosthodontics. Quintessence Publishing Co, Inc. Zagreb, 2008.</li> <li>3. Živko-Babić J, Jerolimov V. Metals in dental medicine. Selected chapters. Zagreb : Školska knjiga, 2005.</li> <li>4. Jerolimov V. at all. Dental materials. Selected chapters. Zagreb : School of Dental Medicine, 2005. (<a href="http://www.sfzg.hr">www.sfzg.hr</a>)</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Rosenstiel SF, Land MF, Fujimoto J. Contemporary fixed prosthodontics, 4th edition. Selected chapters. St. Louis: Mosby Inc., 2006.</li> <li>2. Davarpanah M, Martinez H, Kebir M, Tecucianu JF. Dental implantology. Selected chapters. Zagreb: In.Tri d.o.o., 2006.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Indications for fixed partial dentures in damaged and/or missing teeth</li> <li>• Linking preclinical experience with future clinical FPD therapy</li> <li>• Distinguishing and selecting different types of materials for FPD manufacturing</li> <li>• Connecting and understanding of laboratory and clinical manufacturing procedures of FPD-s</li> <li>• Knowledge updating from literature and implementation of that knowledge in daily clinical practice</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• Application of materials, instruments, equipment and appliance in preclinical and future clinical work</li> <li>• Application of laboratory materials, instruments, equipment and appliance, and laboratory procedures</li> <li>• Master the manufacturing technological procedures for materials used in FPD manufacturing (with troubleshooting)</li> </ul>
<b>Exam questions</b>
Examination question correspond to titles and contents of the lectures, the chapters in the mandatory literature and the knowledge and skills acquired during this course.

### 3.2.69 Preclinical and Laboratory Removable Prosthodontics

Basic information about the course					
Title	Preclinical and laboratory removable prosthodontics				
Code	71340	Abbreviation	312OPLMP		
Total ECTS points	9	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Removable Prosthodontics				
Course leader	Associate Professor Sonja Kraljević Šimunković				
Course load					
	1	2	Total		
Lectures	15	15	30		
Preclinical practicals	30	45	75		
ECTS			9		
Course description					
<p>"Preclinical and laboratory removable prosthodontics" explains and teaches students about basic biomedical and technological knowledge and skills about clinical and laboratory dental work in the conventional therapy with partial and completely edentulous patients. Students, also, need to learn knowledge and skills of removable prosthodontics clinical and laboratory work, with emphasis on successful integration of that clinical and laboratory work. During the course students need to be prepared to perform clinical procedures on the real patients. Gaining knowledge and skills of this course, students perceive the complexity of prosthetic therapy that depends largely on the success of the clinical phase of the work, but also on the successfully completed laboratory phases.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar		Minor preliminary exam	Yes	Major preliminary exam	
Rules of grading and additional information					
<p>Preliminary exams are oral during exercises, and after completed complete denture great colloquium must be satisfied. Final exam is test paper. Students are answering questions by circling, supplementing or as defining specific term. For grade 2, students must have more than 60% of the test positive, for grade 3 more than 70%, for grade 4 more than 80%, and for best score (5-excellent) more than 90% of the positive answers</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div><div>Introduction; definition, purpose and scope of the profession.</div></div> <div><div>2.</div><div>Ledge of the upper and lower complete dentures; soft tissues, hard tissues, anatomical (preliminary) impression, trays and impression materials;</div></div>					

3. Construction and analysis of an anatomical models. Types of stones, borders and fabrication of the custom tray
4. Factors of the retention and stabilization of the complete dentures; custom tray; functional impression of the upper and lower jaws
5. Pouring of the functional model after functional impression. Bite rims- materials and fabrication.
6. Vertical and horizontal relation of the upper and the lower jaw, difference between dentate and edentulous jaws at horizontal relation- guided centric + gothic arch, methods for determination of vertical dimension of occlusion, occlusal plane- methods for its determination, theory.
7. Types of articulators, mounting of casts at ocludator, non-adjustable articulator, semi-adjustable articulator, quick mount face bow, kinematic facebow- what is his purpose, what is the difference to quick mount facebow.
8. Clinical procedure during bite recording at edentulous jaws; Occlusal plane.
9. Setup of the teeth; basic rules; selection of the front teeth- shape, color, height, width, material, preparation of casts for teeth setup (marking the medial line, marking the incisive papilla, lower mid transport to cast- alignment of front teeth in relation to the occlusal plane and the midline.
10. Occlusion- difference between natural teeth and complete dentures, A, B and C contacts, lingualised occlusion, appearance of artificial and natural teeth (dimensions, cusps, choice of posterior teeth, materials for artificial teeth).
11. Marking of casts and setup of posterior teeth; setup by Gysi, lingualised setup, balanced occlusion.
12. Completion of waxing, investing, packing, pressing, polymerization, materials for processing, procedures of processing.
13. Remount procedure, checking of centric contacts in laboratory, corrections, second remount procedure, patient aftercare.
14. Complications during dentures wearing, inflammation of mucosa by Newton, residual ridge resorption, relining, laboratory relining.
15. Final lecture, reparation of denture fractures, indications for complete denture with metal base

#### **Preclinical practicals topics:**

1. Introduction into edentulous jaws anatomy, analysis, denture ledge, impression trays, alginate impressions, pouring of casts.
2. Borders of movable and immovable mucosa, marking the border.
3. Fabrication of custom trays with light polymerizing acrylics.
4. Functional impression, pouring of the functional model, fabrication of bite rims.
5. Jaws relationship-height, centric relation, occlusal plane, bite recording and determination of occlusal plane on the phantom.
6. Types of articulators, mounting casts in semi-adjustable articulator.
7. Transfer with facebow in semiadjustable articulator.
8. Teeth setup-rules, marking functional cast, teeth selection, types of occlusion, lingualised occlusion.
9. Setup of the front teeth- try in on phantom, checking tooth axis and spatial relationship in relation to incisive papilla and lips.
10. Setup of posterior teeth- try in on the phantom, checking the occlusion.
11. Modeling of the gingiva.
12. Processing, polymerization apparatus-programming-laboratory.
13. Polymerization, remount procedure, polishing of dentures-laboratory.
14. Changes during denture wearing, ridge resorption, denture relining, fracture reparation.

15. Final exercise, review of final work.
<b>2. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Classification of partial edentulism: Kennedy, Eichner, functional classification with respect to the load (dental, mucosal), specific loading.</li> <li>2. Elements of removable partial denture and partial denture base.</li> <li>3. Elements of retention: clasps, types of clasps (material)- wire and cast clasp.</li> <li>4. Elements for retention: types of attachments, bar clasp, telescopic crowns.</li> <li>5. Elements for transfer and allocation of loading, types of occlusal rests, thickness, types of preparation for occlusal rests.</li> <li>6. Elements for stabilization of partial dentures, axis of rotation and stabilization.</li> <li>7. Parallelizing, dental parallelometer, his parts, partial denture placing direction, measuring of undercuts, anatomical and prosthetic equator.</li> <li>8. Planning of partial denture and phases of work for different Kennedy classes- most frequent solutions and types of planning, relationship of jaws, centric relation and centric occlusion, most frequent solutions depending on Eichner classification.</li> <li>9. Clinical and laboratory procedures for fabrication of partial denture with metal base: anatomy, planning- parallelometer, FO-when and why, planning the base, spruing, investing, burnout, casting, try in, bite rims, bite recording, finishing.</li> <li>10. Fabrication of metal base-phases, materials, sandblasting, try in of base-further clinical procedures.</li> <li>11. Bite recording and teeth setup at partial dentures-teeth setup at laboratory, fabrication of wire clasps.</li> <li>12. Procedures of processing of partial dentures, laboratory performance</li> <li>13. Handover of denture to patient, activation of clasps, corrections, instructions.</li> <li>14. Fabrication of partial denture with attachments-clinical and laboratory phases</li> <li>15. Cover dentures, removable dentures on implants, telescopic system</li> </ol>
<b>Preclinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Classification of partial edentulism: Kennedy, Eichner, functional classification with respect to the load (dental, mucosal), specific loading-analysis of casts and class determination.</li> <li>2. Elements of removable partial denture-denture base, elements for retention, elements for stabilization and allocation of the load (types of occlusal rests), thickness, types of preparation for occlusal rests, elements for stabilization of partial dentures, axis of rotation and stabilization.</li> <li>3. Parallelizing, dental parallelometer, his parts, partial denture placing direction, measuring of undercuts, anatomical and prosthetic equator.</li> <li>4. Planning of the partial denture, marking borders, major connectors, minor connectors, elements for retention and elements for stabilization, planning and preparation for occlusal rests</li> <li>5. First impressions, pouring functional cast.</li> <li>6. Modeling of the removable partial denture base with waxes.</li> <li>7. Fabrications of metal base-phases, materials, investing, sandblasting, try in of metal base-further clinical procedures.</li> <li>8. Demonstration of investing at the laboratory, demonstration of preheating, sandblasting, electropolishing.</li> <li>9. Try in of base on the phantom, fabrication of bite rims.</li> <li>10. Bite recording and mounting on the articulator.</li> <li>11. Teeth setup for partial denture-teeth setup at laboratory.</li> </ol>

12. Fabrication of wire clasps, try in on the phantom.
13. Processing of the partial denture, laboratory performance.
14. Demonstration of processing of the partial denture with metal base-1.investing; 2. With stone block.
15. Final exercise, evaluation of the work.

#### **Course leader and associates**

Prof.dr.sc. Asja Čelebić  
 Prof.dr.sc. Sonja Kraljevid Šimunkovid  
 Prof.dr.sc. Melita Valentid-Peruzovid  
 Prof.dr.sc. Dubravka Knezovid - Zlatarid  
 Doc.dr.sc. Robert Delid  
 Doc.dr.sc. Iva Alajbeg  
 Doc.dr.sc. Tomislav Badel  
 Doc.dr.sc. Dino Bukovid  
 Doc. dr.sc. Nikša Dulčid  
 Dr.sc. Davor Illeš  
 Dr.sc. Nikola Petričevic  
 Dr.sc. Ivica Pelivan  
 Maja Pavid-Žagar, dr. med. dent.  
 Samir Dimid, dr. med. dent.  
 Sanja Peršid, dr. med. dent.

#### **Literature**

##### **Required literature:**

1. Suvin M. Biološki temelji protetike - Totalna proteza. Zagreb : Školska knjiga, 1984.
2. Suvin M. Djelomična proteza. Zagreb : Školska knjiga, 1982.
3. Kraljević K. Potpuna proteza. Zagreb : Aerografika, 2001.
4. Živko-Babid J, Jerolimov V. Metali u stomatološkoj protetici. Odabrana poglavlja Zagreb:Školska knjiga, 2005.
5. Jerolimov V. i sur. Stomatološki materijali. Odabrana poglavlja. Zagreb : Stomatološki fakultet, 2005. (www.sfzg.hr)
6. Lectures and exercises
7. Kraljević K, Kraljević Šimunković S. Djelomične proteze. Zagreb: In. Tri, 2012.

##### **Recommended literature:**

1. Zarb GA, Bolender CL, Eckert SE, Fenton AH, Jacob RF, Mericske-Stern R. Prosthodontic Treatment for Edentulous Patients: Complete Dentures and Implant- supported Prostheses. London, New York: CV Mosby, 2003.
2. Carr AB, McGivney GP, Brown DT. McCracken's Removable Partial Prosthodontics 11th ed., Elsevier Mosby, 2006.
3. OKESON JP. Temporpmandibularni poremedaji i okluzija., Zagreb: Medicinska naklada, 2008.
4. Morrow RM, Rudd KD, Rhoads JE. Dental laboratory procedures. Complete dentures. Volume one. Mosby, 1986.
5. Rudd KD, Morrow RM, Rhoads JE. Dental laboratory procedures. Removable partial dentures. Volume three. Mosby, 1986.
6. Hohmann A, Hielscher W. Lehrbuch der Zahntechnik. Band II. Quintessenz Verlag, Berlin, Berlin.
7. Sowter JB.Removable Prosthodontic Techniques. University of North Carolina, 1986.

### Required knowledge

- students introduce basic principles of therapy for partial and total edentulism with removable prosthodontics appliances.
- they need to bind laboratory work with clinical procedures.
- to learn basic clinical and laboratory procedures.
- to learn application of apparatus in preclinical and clinical work.
- to learn application of different materials and instruments in preclinical and clinical work.
- to differ different materials in removable prosthodontics.
- to complement the knowledge with published data and apply them in their daily work.
- to adopt techniques, materials and clinical procedures of fabrications of complete and partial dentures.

### Required skills

This program ensures to students adoption of basic knowledges and skills for clinical procedures during fabrication of complete and partial removable dentures.

For complete dentures:

- Taking first impressions, choosing tray and techniques of first impression
- Pouring the cast, laboratory fabrication of custom tray
- Clinical skills and materials for functional impression
- Pouring the functional model, fabrication of bite rims
- Clinical skills for bite recording, transfer to articulator
- Mounting casts to the articulator
- Choice of teeth, teeth setup (front teeth first), try in phase of front teeth
- Setup of posterior teeth, lingualised occlusion, try in, checking the occlusion with articulating paper
- Laboratory fabrication of complete denture-investing, processing, procedures at laboratory and clinics

For partial denture:

- Taking first impressions, choosing tray and techniques of first impression
- Pouring the cast, laboratory fabrication of custom tray
- Planning the partial removable denture- planning of clasps, occlusal rests, base
- Clinical skills for preparation the tooth for occlusal rest
- Laboratory knowledge- flexion of clasps, tooth quadrants, types of clasps, planning of a retention
- Fabrication of bite rims
- Clinical skills and bite recording, , transfer to articulator
- Mounting casts to the articulator, choice of teeth, try in phase
- Laboratory fabrication-investing and processing-procedures at the laboratory and the clinics

Knowledge and skills are developed during lectures, seminars and preclinical exercises in small groups of students with guidance of teachers and assistant novices of the Department for prosthodontics-Removable prosthodontics. Exercises are held at preclinical classroom of the Department for prosthodontics and at laboratory for removable prosthodontics of the School of dental medicine for two semesters, and for its implementation phantoms, LCD and video projections are used.

### Exam questions

Complete denture:

Indications and contraindications, ledge for the denture, analysis of soft and hard tissues, functional impression, retention and stabilization of complete dentures, functional cast,

relationship between upper and lower jaw (centric relation, height, rest position, bite recording, differences between natural teeth and complete dentures, methods, occlusal plane, reference planes), transfer to articulator, facebow, programming the articulator, types of artificial teeth, choice of teeth, marking the cast for teeth setup, setup of teeth, try in phase (Christensen phenomenon, hidden Christensen phenomenon), checking of occlusal contacts, conceptions of occlusion and lingualised occlusion, processing the denture, handover of the denture to patient, resorption of the ridge, relining, reparation of fractures and teeth in denture, materials for the complete denture and its use, instruments for fabrication of complete dentures at laboratory and procedures, types and choice of trays.

Partial denture:

Indications, types and classification of partial edentulism, parts of removable partial denture, planning, clinical and laboratory procedures, parallelometer and planning of the placing direction, borders of partial denture, articulators, first examination, anamnesis and plan of prosthetic treatment, planning the partial denture, materials and clinical and laboratory procedures, laboratory apparatus and procedures, cover denture, denture with attachments, fabrication of the metal base, handover of the partial denture to the patient, bite recording for partial denture, types of loading, occlusal contacts, materials for clinical and laboratory procedures, all fabrication phases, denture on dental implants- basic procedures

### 3.2.70 Preclinical Oral Surgery

Basic information about the course					
Title	Preclinical oral surgery				
Code	71341	Abbreviation	411OPOKI		
Total ECTS points	2.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Oral Surgery				
Course leader	Professor Irina Filipović Zore, PhD				
Course load					
	1		Total		
Lectures	15		15		
Preclinical practicals	20		20		
ECTS			2.5		
Course description					
The aim of the course is to provide the student with enough knowledge and skill to be able to independently perform minor oral surgical procedures in their future dental practice.					
The course teaches students to:					
<ul style="list-style-type: none"><li>• carry out a physical examination and obtain a patient history, especially regarding oral surgery and differential diagnosis of pathologic conditions in the oral cavity</li><li>• use different techniques of local anesthesia in the oral cavity and understand its mechanism of action and possible local or systematic adverse effects</li><li>• perform the art of tooth extraction, as well as manage complications during and after the procedure</li><li>• comprehend the etiology, clinical features, diagnosis and treatment of bacterial, fungal, and viral infections in the oral cavity, as well infection related to salivary glands</li><li>• perform intraoral incision of submucous abscess and prescribe antibiotics</li><li>• use current imaging modalities for the oral region, with emphasis on intraoral and panoramic radiographs</li><li>• recognize indications for apicectomy and surgical removal of teeth</li><li>• diagnose cysts of the oral cavity and understand the basic principles of treatment</li><li>• differentiate between benign and malignant tumors</li><li>• recognize indications within preprosthetic surgery for various procedures to improve hard and soft tissue architecture and anatomy to improve oral function and optimize prosthetic rehabilitation</li></ul>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
At the end of the course students take practical (instruments used in oral surgery, surgical anatomy of the head and neck, techniques of local anesthesia on models) and oral exam.					
Weekly teaching plan					

<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. Introduction to the oral surgery</li> <li>2. Propedeutics in oral surgery</li> <li>3. Analgesia and anesthesia in dentistry</li> <li>4. Local anesthesia in oral surgery</li> <li>5. Complications and incidents during and after administration of local anesthesia</li> <li>6. Indications and contraindications for tooth extraction</li> <li>7. Instruments and techniques for tooth extraction in maxilla</li> <li>8. Instruments and techniques for tooth extraction in mandible</li> <li>9. Tooth extraction in children</li> <li>10. Complications and incidents during the tooth extraction</li> <li>11. Complications and incidents after the tooth extraction</li> <li>12. Tooth extraction in medically compromised patients</li> <li>13. Hemorrhage in oral surgery</li> <li>14. Disorders of state of consciousness in dental office</li> <li>15. Disinfection and sterilization in oral surgery, preparation of the patient for the surgery, postoperative care</li> </ol>
<b>Preclinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Applied anatomy of the head and the neck</li> <li>2. Innervations of the maxilla and the mandible</li> <li>3. Vascularization of the maxilla and the mandible</li> <li>4. Anatomy of the oral cavity</li> <li>5. Infiltration and nerve block anesthesia in the maxilla</li> <li>6. Infiltration and nerve block anesthesia in the mandible</li> <li>7. Mandibular nerve block anesthesia – techniques</li> <li>8. Instruments for tooth extraction</li> <li>9. Extraction of maxillary incisors</li> <li>10. Extraction of maxillary premolars and molars</li> <li>11. Extraction of mandibular incisors</li> <li>12. Extraction of mandibular premolars and molars</li> <li>13. Suturing techniques</li> </ol>
<b>Course leader and associates</b>
<p>Professor Irina Filipović-Zore, PhD  Professor Darko Macan, PhD  Professor Jakša Grgurević, PhD  Professor Davor Katanec, PhD  Professor Tihomir Kuna, PhD  Professor Mato Sušić, PhD  Associate Professor Berislav Perić, PhD  Davor Brajdić, PhD  Dragana Gabrić, PhD  Ana Kotarac Knežević, MSc  Josip Biočić, DMD  Marko Granić, DMD  Ivan Zajc, DMD</p>
<b>Literature</b>
<b>Required literature:</b>

<ol style="list-style-type: none"> <li>1. Miše I: Oralna kirurgija. Zagreb: Jumena, 1988.</li> <li>2. Knežević G: Oralna kirurgija II. Zagreb: Medicinska naklada, 2003.</li> <li>3. Čabov T. Oralnokirurški priručnik. Zagreb: Medicinska naklada, 2009.</li> <li>4. Grupa autora: Stomatološka dijagnostika i propedeutika, ispitno štivo, Stomatološki fakultet, Zagreb, 1996.</li> <li>5. Grupa autora: Odabrana poglavlja iz gerontostomatologije, Stomatološki fakultet, Zagreb, 2004.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Peterson et al: Contemporary Oral and Maxillofacial Surgery, Mosby 1998.</li> <li>2. S.F. Malamed: Handbook of Local Anaesthesia, Mosby 1997</li> <li>3. J.O. Andreasen et al.: Textbook and Color Atlas of Tooth Impaction, Munksgard 1997.</li> <li>4. Graduate thesis in oral surgery</li> <li>5. Professional papers in oral surgery published in journals Acta Stomatologica Croatica, Sonda and Medix</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Tooth extraction – complications during and after the procedure</li> <li>• Tooth extraction in medically compromised patients</li> <li>• Suture removal</li> <li>• Radiologic diagnostics in oral surgery</li> <li>• Dental infection – diagnostics and management</li> <li>• Complications of the dental infection</li> <li>• Antibiotics and dental infection</li> <li>• Periapical disease – management</li> <li>• Cysts of the maxillofacial region</li> <li>• Odontogenic tumors</li> <li>• Benign tumors of the maxillofacial region</li> <li>• Possibilities of preprosthetic surgery – indications</li> <li>• Precancerous lesions</li> <li>• Early diagnostics of the oral cavity cancer</li> <li>• Biopsy</li> <li>• Differential diagnostics of pathological changes in the oral cavity</li> <li>• Differential diagnostics of pain in the oral cavity</li> <li>• Pathology of the salivary glands</li> <li>• Retained and impacted teeth</li> <li>• Management of pericoronitis</li> <li>• Surgical procedures with impacted and retained teeth</li> <li>• Temporomandibular disorders</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• Taking medical history</li> <li>• Performing clinical examination with accent on oral surgery pathology</li> <li>• Tooth extraction on a dental training dummy</li> <li>• Tooth extraction in medically compromised patients</li> <li>• Management incidents in the dental office: vasovagal syncope, allergic reactions, cardiac arrest</li> <li>• Post-extraction and soft tissue hemorrhage management</li> <li>• Management of painful postextraction socket</li> <li>• Cleaning and sterilization of surgical instruments</li> </ul>

- Management of semi-impacted wisdom tooth
- Management of pericoronitis
- Suture removal
- Sectioning of roots in multi-rooted teeth
- Extraction of fractured root on a dental training dummy
- Application of levers during the extraction of teeth on a dental training dummy
- Suturing of wounds and flaps
- Infraorbital nerve block anesthesia on a dental training dummy
- Extraction of a semi-impacted wisdom tooth with a lever on a dental training dummy

### Exam questions

1. Head and neck anatomy
2. Innervation of the mandible and maxilla
3. Innervation of the maxilla
4. Vascularization of the mandible
5. Vascularization of the maxilla
6. Topical anesthesia
7. Infiltration anesthesia
8. Nerve block anesthesia (inferior alveolar nerve, buccal nerve, infraorbital nerve, nasopalatine nerve, greater palatine nerve, mental nerve)
9. Indications for local anesthesia
10. Contraindications for local anesthesia
11. Local complications as a result from local anesthesia
12. System complications as a result from local anesthesia
13. Composition of local anesthetic
14. Role of vasoconstrictor in a local anesthetic
15. Absolute contraindications for local anesthetic with vasoconstrictor
16. Relative contraindications for local anesthetic with vasoconstrictor
17. Dosage of local anesthetics and vasoconstrictors
18. Local anesthetics and allergic reactions
19. Local anesthetics and toxic reactions
20. Indications for tooth extraction
21. Tooth extraction forceps
22. Tooth extraction levers
23. Techniques for dental root extraction
24. Contraindications for tooth extraction
25. Complications during tooth extraction
26. Complications after tooth extraction
27. Oroantral communication
28. Displacement of root or root tip into the maxillary sinus
29. Displacement of root or root tip into soft tissues
30. Hemorrhage
31. Soft tissue injury
32. Fracture of crown or luxation of adjacent tooth
33. Fracture of the alveolar process
34. Fracture of the mandible
35. Fracture of the maxillary tuberosity
36. Nerve injury
37. Dislocation of temporomandibular joint
38. Postoperative complications (trismus, hematoma, ecchymosis, edema)
39. Painful post-extraction socket

40. Infection of wound
41. Syncope, hyperventilation
42. Dental management of medically compromised patients
43. Tooth extraction in children
44. Tooth extraction in pregnant and lactating patients
45. Tooth extraction in patients receiving radiotherapy
46. Tooth extraction in patients receiving chemotherapy
47. Tooth extraction in patients receiving bisphosphonate therapy
48. Tooth extraction in patients receiving corticosteroids
49. Tooth extraction in patients receiving anticoagulants
50. Tooth extraction in patients with hemorrhagic diatheses
51. Tooth extraction in patients with prosthetic heart valves
52. Tooth extraction in patients with artificial joints
53. Heimlich maneuver
54. Disinfection and sterilization in oral surgery

### 3.2.71 Preclinical Orthodontics

Basic information about the course				
Title	Preclinical orthodontics			
ID	71343	Abbreviation	511OPORT	
Total ECTS points	3	Status	Obligatory	
Exam	Yes	Calculated in grade average	Yes	
Language of teaching	Croatian	e-learning	Yes	
Department	Department of Orthontics			
Course leader	Professor Mladen Šljaj, DDS PhD			
Course load				
	1		Total	
Preclinical practicals	45		45	
ECTS			3	
Course Description				
Preclinical Orthodontics is a course created to educate students about basic principles of orthodontics and clinical and laboratory procedures of planning and creating of removable appliances. It represents introduction to Clinical Orthodontics which starts after completion of this course. Students are learning procedures for taking dental impressions and making of dental casts on which they are trained to detect and describe visible dental anomalies. Furthermore, students will be taught about theories and practices on monomaxillary and bimaxillary removable appliances, techniques and types of polymerization, vacuum press equipment, about preventive and interceptive techniques in orthodontics and about basic elements in composition of fixed appliances.				
Conditions				
It finishes with a grade				
Written Exam	Yes	Oral Exam	Yes	Practical Exam
Seminar		Minor preliminary exam		Major preliminary exam
Rules about grading				
After this course finishes, students have to pass written exam which would be graded in relation to successful exam completion percentage: <ul style="list-style-type: none"><li>students with 90% and more current answers will get grade A and do not have oral exam</li><li>students from 80% to 89.9% will get grade B and can choose to have oral exam</li><li>students from 50% to 80% have to continue with oral exam</li><li>students with less than 50% have failed and cannot proceed to oral exam</li></ul>				
Weekly teaching plan				
1. component				
Preclinical practicals				
1	Introduction to orthodontics, impression taking, rules during dental cast pouring; knowledge of deciduous and permanent teeth morphology, Angles class division I, II, III, 3d occlusion analysis of dental cast			

2	Basics of tooth morphology, nomenclature of deciduous and permanent teeth and occlusion, example of dental impression taking, pouring and trimming of dental cast by orthodontic rules, dental cast analysis
3	Monomaxillary orthodontic appliances, active plate, parts of active plate, types of labial arches, retention elements, choices of retention elements and their indications, wire choice
4	Making of retention elements (ball cusp), making of labial arch of 0,7 mm wire
5	Active plate, indication and contraindication, active elements, phases and procedures of active plate production
6	Finishing and polishing of acrylic active plate
7	Basics of functional therapy, introduction with main functional appliances and their principles, indication and contraindication for functional appliances application
8	Making of wax bite registration on dental cast, students independently makes construction bite, taking in count rules of bite in sagittal, vertical and horizontal dimension
9	Types and manufactures of fixators, bimaxillary orthodontic appliances and their principles, types of bionator and indication for its application
10	Example of plaster fixator making and overview of the rest fixator's types, making of wire and acrylic parts of bionator in collaboration with laboratory technician
11	Inconvenient habits, side effects on dentoalveolar structures, indication for slope and slope types, overview of interceptive appliances, indication for vestibular plate
12	Molding techniques, Biostar, Erkopress, retention splint making using Biostar technique, example of mouthguard and positioner making
13	Basics of fixed orthodontics, history of fixed orthodontic techniques, basic parts of fixed orthodontic appliance, introduction in major characteristics of wires and brackets
14	Example of fixed orthodontic appliance placement, basics of wire banding in fixed orthodontic (retraction loop, inset, offset)
15	Repetition of previous courses and preparation for written and oral exam of practical and theoretical knowledge
<b>Course leader and associates</b>	
Professor Mladen Šljaj Professor Marina Lapter Varga Professor Senka Meštrović Professor Jadranka Štefanac Papić Assistant Professor Sandra Anić Milošević Assistant Professor Martina Šljaj Assistant Professor Mihovil Strujić	
<b>Literature</b>	
<b>Required literature:</b>	
<ul style="list-style-type: none"> <li>E-Learning materials</li> <li>Lapter V et al. Ortodontske naprave: konstrukcija, namjena, djelovanje. Zagreb: Školska knjiga; 1992.</li> </ul>	
<b>Recommended literature:</b>	
<ul style="list-style-type: none"> <li>Proffit WR, Fields HW, Sarver DM. Ortodoncija, 1. hrvatsko izdanje. Jastrebarsko: Naklada Slap; 2010.</li> </ul>	
<b>Required knowledge</b>	
<ul style="list-style-type: none"> <li>Definition and aspects of orthodontics</li> </ul>	

- Materials and methods for dental impressions in orthodontics
- Materials and methods for dental cast making in orthodontics
- Anomalies of tooth position
- Monomaxillary appliance: Active plate by Schwartz
- Fixator as adjuvant instrument
- Preventive and interceptive procedures in orthodontics
- Basic elements of fixed orthodontic appliance

#### Required skills

- Dental impression taking
- Bite registration in habitual occlusion using wax
- Pouring and trimming of dental cast according to orthodontic rules
- Tooth anomalies diagnosis using dental casts
- Making of ball casp for active plate
- Making of labial arch for active plate
- Making and trimming of active plate base using “salt and pepper “ technique (cold polymerization)
- Making of wax occlusal registration
- Taking of construction bite
- Check-up of constructed bimaxillary appliance
- Making of retainer using Biostar technique

#### Exam questions

1. Definition and aspects of orthodontics
2. History of orthodontics science in Europe
3. History of orthodontics science in USA
4. Materials and methods for dental impressions in orthodontics
5. Materials and methods for dental cast making in orthodontics
6. Classification of malocclusion according to Angle
7. Reverse overjet, cross bite, brodie bite
8. Typical and atypical tooth rotation
9. Tooth eruption, crowding, CP2 segment, leeway space
10. Difference between active and miofunctional approach
11. Active plate by Schwarz
12. Types of retention elements for continued and interrupted dental arch
13. Active plate labial arch and modifications
14. Cold and warm polymerization
15. Wax bite registration and construction bite
16. Fixator: types and application
17. Bionator by Balters I, II, III
18. Interceptive appliances in orthodontics
19. Basic elements of standard edgewise technique (Angle)
20. Basic elements of straight wire technique (Andrews)

### 3.2.72 Preclinical Periodontology

Basic information about the course					
Title	Preclinical periodontology				
Code	71344	Abbreviation	411OPPAR		
Total ECTS points	3.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Periodontology				
Course leader	Professor Darije Plančak, DMD, MSc, PhD				
Course load					
	1		Total		
Lectures	15		15		
Preclinical practicals	30		30		
ECTS			3.5		
Course description					
<p>The purpose of the course is to teach students the basics of periodontology in terms of knowing the basic terminology, basic diagnostic tools and procedures, the basic elements of professional and personal care for the health of the oral cavity, particularly the supporting tissue and soft tissues of the oral cavity. Furthermore, by finishing this course the student has to know the basic histological, anatomical, morphological and topographical characteristics of periodontal tissues, basic etiopathogenesis of periodontal disease and basic nonsurgical treatment of periodontal disease. The practical component consists of preclinical part where knowledge is collected in order to understand the foundations of periodontal instrumentation so that students can develop the competence for the succesful performing of the complete periodontal therapy.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Exam consists of written and practical parts. The practical part includes an instrumentation of the root surface (supragingival and subgingival) on the model. The written exam consists of 50 questions with multiple choice answers of which only one is correct. Questions cover the material of lectures and exercises in the 6th semester, and this exam is a prerequisite for 9th semester. Each student has to master preclinical program of nonsurgical periodontal therapy in terms of instrumentation of at least 10 teeth on phantoms.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Anatomy of periodontal tissues					
2. Dental plaque and calculus					

<ol style="list-style-type: none"> <li>3. Microbiology of periodontal disease</li> <li>4. Host-parasite interaction</li> <li>5. Gum disease caused by plaque</li> <li>6. Modifying factors</li> <li>7. Chronic periodontitis</li> <li>8. Aggressive periodontitis</li> <li>9. Necrotizing periodontal disease</li> <li>10. Epidemiology of periodontal disease and indices</li> <li>11. Causal periodontal treatment</li> <li>12. Supragingival mechanical plaque control</li> <li>13. Chemical plaque control</li> <li>14. Supportive periodontal therapy</li> </ol>
<b>Preclinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Periodontal instruments</li> <li>2. General principles of instrumentation</li> <li>3. Stabilization of the instrument, fulcrum</li> <li>4. Instrument activation, adaptation, angulation, pressure, motion, and deposits detection</li> <li>5. Principles of scaling and root planing, definitions</li> <li>6. Instruments for manual instrumentation</li> <li>7. Instruments for machine instrumentation</li> <li>8. Supragingival instrumentation techniques</li> <li>9. Subgingival instrumentation techniques</li> <li>10. Instrumentation in the upper jaw</li> <li>11. Instrumentation in the lower jaw</li> <li>12. Instruments sharpening</li> </ol>
<b>Course leader and associates</b>
<p>Professor Darije Plančak, DMD, MSc, PhD  Professor Marija Ivić-Kardum, DMD, MSc, PhD  Professor Andrej Aurer, DMD, MSc, PhD  Assistant prof. Darko Božić, DMD, MSc, PhD  Ana Badovinac, DMD  Ivan Puhar, DMD  Domagoj Vražić, DMD</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Herbert F. Wolf, Klaus H. Rateitschak, Edith M. Rateitschak, Thomas M. Hassell. Parodontologija, 3th ed. Zagreb Naklada Slap;2009.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Jan Lindhe, Thorkild Karring, Niklaus P. Lang. Klinička parodontologija i dentalna implantologija, 1st Croatian ed, Zagreb, Globus, 2004.</li> <li>2. Michael G. Newman, Henry H. Takei, Fermin A. Carranza. Carranza's Clinical Periodontology, 10th edition, Philadelphia, WB Saunders Co., 2006.</li> </ol>
<b>Required knowledge</b>
<ol style="list-style-type: none"> <li>1. The anatomy and physiology of the healthy periodontium</li> <li>2. Microscopic, clinical and radiographic characteristics of periodontal disease</li> <li>3. The role of bacteria in the etiology of periodontal disease</li> </ol>

4. The role of the host in the etiology of periodontal disease
5. Pathogenesis and natural history of periodontal disease
6. Interaction of periodontal and systemic diseases

#### Required skills

1. Recognizing periodontal instruments
2. Hold and use of hand instruments for root surface instrumentation
3. Supragingival hand instrumentation on the model
4. Subgingival hand instrumentation on the model
5. Probing on the model

#### Exam questions

1. Describe the macroscopic anatomy of the gingiva
2. Describe the microscopic anatomy of the gingiva
3. Describe the periodontal ligament
4. Describe cementum
5. Describe the alveolar bone
6. Periodontal blood and lymphatic supply; innervation
7. Describe dental plaque
8. Define dental calculus
9. Describe the importance of microorganisms for the development of periodontal disease
10. Microorganisms in healthy and diseased periodontium
11. Indicate and describe periodontal pathogens
12. Explain the virulence factors
13. Explain the microbiological aspects of the interaction with the host
14. Explain the specific and non-specific inflammatory responses
15. Explain the interaction between specific and non-specific inflammatory response
16. Explain the role of inflammatory mediators and defensive cells in inflammation
17. Explain the impact of genetic risk factors for periodontitis
18. Explain the initial response to plaque bacteria
19. Explain the histological development of gingivitis and periodontitis
20. Explain the pathogenesis of periodontal diseases on the molecular biology level
21. Explain the loss of attachment
22. Explain the cyclical flow of periodontitis
23. Indicate the classification of periodontal disease (AAP, 1999).
24. Compare forms of periodontal disease
25. Explain the epidemiological aspects of gingivitis and periodontitis; the natural history of periodontitis
26. Describe the types and characteristics of gingivitis
27. Describe the etiology of gingivitis
28. Describe the symptomatology of gingivitis
29. Describe the histopathologic features of gingivitis
30. Describe therapy
31. Describe forms of periodontitis
32. Explain histopathology and pathomorphology of periodontitis
33. Explain pockets and attachment loss
34. Describe additional clinical and radiographic symptoms
35. Chronic periodontitis
36. Aggressive periodontitis
37. Enumerate local and general etiological factors
38. Describe ulcerative gingivitis

39. Describe ulcerative periodontitis
40. Explain histopathology and microbiology
41. Explain the diagnosis and differential diagnosis
42. Describe periodontal therapy
43. Describe periodontitis as a risk for cardiovascular diseases
44. Describe periodontitis as a risk for respiratory diseases
45. Describe periodontitis as a risk for diabetic complications
46. Describe periodontitis as a risk for pregnancy complications
47. Describe the symptoms of periodontal disease
48. Take and interpret history
49. Perform extraoral and intraoral examination
50. Measure and interpret periodontal indices
51. Interpret radiological findings
52. Describe the diagnosis and prognosis
53. Describe additional diagnostic tests
54. Describe the phases in the treatment of periodontal disease
55. Explain systemic pre-phase
56. Enumerate and describe the emergencies in periodontology
57. Describe the healing of periodontal wounds
58. Describe the importance of motivation and informing the patient
59. Describe the oral hygiene performed by the patient
60. Describe supragingival instrumentation
61. Explain the importance of removing plaque-retentive factors
62. Define scaling and root planing
63. Describe hand instruments for scaling and root planing
64. Describe machine instruments for scaling and root planing
65. Explain the general principles of instrumentation
66. Explain the "full mouth therapy" approach
67. Explain the concept of chemical plaque control
68. Enumerate resources for chemical plaque control
69. Describe chlorhexidine
70. Explain the objectives and importance of supportive periodontal therapy
71. Explain procedures within recall
72. Specify recall appointments according to the type of periodontal disease

### 3.2.73 Preclinical Restorative Dental Medicine

Basic information about the course			
Title	Preclinical restorative dental medicine		
Code	71345	Abbreviation	312OPRDM
Total ECTS points	10	Status	Obligatory
Exam	Yes	Calculated in grade average	Yes
Language of teaching	Croatian	e-learning	No
Department	Department of Endodontics and Restorative Dentistry		
Course leader	Prof. dr. sc. Zrinka Tarle		
Course load			
	1	2	Total
Lectures	15	15	30
Preclinical practicals	45	45	90
ECTS			10
Course description			
<p>The program of the course Preclinical Restorative Dental Medicine is the introductory course in the complex matter of the large area dealing with restorative dental medicine. Students will acquire basic knowledge encompassing diagnostics and therapy of dental and supportive structures through lectures and preclinical laboratory sessions.</p> <p>Through 30 hours of lectures students are given fundamental and new theoretical knowledge in restorative dental medicine about working area, diagnostics and treatment planning, basic and contemporary principles of cavity preparation, materials for temporary and permanent restorations, recommendations for application of materials in restorative dental medicine, mistakes in restorative treatment, biocompatibility of restorative materials, treatment of acute or chronic tooth trauma and bleaching of vital teeth.</p> <p>The goal of preclinical laboratory sessions is to prepare a student for future work with patients. Therefore, students are performing all types of cavity preparations on models of teeth and the phantom, placing a lining and/or adhesive system, followed by placement of a permanent restoration, finishing and shaping of a filling and its occlusal adjustment.</p>			
Criteria for taking the course exam			
What is graded			
Written exam	Yes	Oral exam	Practical exam
Seminar		Minor preliminary exam	Major preliminary exam
Rules of grading and additional information			
<p>The exam in Preclinical Restorative Dental Medicine is taken in written form after 6th semester. Student answers to questions by marking one of the several offered answers. If a student positively answers to 76% or more answers, it is considered that a written exam is passed. Correct answered 76% to 80% - grade sufficient (2), from 81%-85% - grade good (3), from 86% to 92% - grade very good (4), from 93% to 100% - grade excellent (5).</p>			
Weekly teaching plan			

## 1. component

### Lecture topics:

1. Introduction to the course of Restorative Dental Medicine
2. Examination of teeth, registration, nomenclature
3. Work field isolation
4. Instruments in restorative dental medicine
5. Anamnesis and patient's informed consent
6. Diagnostics and treatment planning
7. Basic principles of cavity preparation
8. Contemporary principles of cavity preparation
9. Minimal invasive cavity preparation
10. Protection of pulpodentinal complex
11. Restorative materials
12. Glass ionomer cements
13. Clinical application of glass ionomer cements
14. Dental amalgam
15. Occlusal adjustment of fillings

### Preclinical practicals topics:

#### Work on models

1. Introduction and fabrication of work models
2. Work place, instruments, dry work area (rubber-dam)
3. Class I cavity preparation
4. Class II cavity preparation
5. Class V cavity preparation
6. Placement of cavity lining in prepared cavities
7. Class I and V amalgam filling placement
8. Placement of interdental matrices and matrix holders, interdental wedges (MO, MOD, OD)
9. Class II amalgam filling placement
10. Preparation of adhesive cavities - class I, II and V
11. Preparation of adhesive cavities - class III and IV
12. Preparation of adhesive cavities - class I and II
13. Composite restoration – class III, IV and V
14. Occlusal adjustment and polishing of fillings
15. Cavity preparation for composite inlay, onlay and overlay

## 2. component

### Lecture topics:

1. Biologic basis of adhesion
2. Enamel-dentine adhesive systems
3. Direct pulp capping
4. Composite resins
5. Polymerization and polymerization stress
6. Polymerization light sources
7. Direct restorations of anterior teeth
8. Direct restorations of posterior teeth
9. Indirect composite restorations
10. Treatment of non-carious lesions
11. Esthetic posts
12. Mistakes in restorative treatment
13. Acute and chronic tooth trauma and its treatment

14. Bleaching of vital teeth
15. Biocompatibility of materials in restorative dentistry
<b>Preclinical practicals topics:</b>
<p>Work on phantom</p> <ol style="list-style-type: none"> <li>1. Diagnostics and treatment planning in restorative dentistry</li> <li>2. Work place, instruments, dry work area (rubber-dam)</li> <li>3. Class I cavity preparation, cavity liner and amalgam filling placement</li> <li>4. Class II cavity preparation, cavity liner and amalgam filling placement</li> <li>5. Class V cavity preparation, cavity liner and amalgam filling placement</li> <li>6. Occlusal adjustment and polishing of amalgam fillings</li> <li>7. Class I cavity preparation, adhesive and composite filling placement</li> <li>8. Class II cavity preparation, adhesive and composite filling placement</li> <li>9. Class III cavity preparation, adhesive and composite filling placement</li> <li>10. Class IV cavity preparation, adhesive and composite filling placement</li> <li>11. Class V and IV cavity preparation, adhesive and composite filling placement</li> <li>12. Occlusal adjustment and polishing of composite fillings; reparation „in situ“</li> <li>13. Minimal invasive cavity preparation</li> <li>14. Cavity preparation for composite inlay, onlay and overlay</li> <li>15. Fabrication of indirect composite filling</li> </ol>
<b>Course leader and associates</b>
<p>Professor Ivica Anić  Professor Nada Galić  Professor Silvana Jukić-Krmek  Professor Marina Katunarić  Professor Ivana Miletić  Professor Goranka Prpić-Mehičić  Professor Božidar Pavelić  Professor Katica Prskalo  Professor Tonči Staničić  Professor Sanja Šegović  Professor Zrinka Tarle  Assistant professor Bernard Janković  Assistant professor Zoran Karlović  Assistant professor Alena Knežević  Assistant professor Vlatko Pandurić  Assistant professor Paris Simeon  Ivona Bago, DMD  Anja Baraba, DMD  Eva Klarić, DMD  Jurica Matijević, DMD  Danijela Marović, DMD</p>
<b>Literature</b>
<b>Required literature:</b>
1. Jozo Šutalo i sur. Patologija i terapija tvrdih zubnih tkiva. Naklada Zadro, Zagreb, 1994.
<b>Recommended literature:</b>
1. Mount GJ, Hume WR. Preservation and restoration of tooth structure. Mosby International Ltd. 1998.

2. Summit JB, Robbins JW, Hilton TJ, Schwartz RS. Fundamentals of operative dentistry: a contemporary approach: Quintessence Publishing Co, Inc 2006.
3. Nakabayashi N, Pashley DH. Hybridization of dental hard tissues. Quintessence Publishing Co., Ltd.1998.
4. Teaching materials published on the web page of Restorative Dental Medicine

#### Required knowledge

- Examination of teeth, registration, nomenclature
- Work field isolation
- Instruments in restorative dental medicine
- Interdental matrices, purpose and application techniques
- Basic principles of cavity preparation
- Cavity classification according to Black
- Cavity classification according to Mount
- Cavity liners (zincoxyphosphate and polycarboxylate cements)
- Glas ionomer cement (basic composition and properties)
- Dental amalgam (basic composition and properties)
- Adhesive systems (basic composition and properties)
- Composite resins (basic composition and properties)

#### Required skills

- Examination of teeth, registration
- Work field isolation
- Rubber-dam placement
- Placement of an appropriate interdental matrix and matrix holder
- Preparation of conventional cavity class I, II, III, IV and V
- Cavity liner placement
- Placement of amalgam filling
- Preparation of adhesive cavity
- Enamel etching
- Dentine etching
- Placement of composite filling class I, II, III, IV, V and VI
- Occlusal adjustment and polishing of fillings

#### Exam questions

1. Work place?
2. Basic instruments in restorative dental medicine (handheld and machine instruments)?
3. Anamnesis and patient examination?
4. Dry work field?
5. Rubber dam (placement methods and parts)?
6. Basic principles of cavity preparation?
7. Cavity preparation according to G.V. Black?
8. The role of preventive extension?
9. Categories of interdental matrices?
10. New cavity classification according to Mount?
11. Application of rules of arc and angle in tooth restorations?
12. Basic properties of dental amalgams?
13. Trituration, amalgamation, phases in the amalgamation process?
14. Classification of dental amalgams?
15. Placement and finishing of dental amalgams?

16. Adhesive cavities?
17. Cavity liners?
18. The role of cavity liners?
19. Properties and composition of zincoxyphosphate cements?
20. Mixing procedures and their influence on the properties of zincoxyphosphate cements?
21. Basic composition and properties of glass ionomer cements?
22. Basic composition and properties of adhesive systems?
23. Basic composition and properties of composite materials?

### 3.2.74 Prevention and Infection Control in Dental Medicine

Basic information about the course				
Title	Prevention and infection control in dental medicine			
Code	86998	Abbreviation	321IPREV	
Total ECTS points	1.5	Status	Elective	
Exam	Yes	Calculated in grade average	Yes	
Language of teaching	Croatian	e-learning	No	
Department	Chair of Microbiology with Parasitology			
Course leader	Associate Professor Ana Budimir, PhD			
Course load				
	1		Total	
Lectures	1		1	
Seminars	6		6	
Laboratory practicals	8		8	
ECTS			1.5	
Course description				
Contact protective measures in routine work and work with high-risk groups of patients. Disinfectants and antiseptics routinely used in dental medicine. Prevention of blood transmitted infections. Puncture wound, procedure and treatment. Post-exposure prophylaxis. New products in infection control. Sterilization in dental medicine: principles and application.				
Criteria for taking the course exam				
Students have to attend 80% of classes at least.				
What is graded				
Written exam		Oral exam	Yes	Practical exam
Seminar	Yes	Minor preliminary exam		Major preliminary exam
Rules of grading and additional information				
Weekly teaching plan				
1. component				
Lecture topics:				
1. Introduction to infection control in dental medicine. Definitions, control and use of disinfectants, sterilization procedures.				
Seminar topics:				
1. Prerequisites for infection control in dental medicine.				
2. Contact measures of protection in a routine work and in work with high-risk groups of patients. A review of publications, scientifically based need for education and infection control.				
3. Blood-transmitted infections. Hepatitis B, D, C, HIV. Tuberculosis.				
4. Immunization of dental staff. Puncture wound, procedure and treatment.				
5. Post-exposure prophylaxis.				
6. Conditions and diseases in medical staff related to transmission of infections.				

<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Disinfectants and antiseptics routinely used in dental medicine</li> <li>2. Sterilization in dental medicine: principles and application</li> <li>3. Personal protective gear (mask, goggles, protective clothing)</li> <li>4. Hand hygiene. Gloves, sensitivity to latex, selection of products, storage, skin care, jewelry, nails.</li> <li>5. Processing infectious waste.</li> <li>6. Decontamination of surfaces in a dental office.</li> </ol>
<b>Course leader and associates</b>
<p>Professor Vanda Plečko, PhD</p> <p>Assistant Professor Ana Budimir, PhD</p> <p>Nataša Bader, PhD</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Authorized reader</li> <li>2. Selected chapters from: Priručnik o postupcima kontrole infekcija. N.N. Damani. 2004. Merkur A.B.D. Zagreb.</li> </ol>
<b>Recommended literature:</b>
Cottone's Practical Infection Control in Dentistry, 3rd Edition. 2010 Lippincott Williams & Wilkins, Molinari J. A. and Harte J.A
<b>Required knowledge</b>
Risk of infection transfer during routine work in dental medicine. Diseases transmitted by typical contact and blood. Types of disinfection and sterilization, methods. Puncture wound incident procedure. Pre- and post-exposure prophylaxis.
<b>Required skills</b>
<p>Critical selection of personal protection means and products in everyday work. Assessment of advantages and disadvantages of certain disinfectants. Application of sterilization methods and control.</p> <p>Procedure in a case of exposure to blood and bodily fluids.</p> <p>Working with high-risk patients. Designing a dental office according to the infection control regulations. Equipment in the dental office, water quality, disposing of infectious waste.</p>
<b>Exam questions</b>
<p>Representative infections which can be transmitted by procedures in dental medicine.</p> <p>Direct, indirect transmission, transmission by air and other ways of microorganism transfer.</p> <p>Definitions, control and use of disinfectants, sterilization procedures.</p> <p>Hand hygiene. Gloves, sensitivity to latex, selection of products, storage, skin care, jewelry, nails.</p> <p>Decontamination of surfaces in a dental office.</p> <p>Preventive measures in routine work and work with high-risk patients.</p> <p>Blood-transmitted infections. Hepatitis B, D, C, HIV. Tuberculosis.</p> <p>Aerosol transmitted infections. Tuberculosis.</p> <p>Immunization of staff in dental medicine.</p> <p>Puncture wound incident, procedure, treatment.</p> <p>Post-exposure prophylaxis.</p> <p>Conditions and diseases of medical staff related to infection transfer.</p>



### 3.2.75 Occupational diseases in dentistry

Basic information about the course					
Title	Occupational diseases in dentistry				
Code	143111	Abbreviation	321IPROF		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning			
Department	Department of Dental Anthropology				
Course leader	Assistant professor Marin Vodanović				
Course load					
	1	2	Total		
Lectures	15		15		
Laboratory practicals	4		4		
ECTS			1.5		
Course description					
Course "Occupational diseases in dentistry" is a multidisciplinary course based on lectures and practical lessons. Teachers on the course are doctors of dental medicine and physicians of different specialties like otorhinolaryngologists, dermatologists, ophthalmologists, immunologists, cardiologists, orthopedic specialists etc. During 15 lectures students will have an opportunity to hear about almost all health hazards related to dental profession. They will also be advised about prevention. During practical lessons students will be introduced how to avoid some health hazards in dentist`s everyday work.					
Criteria for taking the course exam					
Attendance of lectures and practical lesions.					
What is graded					
Written exam	Yes	Oral exam	No	Practical exam	No
Seminar	No	Minor preliminary exam	No	Major preliminary exam	No
Rules of grading and additional information					
0 – 59% - 1 (unsatisfactory)					
60 – 69% - 2 (satisfactory)					
70 – 79% - 3 (good)					
80 – 89% - 4 (very good)					
90 – 100% - 5 (excellent)					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Health hazards in dental medicine					
2. Occupational diseases in dentistry - otorhinolaryngology					
3. Occupational diseases in dentistry - orthopaedics					
4. Occupational diseases in dentistry - dermatology					

<ol style="list-style-type: none"> <li>Injuries in dental office</li> <li>Occupational diseases in dentistry - psychiatry</li> <li>Occupational diseases in dentistry - ophthalmology</li> <li>Occupational diseases in dentistry - immunology</li> <li>Occupational diseases in dentistry – hepatitis B and C</li> <li>Occupational diseases in dentistry – dental pharmacology</li> <li>Occupational diseases in dentistry - radiology</li> <li>Ergonomics in dental medicine</li> <li>Pregnancy and occupational diseases in dentistry</li> <li>Occupational diseases in dentistry – internal medicine</li> <li>Occupational diseases in dentistry - physical medicine</li> </ol>
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>Practical ergonomics in dental office</li> <li>Occupational overuse syndrome - prevention</li> </ol>
<b>Course leader and associates</b>
<p>Assistant professor Marin Vodanović – course leader</p> <ul style="list-style-type: none"> <li>professor Robert Trotić</li> <li>professor Hrvoje Pintarić</li> <li>professor Zdravko Mandić</li> <li>professor Liborija Lugović Mihić</li> <li>professor Neven Ljubičić</li> <li>professor Ivan Krolo</li> <li>professor Simeon Grazio</li> <li>professor Miroslav Bekavac Bešlin</li> <li>assistant professor Krunoslav Kuna</li> <li>assistant professor Dijana Zadravec</li> <li>assistant professor Zoran Zoričić</li> </ul>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>Šarić M, Žuškin E. Medicina rada i okoliša. Zagreb; Medicinska naklada: 2002.</li> <li>Beritić-Stahuljak D, Mustajbegović J, Valić F, Žuškin E. Medicina rada. Zagreb; Medicinska naklada: 1999.</li> <li>Kroemer EHK, Gradjen E. Ergonomski priručnik - Prilagođavanje rada čovjeku. Jastrebarsko: Naklada Slap: 2000.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li></li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>recognize health hazards in dental medicine in the aspects of otorhinolaryngology, orthopaedics, dermatology, psychiatry, ophthalmology, immunology, radiology, internal medicine, physical medicine, etc.</li> <li>be introduced with the procedure in case of injuries in dental office</li> <li>be introduced with ergonomics in dental medicine</li> </ul>

- recognize health hazards for pregnancy related to dental profession

**Required skills**

Students should be able to prevent health hazards in dentistry and use ergonomics principles in everyday work.

**Exam questions**

### 3.2.76 Introduction to pediatric dental medicine

Basic information about the course					
Title	Introduction to pediatric dental medicine				
Code	147353	Abbreviation	411OPROP		
Total ECTS points	2	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Paediatric and Preventive Dentistry				
Course leader	Professor Martina Majstorović				
Course load					
	1		Total		
Lectures	15		15		
Clinical practicals	15		15		
ECTS			2		
Course description					
<p>Children's dental medicine is the introduction to the pediatric and preventive dental medicine, and includes a program of mandatory lectures and clinical practice at the end of which the oral exam (colloquium) is a prerequisite for enrolment in the following teaching semester.</p> <p>The course curriculum includes an introductory program in the following areas: first visit, child's behavior and pain control, growth and development, interreceptive procedures for storage space, orofacial injury, X-ray diagnostics, medical history and treatment planning in children, dental materials in children's dentistry, local anesthesia in children, prevention of dental caries in children and adolescents (fluoride, preventive procedures, minimally invasive treatment of caries and OH measures), treatment planning of non-vital primary and permanent teeth.</p>					
Criteria for taking the course exam					
<p>The evaluation is based on a scoring system in passing the colloquium at the end of VIII. semester, which is a prerequisite for the presence in the clinic in the next semester.</p>					
What is graded					
Written exam		Oral exam		Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	Yes
Rules of grading and additional information					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div></div><div><div>1.</div><div>Introduction to paediatric dental medicine and the first visit to a paediatric dentistry office</div></div><div><div>2.</div><div>Growth and development in children</div></div><div><div>3.</div><div>Principles of diagnosis and treatment planning</div></div><div><div>4.</div><div>Evaluation of the child's behaviour</div></div><div><div>5.</div><div>The concept of dental home and the prevention of early childhood caries</div></div><div><div>6.</div><div>Caries risk assessment</div></div></div>					

7. Individual preventive therapy
8. Non-invasive and minimally invasive treatment of caries
9. Eruption of teeth, space storage and interceptive procedures in children
10. Control of pain in paediatric dentistry
11. Dental materials in paediatric dentistry
12. Evaluation and treatment planning of dental injuries
13. Diagnosis and treatment planning of pulp pathology in deciduous teeth
14. Diagnosis and treatment planning of pulp pathology in young permanent teeth
15. Treatment planning in hospital and high-risk patients

#### **Clinical practicals topics:**

1. Introduction to clinical work and the first examination of the patient.
2. Evaluation of clinical status, clinical findings in teeth and oral facial structures (degree of development of teeth and jaws).
3. Clinical protocol in planning clinical examination of the patient, x-rays evaluation, sequence planning of therapeutic procedures.
4. Assessment of the child's cooperation and classification of the child's behaviour in planning therapeutic procedures due to indications and emergency.
5. Adoption of the "dental home" model (as recommended by the AAPD and EAPD protocols); Early diagnosis of primary tooth decay, prevention and treatment of early childhood caries, instructions on diet.
6. Methods of caries risk assessment.
7. Methods of local fluoridation, principles of chemical and mechanical plaque control.
8. Sealants and preventive dental fillings in children.
9. Chronology of eruption and exfoliation of teeth, basic interceptive interventions in childhood.
10. Techniques of local anaesthesia, local anaesthetics in paediatric dentistry, basic principles of extraction.
11. Glass ionomer cements, composite materials, compomers; dental materials for temporary restorations.
12. Classification of dental injuries, the basic principles of evaluation and diagnosis of dental trauma in primary, young permanent, and permanent teeth.
13. Diagnosis and therapy of necrotic and gangrenous pulp in deciduous teeth, vital pulpotomy in primary teeth.
14. Apexogenesis and apexification, vital amputation after Cvek.
15. Team approach and treatment planning in the care of hospital and high-risk patients (including consultation and collaboration with other medical and dental specialties).

#### **Course leader and associates**

Prof. Dr. sc. Ivana Čuković Bagić  
 Prof. Dr. sc. Domagoj Glavina  
 Prof. Dr. sc. Hrvoje Jurić  
 Prof. Dr. sc. Martina Majstorović  
 Prof. Dr. sc. Željko Verzak  
 Doc. Dr. sc. Walter Dukić  
 Doc. Dr. sc. Kristina Goršeta  
 Doc. Dr. sc. Dubravka Negovetić Vranić  
 Dr. sc. Jelka Jukić, viši asistent  
 Dr. sc. Tomislav Škrinjarić, viši asistent

#### **Literature**

**Required literature:**

1. Jurić i sur.: Dječja dentalna medicina
2. Koch G, Poulsen S: Pediatric Dentistry - a clinical approach. Copenhagen: Munksgaard, 2001. (prijevod na hrvatski)

**Recommended literature:**

1. Angus C. Cameron, Richard P. Widmer: Handbook of Pediatric Dentistry, Second Edition; Mosby; Edinburgh-London-New York-Oxford-Philadelphia-St. Louis-Sydney-Toronto, 2003.
2. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.

**Required knowledge**

Students adopt basic clinical approach, which involves the growth and development of teeth and oral facial structures, diagnostic techniques, treatment planning in childhood and adolescence. The knowledge which is adopted by the student acknowledge mastering in the basic procedure at the first visit, diagnosis and prevention of early childhood caries, behaviour and pain control in clinical approach, planning and implementation of preventive measures and dental procedures in children, use of dental materials, local anaesthesia, early prevention of dental anomalies and dental trauma in children. Students acquire basic knowledge and access to treatment planning, pathology of primary and permanent teeth, and principles of multidisciplinary access in treatment planning in the hospital and high-risk patients, i.e. patients with systemic diseases.

**Required skills**

The skills are in accordance with the acquired knowledge:

1. Introduction to the basics of paediatric dental medicine, the importance and purpose of the first examination in paediatric dental office, advising on the implementation of OH measures and nutritional guidelines in early childhood.
2. Expected (physiological) clinical findings in the oral facial region, complications in the eruption of the first primary teeth, postnatal anomalies in the number and structure of the teeth.
3. Clinical protocol in performing clinical examination of the patient and patient history (anamnesis), x-ray diagnostics and clinical indications in planning therapeutic procedures.
4. Assessment of the child's degree of cooperation and motivation, evaluation of behaviour.
5. Adoption of the concept of dental home, diagnosis, prevention and therapy of early decay in primary teeth, baby bottle tooth decay (early childhood caries).
6. The methods and possible approach in caries risk assessment in the dental clinic (caries risk tests).
7. The use of fluoride in caries prevention, chemical and mechanical plaque control and OH measurements.
8. Fissure sealants and preventive fillings in children.
9. Early loss of deciduous teeth, consequences and prevention of loss of space, the basic guidelines in the application of space maintainers, prevention of unsuitable habits.
10. Local anaesthesia in paediatric dentistry, local anaesthetics in paediatric dentistry, tooth extraction.
11. Dental materials in conservative dental care, stainless steel crowns.
12. Dental injuries to primary and permanent teeth, prevention, diagnosis and treatment planning.
13. Treatment planning in the management of non-vital deciduous teeth, vital pulpotomy in primary teeth.
14. Apexogenesis, indications for apexification, methods of preservation of vital pulp in young permanent teeth, the use of calcium hydroxide and mineral trioxide.
15. Dental treatment planning and multidisciplinary approach in the hospital and high-risk patients.

### Exam questions

Questions are based on the acquired theoretical and practical knowledge.

### 3.2.77 First Aid

Basic information about the course					
Title	First aid				
Code	71346	Abbreviation		121IPPOM	
Total ECTS points	1.5	Status		Elective	
Exam	Yes	Calculated in grade average		Yes	
Language of teaching	Croatian	e-learning		No	
Department	Chair of Surgery				
Course leader	Assistant professor Mario Zovak				
Course load					
	1		Total		
Lectures	4		4		
Preclinical practicals	11		11		
ECTS			1.5		
Course description					
Objective of the FIRST AID course is to train first year students of dental medicine to react to emergencies related to saving lives.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Continous knowledge examination during the exercises, and a final written exam.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Emergencies					
2. Emergency response					
3. Accidental situations					
4. Intoxication					
Preclinical practicals topics:					
1. Basic steps and first aid procedures in sudden loss of consciousness					
2. Procedures for opening and maintaining the airway in a unconscious patient, toss the head back, triple gasps application, placing the unconscious on its side, placing oropharyngeal tube, placing a nasopharyngeal tube, clearing the airways, Heimlich maneuver, endotracheal intubation, artificial respiration and artificial maintenance of circulation in					

<p>case of acute heart failure, heart massage techniques for adults, children and infants, use an automatic electric defibrillator</p> <ol style="list-style-type: none"> <li>3. Triage, order of emergency transport, treatment of wounds, bleeding disposal methods, setting bandage and splint, procedures for head injuries, spine, thorax, abdomen, pelvis, extremities, first aid for burns, frostbite, blast injury, amputation injuries</li> <li>4. Immobilization with handy and standard means of head and cervical spine, spine, clavicle, shoulders and upper arms, forearms and elbows, wrists and fingers, hip and thigh, lower leg and ankle.</li> <li>5. Transfer of injured; transport position of injured person depending on the type of injury.</li> </ol>
<b>Course leader and associates</b>
<p>Prof. dr. sc. Mario Ledinsky Doc. dr.sc. Mario Zovak</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Miroslav Bekavac-Bešlin, Mario Ledinsky, Aljoša Matejčić, August Mijić, Lucijan Negovetić: Kirurgija za stomatologe, Medicinska naklada, Zagreb, 2003.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. V.Vnuk: Urgentna medicina</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• First aid</li> <li>• Reanimation</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• Practical first aid</li> </ul>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. Evaluation of vital functions</li> <li>2. First aid for the injured from electrical shock</li> <li>3. Providing first aid at traffic accidents</li> <li>4. Heart massage techniques</li> <li>5. Providing first aid to a drowning person</li> <li>6. Principles of immobilization</li> <li>7. Principles of resuscitation</li> <li>8. Bleeding disposal methods</li> <li>9. Heimlich maneuver</li> <li>10. Resuscitation during transport</li> <li>11. Mass accidents</li> <li>12. Toxic shock</li> <li>13. Hemorrhagic shock</li> <li>14. Neurocranial injuries</li> <li>15. Amputation injuries</li> <li>16. Disorders of consciousness</li> </ol>

### 3.2.78 Psychiatry and Psychological Medicine

Basic information about the course					
Title	Psychiatry and psychological medicine				
Code	71347	Abbreviation	421OPSIH		
Total ECTS points	2.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Psychiatry and Medical Psychology				
Course leader	Assistant professor Dalibor Karlović				
Course load					
	1		Total		
Lectures	15		15		
Clinical practicals	15		15		
ECTS			2.5		
Course description					
Definition and historical development of psychiatry. Etiology, prevention of mental illnesses. Diagnostic process in psychiatry. Major classifications of mental illnesses. General psychopathology. Neuroses – anxiety disorders. Personality disorders. Sexual disorders and deviations. Schizophrenia. Mood disorders. Psychical disorders of somatic origin (organic psychosyndrome). Alcohol addiction. Drug addiction. Eating disorders. Suicide. Emergency and intensive care psychiatry. Child and adolescent psychiatry, mental retardation. Psychiatric treatment – pharmacotherapy. Psychiatric treatment – psychotherapy. Psychiatric institutions and organization of psychiatric care. Law on protection of persons with mental disorders.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Acquired knowledge will be assessed at the end of the term with a written exam, which is a requirement for a final and combined practical and oral exam.					
Written exam consists of 40 questions. 21 or more correct answers are needed in order to pass the exam (grade range: 21-25 = 2; 26-30 = 3; 31-35 = 4; 35-40 =5).					
Practical part of the exam includes patient assessment and case overview.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Definition and historical development of psychiatry					
2. Etiology, prevention of mental illnesses					
3. General psychopathology					
4. Neuroses – anxiety disorders					

<ol style="list-style-type: none"> <li>Schizophrenia</li> <li>Mood disorders</li> <li>Psychical disorders of somatic origin (organic psychosyndrome)</li> <li>Alcohol addiction</li> <li>Drug addiction</li> <li>Eating disorders</li> <li>Emergency and intensive care psychiatry</li> <li>Child and adolescent psychiatry</li> <li>Psychiatric treatment – pharmacotherapy</li> <li>Psychiatric treatment – psychotherapy</li> <li>Psychiatric institutions and organization of psychiatric care</li> <li>Law on protection of persons with mental disorders</li> </ol>
<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>Practical presentation and exercise in assessing mental status and taking of psychiatric history</li> <li>Practical presentation and exercise in psychiatric diagnostic procedures and classification systems</li> <li>Practical presentation and exercise in recognizing patient general psychopathology</li> <li>Practical presentation and exercise (interview, psychiatric history and status) with patients</li> <li>Schizophrenia – practical presentation and exercise with a patient</li> <li>Mood disorders – practical presentation and exercise with a patient</li> <li>Psychical disorders of somatic origin – practical presentation and exercise with a patient</li> <li>Alcohol addiction – practical presentation and exercise with a patient</li> <li>Drug addiction – practical presentation and exercise with a patient</li> <li>Eating disorders – practical presentation and exercise with a patient</li> <li>Practical presentation of emergency and intensive care psychiatry and exercise in taking care of anxious, agitated, depressive, suicidal and aggressive psychiatric patients</li> <li>Mental retardation – practical presentation and exercise with a patient</li> <li>Practical planning and implementation of psychopharmacologic treatment</li> <li>Practical use and exercise in psychotherapy</li> <li>Practical overview of organization and functioning of psychiatric institutions and services. Introduction to practical implementation of Law on protection of persons with mental disorders.</li> </ol>
<b>Course leader and associates</b>
Prof. dr. sc. Danijel Buljan Prof. dr. sc. Slavko Sakoman Doc. dr. sc. Zoran Zoričić
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>Thaller V, Buljan D, Lazić N, Marušić S. Psihijatrija, Zagreb: CSCAA ,2004.</li> <li>Buljan D. Hitna i intezivna psihijatrija. In: Jukić M, Gašparović V, Husedžinović I, Majer Kogler V, Perić M, Žunić J, Eds. Intezivna medicina. Zagreb: Medicinska naklada; 2008. p. 1158-1172</li> <li>Američka psihijatrijska udruga. Dijagnostički kriteriji iz DSM-IV, međunarodna verzija s MKB-lo šiframa. Jastrebarsko: Naklada Slap; 1999.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>Sakoman S. Obitelj i prevencija ovisnosti. Zagreb: SysPrint; 2002.</li> </ol>

2. Grazio S, Buljan D and associates. Križobolja. Zagreb: Naklada Slap; 2008.
3. Buljan D, Šitum M, Buljan M, Vurnek Živković M. Psihodermatologija, Jastrebarsko: Naklada "Slap", 2007.
4. Kaplan H, Sadock B. Priručnik kliničke psihijatrije, Jastrebarsko: Naklada Slap, 1998.

### Required knowledge

Etiology, epidemiology, clinical presentation of mental disorders, basic knowledge of diagnostic procedures and treatment of mental disorders. Acute stress reaction, reaction to acute or chronic somatic illness, posttraumatic stress disorder (PTSD), pain, anxiety, depression  
 Alcohol and drug addiction with special emphasis on HIV and hepatitis high risk groups  
 Motivating the patient for cooperation  
 Crisis management and interventions  
 Specific psychological methods in dentistry

### Required skills

Contents are planned in order for the student to gain theoretic knowledge and practical skills in the field of psychiatry and psychological medicine required for everyday practice and specific encounters with mental health patients in dental practice.

Students also have the possibility of planning, conducting and defending their diploma thesis, as well attending postgraduate courses:

1. Postgraduate doctoral university study programme of Dental medicine, course: "Scientific research in psycho-stomatology", chair of the programme: prof.dr.sc. Danijel Buljan;
2. Postgraduate specialist university study programme of Dental medicine, course: "Consequences of alcoholism and other addictions in the orofacial region ", chair of the programme: prof.dr.sc. Danijel Buljan. Academic title of master of sciences in the field of dental medicine is acquired.

### Exam questions

1. Historical development of psychiatry
2. Kraepelin's classification
3. Philippe Pinel
4. Bleuler's contribution to the understanding of schizophrenia
5. Freud's personality theories
6. Genetic causes of mental illnesses
7. Neurochemical causes of mental illnesses
8. Primary prevention of mental illnesses
9. Secondary prevention of mental illnesses
10. Tertiary prevention of mental illnesses
11. Classification of disorders of consciousness
12. Quantitative disorders of consciousness
13. Qualitative disorders of consciousness
14. Delirium tremens
15. Disorders of perception: agnosia, illusions, hallucinations
16. Types of hallucinations
17. Pseudohallucinations
18. Types of thought: concrete, abstract, creative
19. Disorders of thought form: pathological circumstantiality, thought retardation or thought block, thought acceleration, perseveration, verbigeration, incoherent or dissociated thought process, word salad
20. Disorders of thought content: overrated thoughts, compulsive thoughts, delusional ideas
21. Mental retardation: Subdivision according to IQ results
22. Disorders of affect: affect and mood

23. Disorders of attention: tenacity and vigility of attention
24. Impulse control disorders
25. Disorders of volition
26. Major classifications of mental illnesses: MKB10 and DSM-IV
27. Groups of psychiatric disorders according to MKB10
28. The five axes of DSM-IV
29. Psychiatric anamnesis: anamnestic and heteroanamnestic data
30. Psychiatric status
31. Reliability and validity of the diagnosis
32. Anxious states
33. Panic disorder
34. Specific phobias
35. Obsessive-compulsive disorder
36. Stress reactions
37. Etiology of neuroses
38. Differential diagnosis of anxiety disorders
39. Conversion neurosis
40. Agoraphobia
41. Social phobia
42. Dissociative disorder
43. Posttraumatic and adjustment disorders
44. Dentophobia
45. Psychological and psychiatric factors of oral disorders
46. Stomatopyrosis, psychological factors
47. Stomatodynia, psychological factors
48. Xerostomia, psychological factors
49. Atypical orofacial pain disorder
50. Temporomandibular disorder as a chronic pain syndrome
51. Stress and orofacial disorder
52. Oral disorders connected with immunity disorders
53. Aphthous stomatitis, psychological factors
54. Classification of personality disorders
55. Differential diagnosis of personality disorders
56. Sexual dysfunctions
57. Sexual deviations
58. Gender and sexual identity disorders
59. Schizophrenia, incidence and prevalence
60. Etiology of schizophrenia
61. Neurochemical basis of schizophrenia
62. Psychodynamic and social theories of schizophrenia
63. Subtypes of schizophrenia
64. Positive and negative symptoms of schizophrenia
65. Schneider's pathognomonic symptoms of schizophrenia
66. Differential diagnosis of schizophrenia
67. Treatment and diagnosis of schizophrenia
68. Differential diagnosis of paranoid states
69. Cultural syndromes: amok, latah, koro, dhat
70. Epidemiology of affective psychoses
71. Genetic predisposition for depression
72. Neurochemical predisposition for affective psychoses
73. Hormonal changes in affective psychoses
74. Affective disorders, psychodynamic, behavioural and cognitive theories

75. Clinical features of depression
76. Types of depression according to MKB10
77. Depression measurement scales
78. Differential diagnosis of affective psychoses
79. Treatment of affective disorders
80. Treatment resistant depression
81. Treatment of mania
82. Somatization disorder
83. Hypochondria disorder
84. Dismorphophobia
85. Psychogenic pain
86. Lying - pretending disorder – Munchausen's syndrome
87. Organic psychosyndrome: etiology (cerebral and extra-cerebral causes)
88. Clinical features and treatment of delirium
89. Presenile and senile dementias
90. Alzheimer's disease
91. Picks's disease
92. Huntington's disease
93. Prion diseases
94. HIV dementia
95. Vascular dementia
96. Amnestic disorder
97. Frontal lobe and temporal lobe syndromes
98. Psychosomatic disorders
99. Process of accepting and adjusting to somatic illness
100. Depression in patients suffering from somatic illness
101. Consultative-liaison psychiatry
102. Etiology and diagnostics of psychosomatic illnesses
103. Alcohol addiction definition
104. Etiology of alcoholism – genetic, psychological, socio-cultural and economic factors
105. Acute alcohol intoxication
106. Neurological complications of alcoholism
107. Psychiatric complications of alcoholism
108. Somatic complications of alcoholism
109. Course and prognosis of alcoholism
110. Alcoholism diagnostics (laboratory tests, self-appraisal tests, CAGE questionnaire)
111. Comprehensive treatment of alcohol addiction – Zagreb alcoholology school, clubs for alcoholics in treatment, prevention of alcohol related problems
112. Epidemiology of psychoactive substance dependence
113. Etiology and comorbidity of substance dependence
114. Psychical and somatic complications of psychic illness
115. Legal aspects connected with substance dependence
116. Prevention of substance dependence
117. Classification of psychoactive substances
118. Central nervous system depressants
119. Intoxication with central nervous system depressants
120. Psychostimulants
121. Hallucinogens
122. Cannabis
123. Pharmacotherapy of substance dependence
124. Substitution therapy of substance dependence

125. Inhalation agents (glue and solvents)
126. Bulimia nervosa
127. Psychological theories about bulimia nervosa
128. Bulimia comorbidity
129. Cultural aspects of feeding
130. Anorexia nervosa
131. Treatment of anorexia nervosa
132. Definition of suicide
133. Epidemiology of suicide
134. Causes of suicide
135. Prevention of suicide
136. Parasuicide
137. Psychiatric emergencies
138. Intensive care psychiatry
139. Clinical classification of child and adolescent psychiatry
140. Attention disorders in children
141. Autism
142. Enuresis
143. Tic and Gilles de la Tourette syndrome
144. Learning disabilities
145. Specific causes of mental retardation
146. Classification of mental disorders
147. Defining mental competence in mental health law practice
148. Mental health residential treatment institutions
149. Psychiatric treatment in penal institutions
150. Psychiatric expertise
151. Antipsychotics
152. Antidepressants
153. Sedatives and anxiolytics
154. Mood stabilizers
155. Adverse effects of psychopharmacs
156. Types of psychotherapy: psychodynamic, behavioural, cognitive
157. Psychotherapy indications
158. EXT therapy
159. Law on protection of persons with mental disorders – basic principles

### 3.2.79 Psychostomatology

Basic information about the course					
Title	Psychostomatology				
Code	86996	Abbreviation	511IPSST		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Psychiatry and Medical Psychology				
Course leader	Assistant professor Dalibor Karlović				
Course load					
	1		Total		
Lectures	8		8		
Clinical practicals	7		7		
ECTS			1.5		
Course description					
<p>The aim of the subject is to get familiar with recent knowledge and research methods regarding relationship between psychological factors and orofacial region. Further on, the importance of cooperation of psychiatrist and dentist is important in diagnostics, as well as in angažmananga\mankolokvijscientific research of such disorders in orofacial region. The emphasis will be put on recent diagnostic methods, which include rating scales, psychoneuroendocrinological and psychoneuroimmunological tests, as well as other biochemical and molecular diagnostic methods used for diagnostics of orofacial disorders.</p> <p>Students will also get familiar with psychosomatic orofacial and dental disorders, e.g. major aphthous stomatitis, lichen planus, stomatopyrosis, burning mouth syndrome, glossodynia, bruxism, atypical odontalgia, facial arthromyalgia, dental fobia, malocclusion, atypical facial pain, etc.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Attending lectures and clinical practicals is mandatory. The subject is conducted during the ninth semester and it consists of 8 hours of lectures and 7 hours of clinical practicals (altogether 15 hours). During the semester, continuous testing of engagment, knowledge and acquired skills in academic and practical part of the subject is undertaken.</p> <p>At the end of the semester, acquired knowledge is tested by written and oral exam. The content of the exam is in line with the content of all the lectures and clinical practicals encompassed by this subject.</p>					
Weekly teaching plan					
1. component					

<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. To introduce students with model of work in liaison psychiatry</li> <li>2. Model of cooperation between a psychiatrist and dentist in a field of treatment and research of psychosomatic complaints in orofacial region.</li> <li>3. Psychosomatic etiology of orofacial disorders.</li> <li>4. Psychoneuroendocrinological and psychoneuroimmunological factors in development of orofacial disorders.</li> <li>5. Relationship between psychological state, stress and genetic factors in development of medical dental disorders.</li> <li>6. Psychopharmacotherapy of orofacial psychosomatic disorders.</li> <li>7. Aestetical dental procedures – the role of psychological factors. Aesthetic and reconstructive surgery in orofacial region and psychological experience of the body</li> <li>8. Psychosomatic aspects in dental medicine in elderly patients</li> </ol>
<b>Clinical practicals topics:</b>
<ol style="list-style-type: none"> <li>1. How to diagnose psychiatric conditions with symptoms in orofacial region</li> <li>2. The approach of dentist to a patient with psychosomatic orofacial disorder</li> <li>3. The exercise of using psychiatric classifications (DSM-IV-TR and ICD-10 and research criteria DSM-V) in practical work in psychosomatic medicine</li> <li>4. The exercise of using psychiatric rating scales in assessment of psychosomatic state of orofacial patient.</li> <li>5. Psychoneuroendocrinological, psychoneuroimmunological and molecular indicators of psychosomatic disorders . how to conduct diagnostic procedure</li> <li>6. Psychosomatic disorders in dental medicine – clinical presentation</li> <li>7. Psychosomatic disorders in dental medicine – diagnostics</li> </ol>
<b>Course leader and associates</b>
Proffessor Danijel Buljan, MD, PhD
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Buljan D, Šitum M. Psihodermatologija, Jastrebarsko: Naklada "Slap", 2007.</li> <li>2. Kaplan H, Sadock B. Priručnik kliničke psihijatrije, Jastrebarsko: Naklada Slap, 1998. (selected chapters)</li> <li>3. Thaller V, Buljan D, Lazić N, Marušić S. Psihijatrija, Zagreb: CSCAA ,2004. (selected chapters)</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Američka psihijatrijska udruga. Dijagnostički kriteriji iz DSM-IV, međunarodna verzija s MKB-10 šiframa. Jastrebarsko: Naklada Slap; 1999.</li> <li>2. Amos JJ, Robinson RG, ed. Psychosomatic Medicine, an introduction to consultation-liaison psychiatry. Cambridge University Press; 2010.</li> <li>3. Buljan D. Psychological and psychiatric factors of chronic pain. Medical Sciences 2009;33:129-140.</li> </ol>
<b>Required knowledge</b>
Understanding etiology, with emphasis on synergistic etiological influence of psychological, endocrinological and immunological factors in development of orofacial disorders. Students should be able to independently conduct basic diagnostic and therapeutic procedures in area of dental medical treatment of patients with psychosomatic disorders.

### Required skills

Students should be competent at recognizing and diagnosing psychosomatic complaints in orofacial region, as well as at establishing cooperation with psychiatrists to jointly treat this complex entities. Further on, students should be able to prepare patients for required specific dental treatment with psychiatric assistance.

### Exam questions

1. Liaison psychiatry and psychosomatic medicine
2. Model of cooperation between a psychiatrist and dentist in a field of treatment and research of psychosomatic complaints in orofacial region.
3. Psychosomatic etiology of orofacial disorders
4. Psychoneuroendocrinological and psychoneuroimmunological factors in development of orofacial disorders.
5. Relationship between psychological state, stress and genetic factors in development of medical dental disorders.
6. Psychopharmacotherapy of orofacial psychosomatic disorders.
7. The role of psychological factors in aesthetic dental procedures and aesthetic and reconstructive surgery in orofacial region and psychological experience of the body
8. Psychosomatic aspects in dental medicine in elderly patients
9. Psychostomatological disorders, diagnostic procedures, clinical presentation and treatment
10. Classification of psychostomatological disorders using ICD-10 and DSM-IV-TR.

### 3.2.80 Smoking and Oral Health

Basic information about the course					
Title	Smoking and oral health				
Code	71348	Abbreviation	311IPOZD		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Oral Medicine				
Course leader	Assoc. Professor Ivan Alajbeg				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
A student acquires basic knowledge on: - epidemiology of diseases caused by smoking - smoking related damage to systemic health - smoking related oral diseases - communication techniques and pharmacotherapy for smoking cessation, as appropriate for dental professionals					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Acquired knowledge is assessed by a written exam. A test consists of 15 questions, to be answered by writing textual answers, ending the sentences and multiple choices. Testing time is limited to 30 min. A grade is calculated according to percentage of correct answers: 60% sufficient, 70% good; 80% very good; 90% excellent. In case of extraordinary exam terms, or in case that a student wants to increase a performance, it is possible to have an oral exam. Seminary increases extra credits for a final grade.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. istory, psychology and epidemiology of smoking					
2. Smoking and oral healthcare professionals					
3. Smoking and oral diseases					
4. Smoking and periodontal disease					
5. Smoking and systemic diseases					

<ol style="list-style-type: none"> <li>Interventions in smoking population</li> <li>"5-A" approach</li> <li>Pharmacotherapy for smoking cessation</li> <li>Patients not ready to quit</li> <li>Barriers identification - answers to real smokers' questions</li> </ol>
<b>Course leader and associates</b>
Assoc. Prof. Ivan Alajbeg
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>Mohammad AR. Tobacco Cessation - Clinician's Guide. Hamilton; BC Decker Inc and American Academy of Oral Medicine, 2006.</li> <li>Alajbeg I, Brailo V, Vidović Juras D. Stomatološki tim protiv pušenja - edukacija edukatora; Hrvatsko društvo za oralnu medicinu i patologiju HLZ-a; Zagreb, 2008.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>Gallagher J, Alajbeg I, Silvia Büchler S, Carrassi A, et al. Public Health Aspects of Tobacco Control Revisited. Int Dent J. 2010;60(1):31-49.</li> <li>Davis J, Ramseier C, Mattheos N, Schoonheim-Klein M, et al.. Education of Tobacco Use Prevention and Cessation for Dental Professionals – a Paradigm Shift. Int Dent J. 2010;60(1):60-72.</li> <li>Needleman I, Binnie V, Ainamo A, Carr AB, et al.. Improving the effectiveness of tobacco use cessation (TUC). Int Dent J. 2010;60(1):50-9.</li> </ol>
<b>Required knowledge</b>
<p>Students are expected to:</p> <ul style="list-style-type: none"> <li>- identify smoking related oral diseases and their premalignant potential</li> <li>- understand mechanism of action of pharmacotherapy for smoking cessation</li> <li>- be able to competently perform anti-smoking activities in dental office setting</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>- to be able to communicate smoking related health risks, risks to periodontal/implant treatment outcomes</li> <li>- to know how to prescribe smoking cessation pharmacotherapy</li> <li>- to be able to perform motivational interview for resistant smokers</li> </ul>
<b>Exam questions</b>
Test questions are directly related to subjects covered by lectures and in compulsory reading.

### 3.2.81 Restorative Dental Medicine I

Basic information about the course					
Title	Restorative dental medicine I				
Code	71349	Abbreviation	412ORES1		
Total ECTS points	7	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Endodontics and Restorative Dentistry				
Course leader	Prof. dr. sc. Zrinka Tarle				
Course load					
	1	2	Total		
Special clinical practicals	45	45	90		
ECTS			7		
Course description					
<p>The program of the course Restorative Dental Medicine I encompasses diagnostics and therapy of pathology of dental and supportive structures, including rehabilitation of functional and esthetic needs of a patient, along with the overview of dental materials and their interactions with hard and soft dental tissues.</p> <p>Restorative Dental Medicine I is exclusively performed through clinical work aiming to train students for upstanding work with patients. Within the framework of the program, students are acquiring fundamental theoretical knowledge in following subjects: diagnosis after anamnesis and examination, interpretation of panoramic and intraoral radiographs, establishing of treatment plan for restorative therapy, biological properties of hard dental tissues, advantages and disadvantages of dental amalgams, classification of glass ionomer cements, adhesive systems and composite resins, minimal invasive preparations, polymerization light sources and direct pulp capping. In terms of practical knowledge, students are improving the following: examination and registration of teeth, work field isolation, placement of an interdental matrix and matrix holder, preparation of conventional cavities, cavity liner and amalgam placement, adhesive cavity preparation and placement of a composite filling with the appropriate protection of the dental pulp.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>The exam in Restorative Dental Medicine I is taken in written form after 8th semester. Student answers to questions by marking one of the several offered answers. If a student positively answers to 76% or more answers, it is considered that a written exam is passed. Correct answered 76% to 80% - grade sufficient (2), from 81%-85% - grade good (3), from 86% to 92% - grade very good (4), from 93% to 100% - grade excellent (5).</p>					
Weekly teaching plan					
1. component					

**Special clinical practicals topics:**

1. Anamnesis and caries diagnostics
2. Interpretation of panoramic and intraoral radiographs
3. Dental anesthesia
4. Rubber dam placement
5. Preparation of conventional cavity class I, II and V
6. Placement of the cavity liner and an amalgam filling
7. Preparation of adhesive cavity class I and II
8. Preparation of adhesive cavity class III and IV
9. Preparation of adhesive cavity class V and VI
10. Placement of composite filling, class I, II, III, IV, V and VI
11. Dental pulp protection by glass ionomer cements
12. Placement of a direct composite veneer
13. Fabrication of a composite inlay, onlay and overlay
14. Bleaching of vital teeth
15. Treatment of tooth trauma

**2. component****Special clinical practicals topics:**

1. Anamnesis and caries diagnostics
2. Interpretation of panoramic and intraoral radiographs
3. Dental anesthesia
4. Rubber dam placement
5. Preparation of conventional cavity class I, II and V
6. Placement of the cavity liner and an amalgam filling
7. Preparation of adhesive cavity class I and II
8. Preparation of adhesive cavity class III and IV
9. Preparation of adhesive cavity class V and VI
10. Placement of composite filling, class I, II, III, IV, V and VI
11. Dental pulp protection by glass ionomer cements
12. Placement of a direct composite veneer
13. Fabrication of a composite inlay, onlay and overlay
14. Bleaching of vital teeth
15. Treatment of tooth trauma

**Course leader and associates**

Professor Ivica Anić  
Professor Nada Galić  
Professor Silvana Jukić-Krmek  
Professor Marina Katunarić  
Professor Ivana Miletić  
Professor Goranka Prpić-Mehičić  
Professor Božidar Pavelić  
Professor Katica Prskalo  
Professor Tonči Staničić  
Professor Sanja Šegović  
Professor Zrinka Tarle  
Assistant professor Bernard Janković  
Assistant professor Zoran Karlović  
Assistant professor Alena Knežević  
Assistant professor Vlatko Pandurić

Assistant professor Paris Simeon  
 Ivona Bago, DMD  
 Anja Baraba, DMD  
 Eva Klarić, DMD  
 Jurica Matijević, DMD  
 Danijela Marović, DMD

## Literature

### Required literature:

1. Jozo Šutalo i sur. Patologija i terapija tvrdih zubnih tkiva. Naklada Zadro, Zagreb, 1994.

### Recommended literature:

1. Mount GJ, Hume WR. Preservation and restoration of tooth structure. Mosby International Ltd. 1998.
2. Summit JB, Robbins JW, Hilton TJ, Schwartz RS. Fundamentals of operative dentistry: a contemporary approach: Quintessence Publishing Co, Inc 2006.
3. Nakabayashi N, Pashley DH. Hybridization of dental hard tissues. Quintessence Publishing Co., Ltd. 1998.
4. Teaching materials published on the web page of Restorative Dental Medicine

## Required knowledge

- Anamnesis
- Radiograph interpretation
- Diagnosis and treatment plan
- Smear layer
- Biological properties of hard dental tissues
- Dental amalgam: advantages and disadvantages
- Classification of glass ionomer cements
- Classification of adhesive systems
- Classification of composite materials
- Minimal invasive preparations
- Polymerization light sources
- Direct pulp capping

## Required skills

- Examination of teeth, registration
- Work field isolation
- Rubber-dam placement
- Placement of an appropriate interdental matrix and matrix holder
- Preparation of conventional cavity class I, II, III, IV and V
- Cavity liner placement (glass ionomer cement)
- Placement of amalgam filling
- Preparation of adhesive cavity
- Enamel etching
- Dentine etching
- Placement of composite filling, class I, II, III, IV, V and VI
- Occlusal adjustment and polishing of fillings

## Exam questions

1. Analysis of a radiograph?

2. Diagnosis and treatment plan?
3. Dental amalgams (composition, particle size and shape, amount of copper and zinc)?
4. The influence of amalgam particle size and shape on the properties of amalgam filling?
5. Physical and mechanical properties of dental amalgams?
6. Mercuroscopic expansion?
7. The structure of a set amalgam?
8. Preamalgamated amalgam alloys?
9. Dental amalgam corrosion (surface, cervical, due to material fatigue and galvanic corrosion)?
10. Creep and flow of dental amalgams?
11. Moisture contamination of amalgams?
12. Biological properties of hard dental tissues?
13. Smear layer?
14. Classification of glass ionomer cements?
15. Dentin pretreatment for glass ionomer cement placement?
16. Adhesion of glass ionomer cements to hard dental tissues?
17. Resin modified glass ionomer cements (composition, setting mechanism, advantages and disadvantages)?
18. Indications for application of resin modified glass ionomer cements?
19. Sensitivity of glass ionomer cements to moisture?
20. Setting of glass ionomer cements?
21. Composite resin filling?
22. Classification of composite materials?
23. Indications and contraindications for the application of composite materials?
24. Photoinitiators in composite resins?
25. Polymerization of composite resins?
26. Polymerization light sources?
27. Placement and finishing of composite fillings?
28. Classification of adhesive systems?
29. Etching agents?
30. Clinical procedure of enamel etching?
31. Indications for the application of adhesive systems?
32. Direct pulp capping?
33. Treatment of non-carious cervical lesions?

### 3.2.82 Restorative Dental Medicine II

Basic information about the course					
Title	Restorative dental medicine II				
Code	71350	Abbreviation	512ORES2		
Total ECTS points	5.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Endodontics and Restorative Dentistry				
Course leader	Prof. dr. sc. Zrinka Tarle				
Course load					
	1	2	Total		
Special clinical practicals	45	45	90		
ECTS			5.5		
Course description					
<p>The program of the course Restorative Dental Medicine II encompasses diagnostics and therapy of pathology of dental and supportive structures, including rehabilitation of functional and esthetic needs of a patient, along with the overview of dental materials and their interactions with hard and soft dental tissues.</p> <p>Restorative Dental Medicine II starts in the ninth semester and it is performed through 90 hours of clinical work. The purpose of the clinical work is to train students for independent work with patients which implies intensive clinical work and adaptation of advanced theoretical and practical knowledge in the area of Restorative Dental Medicine. Within the framework of this program, students are thought the following knowledge and skills: preparation of hard dental tissues (dentin conditioning, enamel and dentine etching), adhesion of glass ionomer cements to hard dental tissues, clinical application of glass ionomer cements, adhesive systems and composite resins, dentin hybridization, mistakes in work with adhesive systems and composite resins, polymerization and polymerization stress, configuration factor, esthetic posts, adhesive cementation, treatment of tooth trauma, bleaching of vital teeth and biocompatibility of materials used in restorative dental medicine.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>The exam in Restorative Dental Medicine II is taken after 10th semester. Students have practical and oral exam.</p> <p>Practical part of the exam is undertaken at the Department of Endodontics and Restorative Dentistry under the guidance of the examiner. Each student has to independently take anamnesis, perform clinical exam (take radiograph if necessary), determine diagnosis (state differential diagnosis) and determine therapy plan. After the examiner approves of the therapy plan, a student performs the procedure. After the completed procedure, the examiner evaluates practical work of the student and notes the grade.</p>					

Oral part of the exam: when preparing the exam, a student should use basic and additional literature. The literature can be in English or Croatian language. During the exam a student should answer at least 10 questions. The examiner can ask additional sub questions. The knowledge is graded with the following grades: excellent (5), very good (4), good (3), sufficient (2) and insufficient (1).

## **Weekly teaching plan**

### **1. component**

#### **Special clinical practicals topics:**

1. Anamnesis and caries diagnostics
2. Interpretation of panoramic and intraoral radiographs
3. Dental anesthesia
4. Rubber dam placement
5. Preparation of conventional cavity class I, II and V
6. Placement of the cavity liner and an amalgam filling
7. Preparation of adhesive cavity class I and II
8. Preparation of adhesive cavity class III and IV
9. Preparation of adhesive cavity class V and VI
10. Placement of composite filling, class I, II, III, IV, V and VI
11. Dental pulp protection by glass ionomer cements
12. Placement of a direct composite veneer
13. Fabrication of a composite inlay, onlay and overlay
14. Bleaching of vital teeth
15. Treatment of tooth trauma

### **2. component**

#### **Special clinical practicals topics:**

1. Anamnesis and caries diagnostics
2. Interpretation of panoramic and intraoral radiographs
3. Dental anesthesia
4. Rubber dam placement
5. Preparation of conventional cavity class I, II and V
6. Placement of the cavity liner and an amalgam filling
7. Preparation of adhesive cavity class I and II
8. Preparation of adhesive cavity class III and IV
9. Preparation of adhesive cavity class V and VI
10. Placement of composite filling, class I, II, III, IV, V and VI
11. Dental pulp protection by glass ionomer cements
12. Placement of a direct composite veneer
13. Fabrication of a composite inlay, onlay and overlay
14. Bleaching of vital teeth
15. Treatment of tooth trauma

## **Course leader and associates**

Professor Ivica Anić  
 Professor Nada Galić  
 Professor Silvana Jukić-Krmek  
 Professor Marina Katunarić  
 Professor Ivana Miletić  
 Professor Goranka Prpić-Mehičić  
 Professor Božidar Pavelić

Professor Katica Prskalo  
 Professor Tonči Staničić  
 Professor Sanja Šegović  
 Professor Zrinka Tarle  
 Assistant professor Bernard Janković  
 Assistant professor Zoran Karlović  
 Assistant professor Alena Knežević  
 Assistant professor Vlatko Pandurić  
 Assistant professor Paris Simeon  
 Ivona Bago, DMD  
 Anja Baraba, DMD  
 Eva Klarić, DMD  
 Jurica Matijević, DMD  
 Danijela Marović, DMD

## Literature

### Required literature:

1. Jozo Šutalo i sur. Patologija i terapija tvrdih zubnih tkiva. Naklada Zadro, Zagreb, 1994.

### Recommended literature:

1. Mount GJ, Hume WR. Preservation and restoration of tooth structure. Mosby International Ltd. 1998.
2. Summit JB, Robbins JW, Hilton TJ, Schwartz RS. Fundamentals of operative dentistry: a contemporary approach: Quintessence Publishing Co, Inc 2006.
3. Nakabayashi N, Pashley DH. Hybridization of dental hard tissues. Quintessence Publishing Co., Ltd. 1998.
4. Teaching materials published on the web page of Restorative Dental Medicine

### Required knowledge

- Dentin conditioning
- Adhesion of glass ionomer cements to hard dental tissues
- Clinical application of glass ionomer cements
- Indications for application of certain glass ionomer cements
- Enamel etching
- Dentin etching
- Dentin hybridization
- Clinical application of adhesive systems
- Mistakes in work with adhesive systems
- Indications for application of certain adhesive systems
- Advantages and disadvantages of composite resins
- Indications for application of certain composite resins
- Polymerization
- Configuration factor
- Polymerization stress
- Esthetic posts
- Adhesive cementation
- Bleaching of vital teeth
- Treatment of tooth trauma
- Biocompatibility of materials in restorative dentistry

### Required skills

- Tooth anesthesia
- Selection and application of appropriate pulp protection
- Direct pulp capping with calcium hydroxide
- Direct pulp capping with adhesive systems
- Minimal invasive preparation and its restoration
- Esthetic restorations of anterior teeth
- Esthetic restorations of posterior teeth
- Direct composite veneer
- Treatment of acute tooth trauma
- Esthetic restorations of chronic tooth trauma
- Esthetic restorations of shape and color of teeth
- Fabrication of composite inlay
- Preparation for placement of an esthetic post
- Adhesive cementation
- Postendodontic restorations
- Bleaching of vital teeth

### Exam questions

1. Classification of adhesive systems (according to generations, work phase, number of components, solvent, acidity, interaction with hard dental tissues)?
2. Adhesion of dental adhesives to enamel and dentin?
3. Dentin etching?
4. Dentin hybridization?
5. Differences between dentin etching and dentin conditioning?
6. Mistakes in work with adhesive systems?
7. Hybridoid layer?
8. Microleakage?
9. Nanoleakage?
10. Configuration factor (C-factor)?
11. Polymerization stress?
12. Compensation of polymerization stress?
13. Etch and rinse adhesive systems?
14. Self etch adhesive systems?
15. Glass ionomer adhesive systems?
16. Advantages and disadvantages of etch and rinse adhesive systems?
17. Advantages and disadvantages of self etch adhesive systems?
18. Indications for application of self etch and etch and rinse adhesive systems?
19. Clinical procedure and possible problems in placement of direct restorations on anterior teeth?
20. Clinical procedure and possible problems in placement of direct restorations on posterior teeth?
21. Direct composite resin veneer?
22. Inlay, onlay, overlay?
23. Advantages and disadvantages of composite inlays in relation to direct composite restorations?
24. Principles of cavity preparation for composite inlay?
25. Principles of cavity preparation for minimal-invasive preparations?
26. Bleaching of vital teeth?
27. Methods of tooth bleaching, advantages and disadvantages?
28. Esthetic posts?

29. Adhesive cementation?
30. Occlusion in restoration of an individual tooth?
31. Periodontal tissues and tooth restoration?
32. Failure of certain fillings?
33. Biocompatibility of amalgam?
34. Biocompatibility of glass ionomer cements?
35. Biocompatibility of adhesive systems?
36. Biocompatibility of composite materials?
37. Clinical procedures in acute and chronic tooth trauma?

### 3.2.83 Social Medicine and Epidemiology

Basic information about the course					
Title	Social medicine and epidemiology				
Code	71351	Abbreviation	211OSMEP		
Total ECTS points	3	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Social Medicine and Epidemiology				
Course leader	Associate Professor, Zlatko Ulovec, PhD				
Course load					
	1		Total		
Lectures	10		10		
Seminars	20		20		
ECTS			3		
Course description					
<p>The aim of this course is to teach students how to participate in a unique process of health care. Along with a wide spectrum of specialist skills and knowledge of everyday dental practice, the students need to acquire certain knowledge of epidemiology as well as skills and attitudes which enable them to understand the impact of physical and social environment on public health. They should be able to assess public health, recognize priority health problems and be able to plan, design and implement intervention programs. The emphasis is placed of preventive aspects and social components of health problems in order to ensure good communication and collaboration with the public.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>The exam consists of a written part with 60 questions of multiple choices and an oral part, that is, assessment of theoretical knowledge of social medicine and epidemiology.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div><div>Assessment of public health status. Issues of the elderly population.</div></div> <div><div>2.</div><div>Health, healthcare and healthcare services.</div></div> <div><div>3.</div><div>Health education.</div></div> <div><div>4.</div><div>Basic ethical principles (specificity of public health), medical oaths and moral codes.</div></div> <div><div>5.</div><div>Basics of healthcare organization and of health economics.</div></div> <div><div>6.</div><div>Causes and risk factors. Principles of preventive medicine and health intervention.</div></div> <div><div>7.</div><div>Epidemiological observation and research. Types of epidemiological studies.</div></div>					

<ol style="list-style-type: none"> <li>8. Epidemics of a disease; hospital infections, workplace hygiene, principles of antiseptics and aseptics; disinfection and sterilization.</li> <li>9. Environment and health, optimal surroundings. Sustainable growth, preservation of natural sources.</li> <li>10. Water and health. Food and health. Hygienic disposal of wastes.</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Healthcare of special needs individuals – Problems of the elderly (geriatric patients). A visit to the Home for the Elderly.</li> <li>2. Health education: large group, small group, counseling, communicating with the patient.</li> <li>3. Basic ethical principles and main medical oaths.</li> <li>4. Indicators in dental medicine. International comparison – international comparison CEF index.</li> <li>5. Health intervention – prevalence of high blood pressure, determining the BM index.</li> <li>6. Indicators of health status (sources of information): epidemiological, demographic, social.</li> <li>7. Evidence based medicine</li> <li>8. Healthcare management – management skills</li> <li>9. Evaluation of working conditions in dental offices (contract with the Croatian Healthcare Service).</li> <li>10. Evaluation of working conditions in dental offices (without contract with the Croatian Healthcare Service).</li> </ol>
<b>Course leader and associates</b>
Assistant Professor Zlatko Ulovec, PhD
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Jakšić Ž, Kovačić L. i sur. Socijalna medicina. Medicinska naklada Zagreb, 2000.</li> <li>2. Babuš V. i sur. Epidemiologija. Medicinska naklada, Zagreb, 1997.</li> <li>3. Valić F. (ur.) Zdravstvena ekologija. Medicinski fakultet Sveučilišta u Zagrebu, 2001.</li> <li>4. Boranić M. i sur. Karcinogeneza. Medicinska naklada, Zagreb, 2000.</li> </ol>
<b>Recommended literature:</b>
1.
<b>Required knowledge</b>
Students should learn about the basic epidemiological and public health views on dental profession with a stress on population approach to dental health prevention, actions and influence of lifestyle on public health.
<b>Required skills</b>
Students should acquire basic organizational and communicative skills, learn to discuss and make decisions, perform certain parts of a systematic prevention examination.
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. Concept and definition of health.</li> <li>2. Andrija Štampar</li> <li>3. Concept and field of social medicine</li> <li>4. Health intervention in chronic illnesses</li> <li>5. Health characteristics of developing countries</li> <li>6. Health characteristics and problems in developed countries</li> </ol>

7. Social communities
8. Primary social communities
9. Characteristics and advantages of team work in healthcare
10. Characteristics of primary health care
11. Working with small and large groups.
12. Prevention of chronic noninfectious diseases.
13. Secondary prevention in healthcare.
14. Risk factors.
15. Epidemiological features and prevention of chronic noninfectious diseases.
16. Basic ethical principles.
17. Medical ethics – respecting autonomy
18. Medical ethics – Fairness
19. Medical ethics – Do good and do no harm
20. Hierarchical sequence of criteria in making medical decisions
21. Health education
22. Behavioral approach to health education
23. Communication (transaction analysis)
24. Approach to individuals with developmental disabilities
25. Significance of demographic and vital-statistical data in health status evaluation (data list)
26. The effect of climate (bio-meteorological) factors on health
27. Aims and goals of a physical check-up
28. Financing healthcare
29. Health issues of the elderly and geriatric patients
30. Healthcare of geriatric patients
31. Dental care of geriatric patients
32. Risk factors related to dental care
33. Types of waste created during healthcare services
34. Birth and death rates, natural increase
35. Fertility, specific fertility
36. Hospital infections
37. Vaccinations
38. Prevention of infectious diseases. Measures for contacts
39. Disinfection and sterilization in dental medicine
40. Global health-ecological problems
41. Basic groups of stable organic air pollutions and their effects on health.
42. Disposing of hard waste matter and their health significance
43. Water consumption
44. Types and characteristics of natural waters
45. Types of potable waters
46. Health effects of water pollution
47. Protection of natural waters (Classification of waters)
48. Disinfecting potable water
49. Supplying individual objects with potable water
50. Health-sanitation supervision of potable water
51. Bacteriological analysis of water
52. Diseases and disorders caused by chemicals in the water
53. Diet as a factor of health
54. Determination of natural conditions (direct methods)
55. Nutrients and their significance
56. Public health significance of nutrition
57. Health effects caused by lack of nutrients



### 3.2.84 Cell Biology with Genetics

Basic information about the course					
Title	Cell biology with genetics				
Code	71353	Abbreviation	112OSBGE		
Total ECTS points	9.5	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair of Biology				
Course leader	Professor Floriana Jakuš, MD, PhD				
Course load					
	1	2	Total		
Lectures	15	15	30		
Seminars		30	30		
Laboratory practicals	30		30		
ECTS			9.5		
Course description					
The course Biology of the Cell with Geneti is designed to teach dental medicine students about the basic concepts of the contemporary biological science which is of utmost importance for modern diagnostics and therapy as well as for the future of human medicine.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam	Yes	Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Students must attend the course regularly. In case of 3 excused absences student must take a colloquium and pass it.. After passing the written examination, student can take the final oral examination.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Biology today, molecular biology					
2. Prokaryotic and eukaryotic cells					
3. Plasma membrane and intercellular interactions					
4. Membrane systems, Organelles					
5. Cell energetics and cytoskeleton					
6. The central dogma of molecular biology, nucleus					
7. Replication, transcription					
8. Translation, ribosomes					
9. The cell cycle					
10. Mitosis, metaphase chromosomes					

11. Biology of reproduction, meiosis 12. Gametogenesis, fertilization 13. Early development, transgenic technology 14. Morphogenesis 15. Teratogenesis, teratogenic agents
<b>Laboratory practicals topics:</b>
1. Microscopy 2. Techniques in cell biology 3. In vitro cell culture 4. Cell, organelles 5. Molecular organization of membrane systems, transport 6. Erythrocyte membrane model, white ghosts 7. Energetics of the cell 8. Electrophoresis, DNA, proteins, blots 9. Phases of the cell cycle 10. Chromosomes, cytogenetics 11. Meiosis, gametogenesis, fertilization 12. Cleavage, embryotransfer 13. Developmental stages of mammalian development, critical phases for teratogenesis, experimental in vitro models Diferencijacija stanice 14. Cell differentiation 15. Developmental tumours, experimental teratoma, teratocarcinoma
<b>2. component</b>
<b>Lecture topics:</b>
1. Genetics Mendelian and molecular genetics 2. Independent assortment; sex-linked inheritance 3. Linkage and recombination 4. Bacterial genetics 5. DNA technology 6. DNA technology 7. DNA technology 8. DNA technology 9. Regulation of gene expression 10. Genetics of developmental processes 11. Cloning 12. Mutation, mutagenesis 13. Molecular biology of cancer 14. Gene therapy, regenerative medicine and future of medicine 15. Human genetics, genetic maps, genomics, proteomics
<b>Seminar topics:</b>
1. Genetic variation, 2. Single-gene inheritance 3. Dihybrid cross, independent assortment 4. Sex-determination, sex-linked inheritance 5. Linkage and mapping 6. Genetics of prokaryotes and genetic engineering 7. Human genome 8. Regulation of bacterial gene activity

9. Regulation of eukariotic gene activity 10. Genetics of developmental processes 11. Cloning 12. Gene mutation in human diseases 13. Molecular biology of cancer 14. DNA analysis in humans 15. Gene therapy, regenerative medicine
<b>Course leader and associates</b>
Prof. dr. sc. Floriana Bulić-Jakuš Prof. dr. sc. Nives Pećina-Šlaus Prof. dr. sc. Maja Vlahović Doc. dr. sc. Ljiljana Šerman Dr.sc. Ana Katušić Dr.sc. Tamara Nikuševa Martić Mr.sc. Frane Paić Nino Sinčić, dr. med.
<b>Literature</b>
<b>Required literature:</b>
1. Katedra za biologiju (V. Crnek-Kunstelj, ur.): Medicinska biologija (skripta), Zagreb, Medicinski fakultet, 2003. 2. Škreb N. I suradnici: Biološke osnove suvremene medicine (III dio), Zagreb, Školska knjiga 1991
<b>Recommended literature:</b>
1. G.M. Cooper i R.E. Hausman: Stanica, molekularni pristup, Medicinska naklada 2010. 2. Cox T.M. i Sinclair J (ur) Molekularna biologija u medicini. Medicinska Naklada, Zagreb, 2000
<b>Required knowledge</b>
Theoretical basics of cell biology, molecular biology, developmental biology and genetics important for understanding human disorders. Terminology necessary for reading biomedical contemporary literature.
<b>Required skills</b>
To work with basic laboratory instruments and techniques (e.g. microscope, preparation of smears...), to solve simple problems in genetics.
<b>Exam questions</b>
1. Prokaryotic and eukaryotic cell 2. Methods in cell research 3. In vitro culture of cells 4. The molecular composition of cells 5. Cell membrane 6. Erythrocytic membrane 7. Transport across the membrane 8. Cell-cell interactions 9. Cytoskeleton- microtubules, microfilaments, intermediate filaments 10. Rough endoplasmic reticulum 11. Smooth endoplasmic reticulum

12. Golgi apparatus
13. Lysosomes
14. Endocytosis, exocytosis
15. Mitochondrion, energetics
16. Cell signaling
17. Central dogma of the molecular biology
18. DNA replication
19. Cell nucleus
20. Chromatins and chromosomes
21. Telomeres
22. Mutations
23. Transcription in eukaryotes
24. RNA processing
25. Reverse transcription
26. Translation
27. Regulation of gene expression
28. DNA methylation, genome imprinting
29. Cell cycle and control
30. Mitosis
31. Cytogenetics
32. Recombinant DNA technology
33. DNA cloning
34. Hybridization probes, application in medicine
35. DNA sequencing
36. Human genome map, genomics (transcriptomics, proteomics)
37. Gene therapy
38. Transgenic animals
39. Regenerative medicine
40. The laws of inheritance
41. Meiosis
42. Monohybrid cross
43. Dihybrid cross, independent assortment
44. Linkage, recombination
45. Sex-linked inheritance
46. Multiple alleles
47. Gametogenesis
48. Fertilization
49. Cleavage
50. Gastrulation
51. Neurulation
52. Morphogenesis
53. Interactions between embryonic cells
54. Induction
55. Differentiation, differential gene activity
56. Teratogenic agents
57. The role of the nucleus in development
58. Nuclear transfer
59. Types of cloning, reproductive, therapeutic
60. Cytoplasmic determinants of development, gray crescent
61. Teratoma, teratocarcinoma
62. Protooncogenes, oncogenes
63. Tumour suppressor genes

- 64. Bacterial genetics
- 65. Gene expression in prokaryotes, operon
- 66. Developmental genetics
- 67. Hox genes, homeobox, homeodomain
- 68. Oncogenesis
- 69. Diagnostics of mutations
- 70. DNA markers, RFLP, minisatellites, microsatellites

### 3.2.85 Statistics in Dental Medicine

Basic information about the course					
Title	Statistics in dental medicine				
Code	71354	Abbreviation	321ISTAT		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Chair for Statistics and Informatics				
Course leader	Associate Professor Mirjana Kujundžić-Tiljak, MD, PhD				
Course load					
	1		Total		
Lectures	15		15		
Seminars	5		5		
Laboratory practicals	10		10		
ECTS			1.5		
Course description					
Enable a student, future doctor of Dental Medicine , for use of statistical methods and tools either for selfevaluation or for research in Dental Medicine as well as for critical appraisal of appropriateness of applied statistical procedures in selected scientific and professional papers in the particular field of interest.					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	Yes
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Exam is oral and partially practical ( finding appropriate statistical design adequate for chosen research problem or interpretation of certain results of statistical analysis). Continuous evaluation of engagement of a student during seminars and excersises provides impact to the final grade.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Data desription (scales of measurements, health and demographic statistics)					
2. Deterministic and stochastic systems					
3. Theoretical and empirical probability distributions					
4. Quantitative data menagement. Parameters estimation.					
5. Sampling and sampling distributions					
6. Qualitative data menagement. Contingency tables analysis.					
7. Hypothesis testing					
8. Risk quantification (relative risk, atributable risk, odds ratio)..					
9. Validity of diagnostic procedures, ROC analysis.					

10. Correlation analysis. Regression analysis. Reduction of dimensionality of data space.
11. Discriminant analysis
<b>Seminar topics:</b>
1. Critical appraisal of appropriateness of applied statistical procedures in the selected publications
<b>Laboratory practicals topics:</b>
<ol style="list-style-type: none"> <li>1. Theoretical probability distributions.</li> <li>2. Empirical probability distributions and parameters estimations.</li> <li>3. Generalization. Sample vs. population, confidence interval.</li> <li>4. Parametric testing of differences between groups: independent and paired samples.</li> <li>5. Contingency tables.</li> <li>6. Nonparametric testing of differences between groups: independent and paired samples. Risk estimation.</li> <li>7. Diagnostic tests validity, ROC analysis.</li> <li>8. Correlation analysis. Regression analysis. Factor analysis. Discriminant analysis.</li> </ol>
<b>Course leader and associates</b>
Professor Davor Ivanković, MD, PhD ; Professor Mirjana Kujundžić Tiljak, MD, PhD
<b>Literature</b>
<b>Required literature:</b>
1. Ivanković D and coworkers. Statistics for students of Dental Medicine. Available at: <a href="http://www.sfzg.hr/course/42699">http://www.sfzg.hr/course/42699</a>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Smeeton, N. Dental Statistics Made Easy. Oxford: Radcliffe Medical Press, 2005.</li> <li>2. Hackshaw, A.K., Paul, E.A., Davenport, E.S. Evidence-Based Dentistry, An Introduction. Oxford: Blackwell Publ Comp, 2006.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Scales of measurement.</li> <li>• Biological variability.</li> <li>• Theoretical and empirical probability distributions.</li> <li>• Measures of central tendency and measures of variability..</li> <li>• Sample vs. Population; Sampling distribution.</li> <li>• Hypothesis testing and most frequently used statistical tests.</li> <li>• Validity of diagnostic procedures.</li> <li>• Correlation analyses. Prediction and classification procedures.</li> </ul>
<b>Required skills</b>
<ul style="list-style-type: none"> <li>• Student should be able to plan statistical analysis for a certain research problem.</li> <li>• Student should be able to conduct data analysis using computer and SAS or STATISTICA, StatSoft. software and to interpret results from a statistical and medical point of view.</li> <li>• Student should be able to appraise appropriateness of applied statistical procedures in professional publications</li> </ul>
<b>Exam questions</b>

Observations and measurements, Types of data, Variable, Scales of measurement, Measures of central tendency, Measures of variability, Probability, Deterministic and stochastic systems, Morbidity and mortality statistics, Demographic statistics, Theoretical probability distributions, Empirical probability distributions, Sređivanje kvalitativnih podataka, Tablice kontingencije, Sređivanje kvantitativnih podataka, Sample and population parameters estimation, Types of samples, Representative sample, Standard error of the mean, Standard error of the proportion, Statistical conclusions based on the sample, Contingency tables, Pearson's  $\chi^2$ -test, McNemar's test, Pearson's coefficient of correlation, Spearman's coefficient of correlation, Correlation analysis, Scatter diagram, Research vs. Statistical hypothesis, Hypothesis testing,  $\alpha$  error, Level of significance, Assumptions for application of parametric statistical procedures, Related samples, Independent samples, Comparison of two or more data sets, Parametric vs. Nonparametric statistical procedures, ANOVA, Wilcoxon-Mann-Whitney's test, Wilcoxon's paired test, Kruskal-Wallis ANOVA of ranks, Friedman's test, Advantages and shortcomings of multivariate analytical procedures, Exploratory factor analysis, Confirmatory factor analysis, Centroids, Discriminant analysis, Regression analysis, Confidence interval, Odds ratio, Relative risk, Attributable risk, Risk estimation, Validity, Sensitivity, Specificity, ROC analysis, Indexes

### 3.2.86 Dental Care of Medically Complex Patients

Basic information about the course					
Title	Dental care of medically complex patients				
Code	71355	Abbreviation	521ISMKB		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Oral Medicine				
Course leader	Assoc. Prof. Ivan Alajbeg				
Course load					
	1		Total		
Lectures	9		9		
Seminars	6		6		
ECTS			1.5		
Course description					
<p>Course focuses on specific medical conditions that require modification of routine dental procedures (primary dental care: treating and extracting teeth, initial periodontal treatment, prosthodontic rehabilitation) in patients with compromised systemic health, as well as on up-to-date protocols for modification of dental procedures in order to avoid pertaining risks. Those are patients with cardiovascular, metabolic, immunologic and hematologic diseases, transplant recipients, patients on anticoagulation therapy, neurologic patients, psychiatric patients etc. Course presents introduction into "Special needs dentistry", independent dental specialty in the USA and EU countries.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Acquired knowledge is assessed by a written exam. A test consists of 15 questions, to be answered by writing textual answers, ending the sentences and multiple choices. Testing time is limited to 30 min. A grade is calculated according to percentage of correct answers: 60% sufficient, 70% good; 80% very good; 90% excellent.</p>					
Weekly teaching plan					
1. component					
Lecture topics:					
<div><div>1.</div>Dental treatment of patients with HIV</div> <div><div>2.</div>Dental management of patients receiving head and neck radiotherapy</div> <div><div>3.</div>Dental management of patients receiving oral anticoagulants</div> <div><div>4.</div>Infective endocarditis prophylaxis, American Heart Association 2007 guidelines.</div> <div><div>5.</div>Dental implants in patients with systemic and mucosal immune-mediated diseases</div>					

<ol style="list-style-type: none"> <li>Dental management of renal patients</li> <li>Dental management of solid organ transplant</li> <li>Dental management patients with metabolic diseases</li> <li>Dental management of neurological and psychiatric patients</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>Dental management of cardiovascular patients</li> <li>Dental management of immuno-suppressed patients</li> <li>Restorative and periodontal care modifications in patients with oral diseases</li> <li>Dental implants in patients with systemic and mucosal immune-mediated diseases</li> <li>Dental management of leukemic patient</li> <li>Dental care for patients undergoing bone marrow transplantation</li> </ol>
<b>Course leader and associates</b>
<p>Assoc. Prof. Ivan Alajbeg  Assisit. Prof. Vlaho Brailo  Ana Andabak, dr. med. dent., univ. mag. med. dent.</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>Proctor R, Kumar N, Stein A, Moles D, Porter S. Oral and dental aspects of chronic renal failure. J Dent Res. 2005; 84(3):199-208.</li> <li>Lockhart PB, Loven B, Brennan MT, Fox PC. The evidence base for the efficacy of antibiotic prophylaxis in dental practice. J Am Dent Assoc. 2007;138;458-74.</li> <li>Oral complications of cancer treatment: what the dental team can do. National Institute of Dental and Craniofacial Research. National Oral Health Information Clearinghouse. Publication No. 08-4372. September 2008</li> <li>Dental Provider's oncology pocket guide. National Institute of Dental and Craniofacial Research. National Oral Health Information Clearinghouse. December 2008.</li> <li>Wahl MJ. Myths of dental surgery in patients receiving anticoagulant therapy. J Am Dent Assoc. 2000;131:77-81.</li> <li>Gibson N, Ferguson JW. Steroid cover for dental patients on long-term steroid medication: proposed clinical guidelines based upon a critical review of the literature. Br Dent J. 2004;197(11):681-5.</li> <li>Dental management of the organ transplant patient. National Institute of Dental and Craniofacial Research. National Oral Health Information Clearinghouse. October 2009.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>Greenberg MS, Glick M. Burketova oralna medicina - dijagnoza i liječenje, 10. izd. Zagreb; Medicinska naklada, 2006.</li> <li>Little J, Falace DA, Miller CS, Rhodus NL. Dental management of medically compromised patient. St. Louis; Mosby, 2002.</li> <li>Tyler MA, Lozada-Nur F, Glick M, Eds. Clinician's guide to treatment of medically complex dental patients. Hamilton; The American Academy of Oral medicine, BC Decker, 2001.</li> <li>Fiske J, Dickinson C, Boyle C, Rafique S, Burke M. Special care dentistry. Oxford; Quintessence Publishing, 2007.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>how to assess the risk of dental treatment in medically compromised patients</li> <li>how to modify treatment plan depending on patient's general condition</li> </ul>

- how to communicate with various medical specialists involved in the care of medically compromised patients
- solid introductory knowledge in special needs dentistry, sufficient to form a competent attitude on required care
- permanent interest and awareness for new developments in the field

#### **Required skills**

Skills that are needed for routine outpatient dental treatment of patients whose systemic condition presents significant health risk: patients with cardiovascular, metabolic, immunological and hematological diseases, transplanted patients, patients under risk of prolonged bleeding, psychiatric and neurological patients, etc. Those patients mostly fit into stage II or III according to "ASA classification".

#### **Exam questions**

Test questions are directly related to subjects covered by lectures and in compulsory reading.

### 3.2.87 Temporomandibular Disorders - Diagnosis and Therapy

Basic information about the course					
Title	Temporomandibular disorders - diagnosis and therapy				
Code	71356	Abbreviation	511OTEMP		
Total ECTS points	2	Status	Obligatory		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Removable Prosthodontics				
Course leader	Professor Asja Čelebić				
Course load					
	1		Total		
Lectures	15		15		
Seminars	15		15		
ECTS			2		
Course description					
Students are informed about different theories which may cause temporomandibular dysfunction (TMD). Students are taught about contemporary theories of the etiology and epidemiology of the TMD. They are also informed about standard and computerized methods for diagnosing dental system functions (electromyography, gnathosonics, axiography, optoelectronic systems). The importance of distinguishing between arthrogenic and muscular problems is specially emphasized with regard to planned therapeutic protocols. The methods of a therapy are divided into reversible and irreversible. The students in lectures and seminars are informed about the methods of physical therapy as a form of reversible therapeutic methodology. They will also be introduced with pharmacological therapies, splint therapy, as well as specific irreversible methods used in prosthodontics, orthodontics and periodontics which are irreversible form of a therapy.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam	Yes	Major preliminary exam	
Rules of grading and additional information					
At the end of a semester the overall score is based on several elements of the assessment during the semester – students are assessed for their engagement, rigor and creativity of the work, upon the evaluation of knowledge, which is added to the score from the exam of knowledge.					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Etiology and epidemiology of TMD					
2. Compensatory mechanisms, physiological tolerances,					
3. Neuromuscular protective reflexes					
4. Signs and symptoms of trouble with,					

<ol style="list-style-type: none"> <li>5. Parafunction, bad habits,</li> <li>6. Stress and psychological components</li> <li>7. Clinical functional analysis</li> <li>8. Diagnostic imaging methods (X-ray, NMR)</li> <li>9. Instrumental functional analysis (electromyography (EMG), axiography)</li> <li>10. Therapeutic modalities for temporomandibular dysfunction with the initial therapy, preliminary, reversible, splints, occlusal splint types and mechanisms of action</li> <li>11. Headaches, TMD and pharmacological therapy</li> <li>12. Physical therapy and other supportive therapy modalities</li> <li>13. Irreversible Therapy-selective grinding and alignment of occlusal contacts</li> <li>14. Orthodontic treatment,</li> <li>15. Surgical therapy</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. anamnestic protocols</li> <li>2. writing a history of the disease, the terminology</li> <li>3. analysis of functional movements</li> <li>4. analysis of the sounds in the joint (auscultation, crepitation)</li> <li>5. preliminary diagnosis</li> <li>6. analysis of DPRs</li> <li>7. making anterior jig and deprogramator centric registrations (CR), assembly models in the articulator and analyze occlusal contacts and Interferences</li> <li>8. Cast analysis of clinical patients with TMD</li> <li>9. Differential Diagnosis</li> <li>10. types of therapy-modalities of a treatment</li> <li>11. methods of physical therapy</li> <li>12. biofeedback, TENS</li> <li>13. EMG or Axiographic analysis (group work)</li> <li>14. Filling-in protocols for pain-visual-analog scale (VAS)</li> <li>15. Preventive and protective splints (Sports)</li> </ol>
<b>Course leader and associates</b>
<p>Prof.dr.sc. Danijel Buljan  Prof.dr.sc. Ivan Krolo  Prof. Marina Lapter  Prof.dr.sc. Melita Valentić-Peruzović  Doc.dr.sc. Iva Alajbeg  Doc.dr.sc. Vanja Bašić-Kes  Dr.sc.Davor Illeš  Dr.sc. Ivica Pelivan</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Okeson J.P. Temporomandibularni poremećaji i okluzija. 1. hrvatsko izdanje. Valentić-Peruzović M. , ured.hrv.izd. Zagreb: Medicinska naklada, 2008.</li> <li>2. Temporomandibularni poremećaji- multidisciplinarni pristup / Valentić-Peruzović M, Jerolimov V, urednici. Zagreb : Stomatološki fakultet Sveučilišta u Zagrebu i Akademija medicinskih znanosti Hrvatske, 2007 (monografija).</li> </ol>
<b>Recommended literature:</b>

1. Temporomandibular disorders, an evidence-based approach to diagnosis and Treatment. edited by Laskin D.M, Greene C.S, Hylander W.L.Quintessence Publishing Co,Inc. Chicago, 2006.

### Required knowledge

Students should learn modern criteria of normal, healthy and functionally compensated dental system. They will become familiar with the etiological and epidemiological data from the recent literature. and with characteristic signs and symptoms of temporomandibular dysfunction (TMD). Familiar methods of clinical functional analysis and simpler kind of reversible therapeutic procedures including manufacture of stabilising occlusal splint and supportive methods of physical therapy. Students will get insight into the methods of modern diagnostic procedures and multidisciplinary approach to the patient with dysfunction

### Required skills

Students should learn simple procedures, diagnostics of TMD, one should learn how to identify inadequate jaw relations, occlusal contacts disturbances, muscle activity disturbances due to spasm mechanisms, Differential diagnostics between the artrogenic and muscular disorders of TMD. Students learn methods of initial treatment, reversible procedures for example: analysis in the articulator bite analysis, splints and physical therapy methods muscular disorders. After completing this module, students fill out a systematic screening protocol for record of a TMD, and they will be able to compare clinical findings with findings on casts mounted in an articulator

### Exam questions

1. Etiology of TMD
2. Epidemiology of TMD
3. Compensatory mechanisms, physiological tolerances,
4. Neuromuscular protective reflexes
5. Signs of TMD
6. Symptoms of TMD
7. Parafunctions
8. The role of stress and psychological components
9. Clinical functional analysis
10. Diagnostic imaging methods (X-ray, NMR)
11. Instrumental functional analysis
12. Reversible methods of therapy of TMD
13. Irreversible methods of therapy of TMD
14. Types of occlusal splints
15. Protective splints
16. Pharmacological Therapy
17. Methods of physical therapy
18. Selective grinding and alignment of occlusal contacts
19. Biofeedback
20. Tens

### 3.2.88 Physical Education I

Basic information about the course			
Title	Physical education I		
Code	71357	Abbreviation	111OTJE1
Total ECTS points		Status	Obligatory
Exam	No	Calculated in grade average	No
Language of teaching	Croatian	e-learning	No
Department	Chair of General and Social Subjects		
Course leader	V. pred. Irena Bagarić		
Course load			
	1	2	Total
Physical Education	30	30	60
ECTS			
Course description			
Weekly teaching plan			
1. component			
Physical education excercises:			
Course leader and associates			
Notes			

### 3.2.89 Physical Education II

Basic information about the course			
Title	Physical education II		
Code	71358	Abbreviation	211OTJE2
Total ECTS points		Status	Obligatory
Exam	No	Calculated in grade average	No
Language of teaching	Croatian	e-learning	No
Department	Chair of General and Social Subjects		
Course leader	V. pred. Irena Bagarić		
Course load			
	1	2	Total
Physical Education	30	30	60
ECTS			
Course description			
Weekly teaching plan			
1. component			
Physical education excercises:			
Course leader and associates			
Notes			

### 3.2.90 Introduction to Dental Medicine

Basic information about the course					
Title	Introduction to dental medicine				
Code	71359	Abbreviation	111IUVOD		
Total ECTS points	1.5	Status	Obligatory or Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning			
Department	Department of Dental Anthropology				
Course leader	Assistant professor Marin Vodanović, Phd.				
Course load					
	1		Total		
Lectures	5		5		
Seminars	10		10		
ECTS			1.5		
Course description					
<p>The aim of this course is to acquaint the dental student at the beginning of study with basic conceptions of the future profession and its position within medicine and in society. A review of the development of dental medicine in a theoretical and practical direction will show the extent of this development in Croatia and in the world. Evaluation of the condition of oral health in Croatia will contribute to awareness of needs in dental medicine, both with regard to experts and the general public.</p> <p>The course Introduction to Dental Medicine is the first stomatological course, and is held in I. semester. Belongs to common and preclinical stomatological courses, and is important as an introduction to Dental Medicine. The course provides the students with a historical perspective that is important and valuable. Through it the students are acquainted with stomatological doctrine, according to the rules of medical deontology. This course answers the questions about: what is Dental Medicine today. Implicit in that is the need for the School to have a clear definition of what kind of oral health professional or professionals is or are most appropriate for Croatia.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
Method of testing knowledge is written exam according to the list of questions.					
Weekly teaching plan					
1. component					
Lecture topics:					
<ol style="list-style-type: none"><li>1. Introduction to Dental Medicine</li><li>2. History of School of Dental Medicine, University of Zagreb</li><li>3. Dental school education in Croatia</li></ol>					

<ol style="list-style-type: none"> <li>4. Organization of dental health care and structure and types of personnel in dental medicine. Staff profiles.Guidelines for the development of dental health services. Primary care, polyclinical conciliar and hospital health care.</li> <li>5. Types of specialisation in dental medicine in Croatia, in EU and the world. Dental morphology as a base for other stomatological research.</li> <li>6. Paedodontics</li> <li>7. Orthodontics</li> <li>8. Endodontic and restaurative dentistry</li> <li>9. Periodontology</li> <li>10. Oral surgery</li> <li>11. Prosthodontics – fixed and removable</li> <li>12. Oral medicine</li> <li>13. Models for computer application in dental medicine</li> <li>14. Profile and competences for the new European dentist.</li> <li>15. What after finishing the study?</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Evaluation of the succes of the dental service in our country.</li> <li>2. Primary, secondary and tertiary information ( function of Central Library of our Dental School</li> <li>3. Contents and levels of dental health and dental services in Croatia.</li> <li>4. The rights and responsibilities of dentist. Codex of ethics and deontology.</li> <li>5. What are the employment possibilities after finishing the study of dental medicine in Croatia?Examinations, assesments and competences? Students affairs?.</li> </ol>
<b>Course leader and associates</b>
<p>Jadranka Keros, PhD, Professor</p> <p>Jelena Dumančić, PhD,Associated Professor</p> <p>Marin Vodanosić, PhD, Associated Professor</p>
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Keros J.Introduction to dental medicine School of Dental Medicine Zagreb 2007.</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Grmek KD; Budak A.. "Uvod u medicinu" (Introduction to Medicine) (1996), Globus, ZagrebSchool of Dental Medicine University of Zagreb: "Obnovljeni Nastavni plan studija doktora stomatologije" (Renewed Teaching Plan for Dentistry Study) (1944), School of Dental Medicine, ZagrebKnežević G. (ed.) Ljetopis: Stomatološki fakultet Sveučilišta u Zagrebu (Yearbook: School of Dental Medicine in Zagreb): 1948-1993, Stomatološki fakultet Sveučilišta u Zagrebu (1994), Zagreb Plasschaert AJM, Holbrook WP, Delap E, Martinez C, Walmsley AD: Profile and Competences for the European Dentist" (last version Nov. 2004) (2004) ADEEPetersen, PE: The World Oral Health Report 2003: continuous improvement of oral health in the 21st century - the approach of the WHO Global Oral Health Programme.Community Dentistry and Oral Epidemiology 31 (Suppl. 1), 3-24.</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Definition of dental education- ethics and deontology.</li> <li>• History of dental medicin.</li> <li>• Education peogramm</li> <li>• Structure and functioning of the dental school</li> </ul>

- Student rights and responsibilities
- The main characteristic of dental care
- Specialisations in dental medicine
- The organization of dental care in Croatia
- The type of personnel in dental medicine.
- The computer and educational, clinical and scientific application.
- What after finishing the study
- How to learn?

### Required skills

### Exam questions

When was founded the school of dental medicine in Zagreb? What is medical ethics? What is deontology? Is there any correlation between ethics and deontology? Organizational and administrative structures of our dental school? What are dean's main duties? What is Faculty council? What is the faculty department? What are the types of personnel in dentistry? How can one describe dental medicine? What does the dental hygienist do? Who are dental therapists? How to become a nurse - dental assistant? Where can one train to be a dental technician in Croatia? List the guidelines of WHO on the development of the dental service? How is the health care of inhabitants in Croatia organized? What specialisations in dental medicine are possible in the Republic of Croatia? What are the aims of health education of the public according to the guidelines of WHO? How can primary prevention in dental health education be classified? What is included in secondary prevention within the scope of dental health education of the population? How can tertiary prevention in dental health education be described? What are the guidelines of WHO for assessing progress in oral health and prevention of oral diseases in a specific social community? What does the expression "Health through oral health" mean? What are the significant changes in the incidence of disease of oral cavity organs? What are the global trends in dental medicine and in dental education? What was the course of the development of dental education in the world? How did the conception of dental caries change? What was the course of the development of dental schooling in Croatia? When was the School of Dental Medicine University of Zagreb founded? What guideline was stressed in the first Statute of the School of Dental Medicine in Zagreb (1963)? What are the features of the "Renewed teaching plan for graduate study of dental medicine? Since when has postgraduate study been organized at the School of Dental Medicine in Zagreb? What are the clinical skills and expertise which a dentist must possess in the European Union? What are the seven fields of work the basic minimum for the European dentist? What is included in the field "Professionalism"? What is included in the field "Communication and interpersonal skills"? What is understood by the field "Basic knowledge, handling information and critical thinking"? What is the field "Collection of clinical data"? How can the fifth field "Diagnosis and preparation of treatment" be presented? What does the sixth field "Establishment and maintenance of oral health" include? What is understood by the seventh field "Advancement of health"? What information can be obtained in the Central Library of the School of Dental Medicine? What does primary information involve? What is the Index to Dental Literature, IDL? Which databases do students of dental medicine have at their disposal and under what conditions? What do visual media mean for dental medicine? What is the basic classification/division of visual media? What are the principles of intraoral macro photography? What is a slide? What are the advantages of video technology over static picture? How can digitalisation of classic visual recordings be created? What does multimedia offer dental medicine? What other presentational systems are available? What are the possibilities for computer application in dental medicine? What is dental informatics? What are the new technologies available for clinical work, research and education in dental medicine? How can the Internet be

used in dental medicine? What are the possibilities for use of the computer in clinical work? What are the advantages and disadvantages of electronic dental cards/records? What are the possibilities of computer use in search of the literature? How can the computer help in rationalisation of administration work in dental surgeries/offices? What determines the relationship between the dentist and patient? How can the mistakes of the dentist be classified? When were Dental Chambers and Syndicates founded? The Geneva formulation of the Hippocratic Oath? When was the Codex of ethics and deontology of the Croatian Dental Chamber passed? What is professional secrecy? What are the rights and responsibilities of the Croatian Dental Chamber? Who issues a licence for independent work for dentists in the Republic of Croatia and how long does it last? Who is bound by the "Codex of medical ethics and deontology of the Croatian Medical Association"? What does "Informed Consent" mean? How to learn? What are the employment possibilities after finishing the school of dental medicine?

### 3.2.91 Introduction to Scientific Work I

Basic information about the course					
Title	Introduction to scientific work I				
Code	71360	Abbreviation	421IUZR1		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Endodontics and Restorative Dentistry				
Course leader	Prof. Ivica Anić, DDS, PhD				
Course load					
	1		Total		
Lectures	5		5		
Seminars	10		10		
ECTS			1.5		
Course description					
<p>Programme of the course „Introduction into scientific work” gives basic knowledge about the aim and the methods for conducting a scientific research and its public presentation and publication in scientific journals. Lectures give students basic and current knowledge in the field of science and basic knowledge about the methods and reasons for making a scientific research. The scientific research has to be genuine, short and clear and has to precisely determine and describe the results. The results of the scientific work have to be compared critically with similar or/and identical and opposite results published by other authors. The aim of the seminars is to prepare the students for coming up with the theme and the aim of the study, browsing of scientific literature and writing and scientifically reasoning certain parts of the scientific work. Students work in groups with imaginary (or real, if any independent study is currently being performed) parameters. Final exam includes theoretical knowledge about scientific work and individual presentation of the scientific article written during practice. The exam is oral.</p>					
Criteria for taking the course exam					
What is graded					
Written exam		Oral exam	Yes	Practical exam	
Seminar	Yes	Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Exam: Oral exam (exam can be in the given in its written form as a test). Knowledge shown during the exam is graded: excellent (5), very good (4), good (3), sufficient (2) and insufficient (1). Students can approach the exam from the course „Introduction into scientific work” after they have finished the 9th semester and if they have fulfilled successfully all the assigned obligations determined by the Statute of the School of Dental Medicine, University in Zagreb At the end of the 9th semester students approach the practical and oral exam from the course „Introduction into scientific work”. Oral part of the exam: Student uses presented and additional literature to prepare for the exam. The literature can be in Croatian and in English language. The exam is public, it is based on previously given exam questions in the programme of the course and the student can not be alone during the exam. One or two students are always listening the exam.</p>					

<b>Weekly teaching plan</b>
<b>1. component</b>
<b>Lecture topics:</b>
<ol style="list-style-type: none"> <li>1. What is a scientific article, categories</li> <li>2. Scientific style</li> <li>3. Parts of the scientific article</li> <li>4. Writing a scientific article and its preparation for publication</li> <li>5. Writing of other articles and thesis</li> <li>6. Evaluation of scientific research</li> </ol>
<b>Seminar topics:</b>
<ol style="list-style-type: none"> <li>1. Subject of the research, browsing of the literature, journals</li> <li>2. Title, authors, introduction</li> <li>3. Introduction and citing of literature</li> <li>4. Materials and methods, results, illustrations</li> <li>5. Results and discussion</li> <li>6. Conclusion and comparison of results</li> <li>7. Indicators of quality of scientific research</li> <li>8. Preparation for publication of scientific article, choosing the journal and evaluation of the journal</li> <li>9. Scientific Project and programs (Frame work)</li> <li>10. Financing of scientific research in Croatia</li> </ol>
<b>Course leader and associates</b>
Prof. Ivica Anić, DDS, PhD Prof. Ivana Miletić, DDS, PhD Prof. Sanja Šegović, DDS, PhD Anja Baraba, DDS, PhD Ivona Bago, DDS
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Vlatko Silobrčić. How to compose, publish and evaluate a scientific. Medicinska naklada – Zagreb ISBN 953-176-219-8</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Edward J Huth. How to write and publish papers in the medical science. Second edition, Williams&amp;Wilkins, 1990, ISBN 0-683-04272-6</li> </ol>
<b>Required knowledge</b>
After finishing the course, student should know to come up with a title of a scientific research, find and process all the literature available, prepare a protocol for experiemental or epidemiological study, know the basic parts of scientific research and about its financing
<b>Required skills</b>
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. Ethics in making, writing and publishing the scientific work?</li> <li>2. Database?</li> </ol>

3. Bibliometrics and scientometrics?
4. Citation in scientific work (citation of literature, relative citation, citation scale)?
5. Basic parts of scientific work?
6. Original scientific article (definition)?
7. Conference communication?
8. Preliminary communication?
9. Invited lecture?
10. Doctoral thesis?
11. Methods of writing scientific work?
12. Data elaboration?
13. Presenting of the results and discussion?
14. Publishing scientific works and selecting journals?
15. Review of the work and results of the review?
16. Primary, secondary, tertiary publication?
17. Thesis, graduation?
18. Rules of writing the scientific work and instructions for the authors?
19. Presentation of scientific research?
20. Protection of authors rights?
21. Scientific projects and young researchers in Croatia?
22. Writing a CV?

### 3.2.92 Introduction to Scientific Work II

Basic information about the course					
Title	Introduction to scientific work II				
Code	71361	Abbreviation	511IUZR2		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	Yes		
Department	Department of Endodontics and Restorative Dentistry				
Course leader	Prof. Ivica Anić, DDS, PhD				
Course load					
	1		Total		
Laboratory practicals	15		15		
ECTS			1.5		
Course description					
<p>Programme of the course „Introduction into scientific work” gives basic knowledge about the aim and the methods for conducting a scientific research and its public presentation and publication in scientific journals. Lectures give students basic and current knowledge in the field of science and basic knowledge about the methods and reasons for making a scientific research. The scientific research has to be genuine, short and clear and has to precisely determine and describe the results. The results of the scientific work have to be compared critically with similar or/and identical and opposite results published by other authors. The aim of the seminars is to prepare the students for coming up with the theme and the aim of the study, browsing of scientific literature and writing and scientifically reasoning certain parts of the scientific work. Students work in groups with imaginary (or real, if any independent study is currently being performed) parameters. During practice, students are provided with a title and results of already published scientific articles and they have to write their own scientific article based on the data obtained and then they compare it to the original article. Final exam includes theoretical knowledge about scientific work and individual presentation of the scientific article written during practice. The exam is oral.</p>					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	Yes
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
<p>Exam: Practical exam (exam can be in the given in its written form as a test). Knowledge shown during the exam is graded: excellent (5), very good (4), good (3), sufficient (2) and insufficient (1). Students can approach the exam from the course „Introduction into scientific work” after they have finished the X semester and if they have fulfilled successfully all the assigned obligations determined by the Statute of the School of Dental Medicine, University in Zagreb. At the end of the X semester students approach the practical and oral exam from the course „Introduction into scientific work”. Practical part of the exam: is regard to the written materials that are given and elaborated on seminars. Students are given the results of already published studies (including the</p>					

title), which determine the issue they have to elaborate. According to the issue, student searches for the corresponding literature for the „Introduction“ part, and tries to determine the materials and methods, with which he could attain given results. After the student has finished the first part successfully, he writes discussion about the materials and methods and results. He presents his work through the Internet to the teacher and colleagues. At the end, student receives the original scientific article and compares it with his own work. Written materials are given on CD, USB-memory stick or by sending it by Internet. As a part of „Introduction into scientific work“, „E-learning“ course is organized in order for students to use Internet during the course.

## Weekly teaching plan

### 1. component

#### Laboratory practicals topics:

Students are divided into the groups of two. They are provided with a title (subject) and results of an already published article, without any other results. Based on the title, students find the literature for the introduction of the article, they also have to come up with methods for conducting the experiment and in the end they discuss the results in comparison to other authors. During the last practice, they compare „their“ article in comparison to the original article.

#### Course leader and associates

Prof. Ivica Anić, DDS, PhD  
 Prof. Ivana Miletić, DDS, PhD  
 Prof. Sanja Šegović, DDS, PhD  
 Anja Baraba, DDS, PhD  
 Ivona Bago, DDS

#### Literature

##### Required literature:

1. Vlatko Silobrčić. Kako sastaviti, objaviti i ocijeniti znanstveno djelo. Medicinska naklada ? Zagreb ISBN 953-176-219-8

##### Recommended literature:

1. Edward J Huth. How to write and publish papers in the medical science. Second edition, Williams&Wilkins, 1990, ISBN 0-683-04272-6

#### Required knowledge

Student should know how to write an introduction part in order for it to be short and clear. They should also know how to prepare a protocol for conducting an experiment and write material and methods section. Student should choose the most important results and present them in text, tables and images without repeating them and discuss the them.

#### Required skills

Student should be able to choose scientific journal for publication of scientific paper and prepare the article for publication, including the correspondence with the editor of the journal.

#### Exam questions

Student is given a title, part of an abstract and results of an already published article and based on the given data, the student writes a protocol and a discussion for the article.

### 3.2.93 Child Neglect and Abuse

Basic information about the course					
Title	Child neglect and abuse				
Code	71362	Abbreviation	521IZZDJ		
Total ECTS points	1.5	Status	Elective		
Exam	Yes	Calculated in grade average	Yes		
Language of teaching	Croatian	e-learning	No		
Department	Department of Paediatric and Preventive Dentistry				
Course leader	Professor Ivana Čuković-Bagić				
Course load					
	1		Total		
Lectures	15		15		
ECTS			1.5		
Course description					
Child neglect and abuse is elective subject which students take in one semester for 15 hours in the form of lectures. The main goal of this course is to educate students about very actual issue, child abuse. It is present not only in other countries of the world but also in our country. The content of this course includes the presentation of general information on child abuse and neglect, the specifics of their recognition, legal protection aspects with special reference to the role and responsibility of the medical profession; as well as a detailed description of dental neglect, which is also a kind of medical abuse that every dentist should know how to recognize it. In this academic year, a visit to the Center for Child Protection Zagreb and the Brave phone is planned.					
Criteria for taking the course exam					
What is graded					
Written exam	Yes	Oral exam		Practical exam	
Seminar		Minor preliminary exam		Major preliminary exam	
Rules of grading and additional information					
The written exam is assessed according to the following rules: 0-50%=1, 51-62%=2, 63-77%=3, 78-89%=4, 90-100%=5					
Weekly teaching plan					
1. component					
Lecture topics:					
1. Introduction – general awareness on child abuse and neglect					
2. Legal aspects in child abuse and neglect protection					
3. How to recognize the child abuse and neglect					
4. Child neglect – the role of the specialist in paediatric and preventive dentistry 1					
5. Child neglect 2					
6. Responsibility of medical professionals – what you need to know about child protection					
7. Child interviewing 1					
8. Child interviewing 2					

<ol style="list-style-type: none"> <li>9. Transgenerational transmission of attachment</li> <li>10. Influence of child abuse and neglect on the brain development – long-term and short-term consequences</li> <li>11. Establishment and work of Center for Child Protection</li> <li>12. Brave phone</li> <li>13. Visit to the Center for Child Protection</li> <li>14. Visit to the Center for Child Protection</li> <li>15. Final discussion and subject evaluation</li> </ol>
<b>Course leader and associates</b>
Professor Ivana Čuković-Bagić
<b>Literature</b>
<b>Required literature:</b>
<ol style="list-style-type: none"> <li>1. Harris J, Sidebotham P, Welbury R. Child protection and the dental team. An introduction to safeguarding children in dental practice. <a href="http://www.cpd.org.uk/">http://www.cpd.org.uk/</a> (Croatian translation)</li> </ol>
<b>Recommended literature:</b>
<ol style="list-style-type: none"> <li>1. Publications of Center for Child Protection Zagreb, Đorđićeva 26, Zagreb (free of charge for students)</li> </ol>
<b>Required knowledge</b>
<ul style="list-style-type: none"> <li>• Responsibility of dentists' and other medical professionals in safeguarding children</li> <li>• Recognizing symptoms of child abuse and neglect with special remarks on dental neglect as a form of medical neglect</li> <li>• Actions that must be taken in case of suspected child abuse</li> <li>• Organization of dental praxis and members of dental team who work with children in dental office</li> <li>• Legal aspects of child protection from abuse and neglect</li> </ul>
<b>Required skills</b>
Skills include mastering level 1 i.e. only theoretical knowledge listed above.
<b>Exam questions</b>
<ol style="list-style-type: none"> <li>1. Child abuse and neglect definition</li> <li>2. Diagnostics of abuse and neglect</li> <li>3. Prevention of abuse and neglect</li> <li>4. Basic legal acts connected to responsibility of professionals who work with children</li> <li>5. The role of dental team in recognizing and prevention of abuse</li> <li>6. Actions for reporting of child abuse and neglect</li> </ol>

### **3.3 Organization of the study program, study cycles and students' obligations.**

#### **Admission requirements for the following semester and the following year of study as well as the prerequisites for enrollment of a particular course**

Examinations terms schedule is posted on the Department boards as well as on the official Web site of the School at the beginning of the academic year and is a constituent part of the Curriculum. Regular examination terms are as follows: winter, summer and autumn. There are two examination periods within every examination term with at least 8 days in between them.

A student who satisfies all the criteria set by the Curriculum may take the exams. All exams are public and their results are also open to public. The examination format, schedule and dates, cancellation, examination procedure which follows a student's complaint, applications and other issues regarding the examinations are set by the School.

A student can sit for every exam only four times. An examination committee is formed in case a student sits for the fourth time. A student who fails the exam for the fourth time can enroll the same course only one more time in further academic years.

In the course of the academic year, there is no prescribed order of taking the exams. In order to enroll in the next year of study, it is necessary to obtain 56 ECTS points.

All the passed exams in the first year of study are prerequisite to enroll in the third year of study. All the passed exams in the second year of study are prerequisite to enroll in the fourth year of study. All the passed exams in the third year of study are prerequisite to enroll in the fifth year of study. All the passed exams in the fourth year of study are prerequisite to enroll in the sixth year of study.

The passed exam in General Pharmacology is a prerequisite to enroll in Dental Pharmacology.

The passed exam in General Radiology is a prerequisite to enroll in Dental Radiology.

The passed exam in Preclinical Oral Surgery is a prerequisite to enroll in Oral Surgery I.

The passed exam in Preclinical Periodontology is a prerequisite to enroll in Clinical Periodontology.

The passed exam in Preclinical Endodontics is a prerequisite to enroll in Endodontics I.

The passed exam in Preclinical Oral Medicine is a prerequisite to enroll in Oral Medicine.

The passed exam in Preclinical Orthodontics is a prerequisite to enroll in Orthodontics.

### **3.4 List of courses and/or modules which can be taught in a foreign language**

The following courses can be taught in English:

Cariology

Endodontics

Forensic dentistry

Oral medicine

Pediatric dentistry

Periodontology

Restorative dentistry

Sociology of the Dental Profession

Biology

Chemistry

Physics

Biochemistry

Anatomy

Histology and Embryology

Physiology

English in Dental Medicine I, II

### **3.5 Criteria and conditions of ECTS credit transfer – allocation of ECTS credit value to courses which the students can select from other academic graduate programs within the same university or from other institutions of higher education**

On the basis of thoroughly explained and substantiated request and an evaluation of the compatibility of the program followed at the host institution as well as the program of the home institution, the Dean decides on the recognition of the period of mobility (ECTS points, passed courses, obtained grades and practicals) in compliance with the Statute of international mobility of the University of Zagreb.

Comparison and the assessment of compatibility of the study programs, allocation of ECTS points, courses, grades obtained as well as of the professional practical experience is performed by the ECTS coordinator in collaboration with the Dean or the Vice Dean of Academic Affairs and the course leader.

When practical experience is not an integrated part of the study program at the home institution, information on the completed practical experience will be recorded into the student's supplemental transcript.

### **3.6 Completion of academic studies**

The academic graduate program ends when all the exams have been passed followed by the writing and public defending of the graduate thesis.

Teachers are required to deliver a list of topics for the students' graduate theses which are posted on message boards of the School.

Students write their thesis during the last year of their academic graduate program. They publicly defend the thesis before the committee consisting of three members of the teaching staff.

A professional or a scientific paper written by the student in the course of the study may be accepted as a graduation thesis with the approval of the Graduate Theses Committee.

## 4 Prerequisites for performing the academic study program

### 4.1 Premises wherein the program is realized

- School of Dental Medicine, University of Zagreb, Gundulićeva street 5 and Gundulićeva street 3, Zagreb
- School of Medicine, University of Zagreb, Šalata 3, Zagreb
- Clinical Hospital Center „Sestre milosrdnice“, Vinogradska cesta 29, Zagreb
- Clinical Hospital „Dubrava“, Avenija Gojka Šuška 6, Zagreb
- School of Public Health “Andrija Štampar“, Rockefellerova street 4, Zagreb
- Clinic for Infectious Diseases „dr. Fran Mihaljević“, Mirogojska street 8, Zagreb
- Clinical Hospital Center Zagreb, Šalata 2, Zagreb
- Dental clinic, Clinical Hospital Center Zagreb, Gundulićeva street 5, Zagreb

### 4.2 Facilities and equipment

Biological sciences courses are realised at the Medical School premises at Šalata, based on a long-standing contract between the two schools. Biology courses for dental students are greatly similar to those provided for medical students. Thus the mentioned system seems to be the most logical and rational, and it has been organised in this way for many years with the accord of the two deans, to the satisfaction of both sides.

Medical sciences courses can hardly be imagined without the support of the clinical hospital and therefore the following hospitals serve as teaching bases for medical courses:

- Clinical Hospital Center „Sestre milosrdnice“, Vinogradska cesta 29, Zagreb
- Clinical Hospital „Dubrava“, Avenija Gojka Šuška 6, Zagreb
- Clinic for Infectious Diseases „dr. Fran Mihaljević“, Mirogojska street 8, Zagreb
- Clinical Hospital Center Zagreb, Šalata 2, Zagreb

Courses in preclinical and clinical dental medicine are held at the School of Dental Medicine, Gundulićeva 5 and 3, and to a smaller extent at the clinical hospital “Dubrava ” which the School collaborates with since 1995.

Eight departments of the School of Dental Medicine are situated at the premises of Gundulićeva Street 5: Department of Dental Anthropology, Department of Endodontics and Restorative Dental Medicine, Department of Pedodontics, Department of Oral Medicine, Department of Oral Surgery, Department of Orthodontics, Department of Periodontology and Department of Prosthodontics.

At the School of Dental Medicine there are two smaller lecture-rooms, five seminar classrooms, one preclinical classroom, two laboratories, one X-ray room and a library, which is very important for the school activities.

The Central Dental Medicine Library is the largest library for dental medicine in the Republic of Croatia. It contains over 4000 monographic publications, over 11 000 periodicals, and about 1 200 dissertations.

The School of Dental Medicine is equipped with the state of the art dental, laboratory and informatics equipment by the world’s leading manufacturers and it entirely complies with world standards.

### 4.3 Full-time teaching staff participating in the courses

Prezime	Ime	Zvanje
<b>Alajbeg</b>	Ivan	Associate Professor
<b>Alajbeg</b>	Iva	Associate Professor
<b>Andabak</b>	Ana	Junior Researcher – assistant
<b>Anić</b>	Ivica	Full Professor with tenure
<b>Anić Milošević</b>	Sandra	Assistant Professor
<b>Altabas</b>	Karmela	Senior Research Assistant
<b>Aurer</b>	Andrej	Assistant Professor
<b>Badel</b>	Tomislav	Assistant Professor
<b>Badovinac</b>	Ana	Research Assistant
<b>Bagarić</b>	Irena	Senior Lecturer
<b>Bago</b>	Ivona	Junior Researcher – assistant
<b>Baličević</b>	Drinko	Assistant Professor
<b>Baraba</b>	Anja	Junior Researcher – assistant
<b>Baričević</b>	Marinka	Research Assistant
<b>Bašić</b>	Krešimir	Junior Researcher – assistant
<b>Bašić Kes</b>	Vanja	Assistant Professor
<b>Bekavac-Bešlin</b>	Miroslav	Full Professor with tenure
<b>Bergman Gašparić</b>	Lana	Junior Researcher – assistant
<b>Biočić</b>	Josip	Research Assistant
<b>Bolanča</b>	Ante	Full Professor – first term
<b>Božić</b>	Darko	Assistant Professor
<b>Brailo</b>	Vlaho	Assistant Professor
<b>Brajdić</b>	Davor	Research Assistant
<b>Brkić</b>	Hrvoje	Full Professor with tenure
<b>Buković</b>	Dino	Assistant Professor
<b>Buljan</b>	Danijel	Full Professor – first term
<b>Buljan</b>	Marija	Junior Researcher – assistant
<b>Carek</b>	Andreja	Junior Researcher – assistant
<b>Cerjan-Letica</b>	Gordana	Associate Professor
<b>Cvitanović-Šojat</b>	Ljerka	Assistant Professor
<b>Čelebić</b>	Asja	Full Professor with tenure
<b>Čimić</b>	Samir	Junior Researcher – assistant
<b>Čuković Bagić</b>	Ivana	Full Professor
<b>Čupić</b>	Hrvoje	Associate Professor
<b>Ćatić</b>	Amir	Assistant Professor
<b>Ćatović</b>	Adnan	Full Professor with tenure
<b>Čelić</b>	Robert	Assistant Professor
<b>Damjanović</b>	Vladimir	Research Assistant
<b>Dukić</b>	Walter	Assistant Professor

<b>Dulčić</b>	Nikša	Assistant Professor
<b>Dumančić</b>	Jelena	Assistant Professor
<b>Filipović-Zore</b>	Irina	Associate Professor
<b>Fröbe</b>	Ana	Assistant Professor
<b>Gabrić Pandurić</b>	Dragana	Junior Researcher – assistant
<b>Gaćina</b>	Petar	Assistant Professor
<b>Galić</b>	Nada	Associate Professor
<b>Gamulin</b>	Ozren	Assistant Professor
<b>Geber</b>	Goran	Research Assistant
<b>Glavina</b>	Domagoj	Full Professor
<b>Goršeta</b>	Kristina	Junior Researcher – assistant
<b>Granić</b>	Marko	Junior Researcher – assistant
<b>Grgurević</b>	Lovorka	Assistant Professor
<b>Grgurević</b>	Jakša	Associate Professor
<b>Grgurević</b>	Lovro	Junior Researcher – assistant
<b>Husedžinović</b>	Ino	Full Professor with tenure
<b>Illeš</b>	Davor	Junior Researcher – assistant
<b>Iveković</b>	Renata	Full Professor
<b>Ivić-Kardum</b>	Marija	Assistant Professor
<b>Jakovac</b>	Marko	Assistant Professor
<b>Janković</b>	Bernard	Assistant Professor
<b>Jukić</b>	Jelka	Research Assistant
<b>Jurić</b>	Hrvoje	Associate Professor
<b>Karlović</b>	Zoran	Assistant Professor
<b>Katanec</b>	Davor	Associate Professor
<b>Katunarić</b>	Marina	Associate Professor
<b>Keros</b>	Jadranka	Full Professor with tenure
<b>Klarić</b>	Petar	Associate Professor
<b>Klarić</b>	Eva	Junior Researcher – assistant
<b>Knezović Zlatarić</b>	Dubravka	Associate Professor
<b>Knežević</b>	Alena	Assistant Professor
<b>Knežević</b>	Predrag	Assistant Professor
<b>Komar</b>	Dragutin	Full Professor – first term
<b>Kotarac Knežević</b>	Ana	Junior Researcher – assistant
<b>Kovačić</b>	Nataša	Assistant Professor
<b>Krajinović</b>	Vladimir	Research Assistant
<b>Kranjčić</b>	Josip	Junior Researcher – assistant
<b>Kraljević-Šimunković</b>	Sonja	Associate Professor
<b>Krilov</b>	Dubravka	Associate Professor
<b>Krmek</b>	Silvana	Associate Professor
<b>Krolo</b>	Ivan	Full Professor – first term

<b>Kuna</b>	Krunoslav	Assistant Professor
<b>Kuna</b>	Tihomir	Assistant Professor
<b>Kusić</b>	Zvonko	Full Professor with tenure
<b>Lapter Varga</b>	Marina	Full Professor – first term
<b>Ledinsky</b>	Mario	Full Professor
<b>Lončar</b>	Božana	Junior Researcher – assistant
<b>Lovrenčić-Huzjan</b>	Arijana	Associate Professor
<b>Lovrić</b>	Jasna	Associate Professor
<b>Lugović Mihić</b>	Liborija	Assistant Professor
<b>Lukač</b>	Josip	Full Professor with tenure
<b>Ljubičić</b>	Neven	Associate Professor
<b>Macan</b>	Darko	Full Professor – first term
<b>Majstorović</b>	Martina	Associate Professor
<b>Mandić</b>	Zdravko	Full Professor
<b>Manola</b>	Šime	Research Assistant
<b>Matejčić</b>	Aljoša	Full Professor
<b>Matijević</b>	Jurica	Junior Researcher – assistant
<b>Matošević</b>	Danijela	Junior Researcher – assistant
<b>Mehulić</b>	Ketij	Full Professor – first term
<b>Meštrović</b>	Senka	Full Professor – first term
<b>Mihatov-Štefanović</b>	Iva	Research Assistant
<b>Mijić</b>	August	Full Professor – first term
<b>Milardović</b>	Slađana	Junior Researcher – assistant
<b>Milenović</b>	Aleksandar	Assistant Professor
<b>Miletić</b>	Ivana	Full Professor – first term
<b>Mravak-Stipetić</b>	Marinka	Full Professor with tenure
<b>Negovetić-Vranić</b>	Dubravka	Assistant Professor
<b>Nikolić</b>	Marko	Research Assistant
<b>Njemirovskij</b>	Vera	Associate Professor
<b>Pandurić</b>	Vlatko	Assistant Professor
<b>Pavelić</b>	Božidar	Associate Professor
<b>Pelivan</b>	Ivica	Junior Researcher – assistant
<b>Perić</b>	Berislav	Assistant Professor
<b>Peroš</b>	Krisitna	Research Assistant
<b>Peršec</b>	Jasminka	Research Assistant
<b>Peršić</b>	Sanja	Junior Researcher – assistant
<b>Petric Vicković</b>	Ivanka	Senior Research Assistant
<b>Petričević</b>	Nikola	Junior Researcher – assistant
<b>Pintarić</b>	Hrvoje	Assistant Professor
<b>Plančak</b>	Darije	Full Professor with tenure
<b>Podoreški Zadravec</b>	Dijana	Research Assistant

<b>Prpić-Mehićić</b>	Goranka	Full Professor with tenure
<b>Prskalo</b>	Katica	Associate Professor
<b>Puhar</b>	Ivan	Junior Researcher – assistant
<b>Roša</b>	Jagoda	Full Professor – first term
<b>Rošin-Grget</b>	Kata	Associate Professor
<b>Sakoman</b>	Slavko	Full Professor with tenure
<b>Savić</b>	Ivana	Junior Researcher – assistant
<b>Simeon</b>	Paris	Assistant Professor
<b>Staničić</b>	Tonči	Associate Professor
<b>Stipetić-Ovčariček</b>	Jasmina	Full Professor – first term
<b>Strujić</b>	Mihovil	Junior Researcher – assistant
<b>Sušić</b>	Mato	Assistant Professor
<b>Šegović</b>	Sanja	Associate Professor
<b>Šerić</b>	Vesna	Associate Professor
<b>Šimić</b>	Goran	Associate Professor
<b>Šitum</b>	Mirna	Full Professor – first term
<b>Škerk</b>	Višnja	Full Professor with tenure
<b>Škrinjarić</b>	Ilija	Full Professor with tenure
<b>Škrinjarić</b>	Tomislav	Junior Researcher – assistant
<b>Šlaj</b>	Mladen	Full Professor with tenure
<b>Šlaj</b>	Martina	Assistant Professor
<b>Štefanac-Papić</b>	Jadranka	Full Professor with tenure
<b>Štefić</b>	Lidija	Senior Lecturer
<b>Šutej</b>	Ivana	Research Assistant
<b>Tarle</b>	Zrinka	Full Professor with tenure
<b>Trkanjec</b>	Zlatko	Full Professor – first term
<b>Troskot</b>	Branko	Assistant Professor
<b>Trotić</b>	Robert	Associate Professor
<b>Uglešić</b>	Vedran	Associate Professor
<b>Ulovec</b>	Zlatko	Assistant Professor
<b>Vagić</b>	Davor	Assistant Professor
<b>Valentić-Peruzović</b>	Melita	Full Professor with tenure
<b>Verzak</b>	Željko	Associate Professor
<b>Vidović</b>	Dinko	Research Assistant
<b>Viskić</b>	Joško	Junior Researcher – assistant
<b>Vodanović</b>	Marin	Junior Researcher – assistant
<b>Vojvodić</b>	Denis	Full Professor – first term
<b>Vražić</b>	Domagoj	Junior Researcher – assistant
<b>Vučić</b>	Majda	Assistant Professor
<b>Vučičević-Boras</b>	Vanja	Assistant Professor
<b>Vuletić</b>	Lea	Research Assistant

<b>Zajc</b>	Ivan	Junior Researcher – assistant
<b>Zakanj</b>	Zora	Assistant Professor
<b>Zoričić</b>	Zoran	Assistant Professor
<b>Zovak</b>	Mario	Assistant Professor
<b>Žabarović</b>	Domagoj	Research Assistant
<b>Žagar</b>	Maja	Junior Researcher – assistant
<b>Živko-Babić</b>	Jasenska	Full Professor with tenure

#### 4.4 Part-time teaching staff participating in the courses by contract of collaboration

<b>Prezime</b>	<b>Ime</b>	<b>Zvanje</b>
<b>Balarin</b>	Maja	Research Assistant
<b>Banek</b>	Ljerka	Associate Professor
<b>Bader</b>	Nataša	Research Assistant
<b>Belev</b>	Borislav	Research Assistant
<b>Bradamante</b>	Želimir	Full Professor with tenure
<b>Budimir</b>	Ana	Assistant Professor
<b>Bulić-Jakuš</b>	Floriana	Full Professor with tenure
<b>Čačić Hribljan</b>	Melita	Research Assistant
<b>Delaš</b>	Ivančica	Associate Professor
<b>Dolanski-Babić</b>	Sanja	Assistant Professor
<b>Feher-Turković</b>	Lana	Research Assistant
<b>Foretić</b>	Blaženka	Assistant Professor
<b>Gajović</b>	Srećko	Associate Professor
<b>Gamulin</b>	Ozren	Assistant Professor
<b>Grbeša</b>	Đurđica	Associate Professor
<b>Grgurević</b>	Lovorka	Assistant Professor
<b>Ivanković</b>	Davor	Full Professor with tenure
<b>Ježek</b>	Davor	Associate Professor
<b>Jurić-Lekić</b>	Gordana	Associate Professor
<b>Kalenić</b>	Smilja	Full Professor with tenure
<b>Katavić</b>	Vedran	Assistant Professor
<b>Katušić</b>	Ana	Research Assistant
<b>Kovačić</b>	Nataša	Assistant Professor
<b>Krilov</b>	Dubravka	Associate Professor
<b>Kusić</b>	Zvonko	Full Professor with tenure
<b>Lovrić</b>	Jasna	Associate Professor
<b>Nikuševa Martić</b>	Tamara	Research Assistant
<b>Pašalić</b>	Daria	Assistant Professor

<b>Pećina-Šlaus</b>	Nives	Associate Professor
<b>Petanjek</b>	Zdravko	Associate Professor
<b>Picek</b>	Igor	Research Assistant
<b>Plečko</b>	Vanda	Associate Professor
<b>Pleština</b>	Stjepko	Associate Professor
<b>Šerman</b>	Ljiljana	Assistant Professor
<b>Šimić</b>	Goran	Associate Professor
<b>Vinter</b>	Ivan	Full Professor with tenure
<b>Vlahović</b>	Maja	Associate Professor
<b>Vukelić</b>	Željka	Assistant Professor

#### 4.5 Information on engaged teachers

General Information	
Name	Iva Alajbeg
Employee designation	IA009
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department removable prosthodontics
E-mail	ialajbeg@sfzg.hr
History of Promotions	
2007 Assistant Professor	
2011 Associate Professor	
Participation in Teaching	
Removable prosthodontics (G)	
Preclinc and laboratory removable prosthodontics (G)	
Occlusion (G) – leader	
Participation in Scientific Projects	
Investigator in scientific projects supported by the Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian society of prosthodontics	
International association for dental research	
Croatian dental chamber	
International College of Prosthodontics	
Foreign Languages	
English, German, Italian	

General Information	
Name	Ivan Alajbeg
Employee designation	IA010
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Oral Medicine
E-mail	alajbeg@sfzg.hr
History of Promotions	
2006 Assistant Professor	
2011 Associate Professor	
Participation in Teaching	
Oral Medicine (U)	
Smoking - a Disease and Treatment (U) - leader	
Dental Care of Medically Complex Patients (U) - leader	
Participation in Scientific Projects	
1998. Oral Medicine in Geriatrics - MSES (grant #065008)	
2001. Oral Medicine Online (IT project) - MSES (grant #076-2001)	
2002. Oral Precancerous Lesions and Paraneoplastic Diseases - MSES (grant # 0065008)	
2007. Salivary Markers of Oral Diseses and Application - MSES (grant #065-0650445-0485)	
2007. Non-Aromatic Naphthalane - Composition Investigation and Biologic Effects on Epithelial Tissues, MSES (grant # 065-0650445-1277) - Principal Investigator	
Membership in Professional and Scientific Assoaciations	
Croatian Society for Oral Medicine and Pathology - President	
European Association of Oral Medicine	
Croatian Medical Association	
Croatian Dental Society	
Croatian Medical and Biological Engineering Society	
Croatian Pharmacological Society	
Croatian Dental Chamber	
Foreign Languages	
English	

General Information	
Name	Karmela Altabas
Employee designation	KA009
Title	Senior assistant
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of internal medicine
E-mail	karmela.altabas@gmail.com
History of Promotions	
2011 Senior assistant	
Participation in Teaching	
Internal medicine (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian society for hypertension	
Croatian dental association	
European Renal Association,	
European Dialysis and Transplant Association	
Foreign Languages	
English	

General Information	
Name	Ana Andabak
Employee designation	AA026
Title	Scientific Novice - Assistant
Academic degree	DMD degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Oral Medicine
E-mail	anaandabak@gmail.com
History of Promotions	
2009 Scientific Novice - Assistant	
Participation in Teaching	
Oral Medicine (U)	
Participation in Scientific Projects	
Non-Aromatic Naphthalene - Composition Investigation and Biologic Effects on Epithelial Tissues (MSES)	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Society for Oral Medicine and Pathology	
Croatian Medical Association	
European Association of Oral Medicine	
Foreign Languages	
English, German	

General Information	
Name	Ivica Anić
Employee designation	IA008
Title	Full Professor – tenured position
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	anic@sfzg.hr
History of Promotions	
1993 Assistant Professor 1996 Associate Professor 2000 Full Professor – first election 2005 Full Professor – tenured position	
Participation in Teaching	
Cariology (D) Restorative Dental Medicine (D) Endodontics (D) Formulation of a Scientific Work (P) - leader Efficiency Investigation of Instrumentation Techniques and Root Canal Filling (P) - leader Evaluation and Testing Methods for Laser Impact on Hard and Soft Dental Tissues (P) - leader	
Participation in Scientific Projects	
1996 - 2002 Experimental and Clinical Endodontology, MSES (0650005) 2002 - 2006 Experimental and Clinical Endodontology, MSES (0065999) 2007 - Experimental and Clinical Endodontology, MSES (065-0650444-0418) 2007 – Basic and Applied Research of Oral Health and Dental Materials, MSES	
Membership in Professional and Scientific Associations	
International Association for Dental Research Croatian Academy of Medical Science Alumni association KOUHUKAI, Showa University Tokyo Croatian Endodontic Society Croatian Medical and Biological Engineering Society European Society of Endodontology Croatian Medical Association	
Foreign Languages	
English	

General Information	
Name	Sandra Anić Milošević
Employee designation	SA002
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Orthodontics
E-mail	sanic@sfzg.hr
History of Promotions	
1997 Assistant	
2009 Assistant Professor	
Participation in Teaching	
Orthodontics (U)	
Preclinical orthodontics (U)	
Dental photography (U)	
Participation in Scientific Projects	
New diagnostic methods in orthodontics and biocompatibility of appliances (MSES)	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Orthodontic Society	
World Federation of Orthodontists	
European Orthodontic Society	
Foreign languages	
English, French	

General Information	
Name	Andrej Aurer
Employee designation	AA009
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of Dental Medicine
Employer	Dental School University of Zagreb
Unit	Department of Periodontology
E-mail	aurer@sfzg.hr
History of Promotions	
1996 Assistant	
2007 Assistant Professor	
Participation in Teaching	
Clinical Periodontology (U)	
Pre-clinical Periodontology (U)	
Gerontostomatology (U)	
Participation in Scientific Projects	
Membership in Professional and Scientific Associations	
CCDM	
CSP at CMA	
European Federation of Periodontics	
Foreign Languages	
English, German	

General Information	
Name	Tomislav Badel
Employee designation	TB013
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Removable Prosthodontics
E-mail	badel@sfzg.hr
History of Promotions	
2008 Assistant Professor	
Participation in Teaching	
Preclinical and laboratory removable prosthodontics (G) Removable prosthodontics (G) Occlusion and temporomandibular dysfunction (P)	
Participation in Scientific Projects	
1995 Clinical procedures and materials in removable prosthodontics - MSES (grant #3-02-330) 1998 Occlusion and craniomandibular dysfunction - MSES (grant #065010) 2007 Occlusion and draniomandibular dysfunction - MSES (grant #065-0650448-0438) 2008 Examination of bone tissue stomatognathic system - MSES (grant #065-0650445-0441)	
Membership in Professional and Scientific Assoaciations	
Croatian Dental Society Croatian Society for Prosthetic Dentistry Croatian Society for Regional Anesthesia and Analgesia	
Foreign Languages	
English, German	

General Information	
Name	Ana Badovinac
Employee designation	AB140
Title	Assistant
Academic degree	DMD degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Periodontology
E-mail	badovinac@sfzg.hr
History of Promotions	
2009 Assistant	
Participation in Teaching	
Clinical Periodontology (U)	
Pre-clinical Periodontology (U)	
Participation in Scientific Projects	
Systemic Aspects in Periodontal Deasese Onset – MSES (0650650444-0415)	
Membership in Professional and Scientific Assoaciations	
Croatian Society for Periodontology	
Croatain Medical Association	
Foreign Languages	
English, Italian	

General information	
Name	Irena Bagarić
Employee designation	IB039
Title	Senior lecturer
Academic degree	Mag. Cin. University Degrees
Professional title	Mag. Cin. professor
Employer	School of dental medicine University of Zagreb
Unit	Department for basic and social studies
E-mail	bagaric@sfzg.hr
History of Promotions	
Lecturer	
Senior lecturer	
Participation in Teaching	
Physical education and sports (G)	
Participation in Scientific Projects	
"Healthy University" combined project of Association of Physical Education Teachers of the University of Zagreb and Zagreb Institute of Public Health	
Membership in Professional and Scientific Associations	
University of Zagreb, Sports Services, General Manager Association of Physical Education Teachers of the University of Zagreb, President Federation of Physical Education Teachers at the Higher Education Institutions of Croatia, President Zagreb University Sports Association, EC member Sports Association of Dental Medicine Students, President ENAS, European Network of Academic Sports Services, member	
Foreign Languages	
English, German, Spanish	

General Information	
Name	Ivona Bago
Employee designation	IB164
Title	Junior Researcher - Assistant
Academic degree	High Expertise
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	ivonabago@yahoo.com
History of Promotions	
2010 Junior Researcher - Assistant	
Participation in Teaching	
Restorative Dental Medicine (D)	
Endodontics (D)	
Participation in Scientific Projects	
„Experimental and Clinical Endodontology“ br. 065-0650444-041810	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General Information	
Name	Drinko Baličević
Employee designation	DB054
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of pathology
E-mail	dbalicevic@sfzg.hr
History of Promotions	
2005 Assistant professor	
Participation in Teaching	
General pathology (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
Croatian society of pathology and forensic medicine	
Croatian society of gastroenterology ju	
Foreign Languages	
English	

General Information	
Name	Anja Baraba
Employee designation	AB090
Title	Junior Researcher - Assistant
Academic degree	High Expertise
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	baraba@sfzg.hr
History of Promotions	
2007 Junior Researcher - Assistant	
Participation in Teaching	
Restorative Dental Medicine (D)	
Endodontics (D)	
Introduction to Scientific Work (D)	
Participation in Scientific Projects	
„Experimental and Clinical Endodontology“ br. 065-0650444-041810	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
Croatian Society for Esthetic Dentistry	
Foreign Languages	
English, French	

General Information	
Name	Marinka Baričević
Employee designation	MB259
Title	Assistant
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Oral Medicine
E-mail	baranovic@inet.hr
History of Promotions	
2009 Assistant	
Participation in Teaching	
Oral Medicine (U)	
Participation in Scientific Projects	
Non-Aromatic Naphthalane - Composition Investigation and Biologic Effects on Epithelial Tissues (MSES)	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, Italian, German	

General Information	
Name	Krešimir Bašić
Employee designation	KB063
Title	Assistant
Academic degree	Assistant
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Chair of pharmacology
E-mail	basic@sfzg.hr
History of Promotions	
2011 Assistant	
Participation in Teaching	
General pharmacology (G)	
Dental pharmacology (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Foreign Languages	
English	

General Information	
Name	Vanja Bašić Kes
Employee designation	VB099
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical Hospital Center Sestre Milosrdnice
Unit	Chair of neurology
E-mail	vanjakes@net.hr
History of Promotions	
2009 Assistant Professor	
Participation in Teaching	
Neurology (D)	
Pain (D) - leader	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Foreign Languages	
English	

Osnovne informacije	
Name	Miroslav Bekavac Bešlin
Employee designation	MB082
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical Hospital Center Sestre Milosrdnice
Unit	Chair of surgery
E-mail	miroslav.bekavac.beslin@kbcsm.hr
Povijest izbora u zvanja	
1993 assistant	
1997 assistant professor	
2001 associate professor	
2005 full professor	
2010 full professor in	
Sudjelovanje u nastavi predmeta	
General surgery (D)	
Sudjelovanje u znanstvenim projektima	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Članstva u stručnim i znanstvenim udrugama	
Strani jezici kojima se služi	
English, Germany	

General Information	
Name	Lana Bergman Gašparić
Employee designation	LB040
Title	Junior Researcher
Academic degree	University Degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	lbergman@sfzg.hr
History of Promotions	
2004 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G)	
Fixed prosthodontics (G)	
Participation in Scientific Projects	
Teeth, prosthetic materials and prosthetic appliances in adolescent and gerontological population	
Membership in Professional and Scientific Associations	
Croatian Society for Prosthetic Dentistry	
IADR	
European Prosthodontic Association	
College of Gerodontology	
Foreign Languages	
English, Italian	

General information	
Name	Josip Biočić
Employee designation	JB101
Title	Assistant
Academic degree	D.M.D.
Professional title	D.M.D.
Employer	University Hospital Dubrava
Unit	Department of Oral Surgery
E-mail	biocic.josip@gmail.com
History of Promotions	
2011. Assistant	
Participating in Teaching	
Oral Surgery – graduate study	
Participating in Scientific Projects	
Revascularisation of oral structures after traumatic damage	
HRSTON	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

Osnovne informacije	
Name	Ante Bolanča
Employee designation	AB037
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical Hospital Center Sestre Milosrdnice
Unit	Chair of oncology and nuclear medicine
E-mail	abolanca@hotmail.com
Povijest izbora u zvanja	
1991. assistant	
1999. assistant professor	
2004. associate professor	
Sudjelovanje u nastavi predmeta	
Clinical oncology (D)	
Sudjelovanje u znanstvenim projektima	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Članstva u stručnim i znanstvenim udrugama	
Croatian oncology society, UICM, ESMO	
Strani jezici kojima se služi	
English, Germany, Italian	

General Information	
Name	Darko Božić
Employee designation	DB056
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Periodontology
E-mail	bozic@sfzg.hr
History of Promotions	
2001 Scientific Novice - Assistant	
2011. Assistant Professor	
Participation in Teaching	
Clinical Periodontology (U)	
Pre-clinical Periodontology (U)	
Participation in Scientific Projects	
Systemic Aspects in Periodontal Deasese Onset – MSES (0650650444-0415)	
Membership in Professional and Scientific Assoaciations	
Croatian Society for Periodontology	
European federation of periodontology	
CMA	
Croatian Society for Dental Implantology	
Foreign Languages	
English, Slovene	

General Information	
Name	Vlaho Brailo
Employee designation	VB032
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Oral Medicine
E-mail	brailo@sfzg.hr
History of Promotions	
2004 Scietific Novice - Assistant	
2010 Assistant Professor	
Participation in Teaching	
Oral Medicine (U)	
Dental Care of Medically Complex Patients	
Participation in Scientific Projects	
2007. Salivary Markers of Oral Diseses and Application	
2004 – 2006. Oral Precancerous Lesions and Paraneoplastic Diseases	
Membership in Professional and Scientific Assoaciations	
Croatian Society for Oral Medicine and Pathology	
Croatian Medical Association	
Croatian Dental Society	
European Association of Oral Medicine	
Croatian Dental Chamber	
Foreign Languages	
English	

General information	
Name	Davor Brajdić
Employee designation	DB193
Title	Assistant
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	University Hospital Dubrava
Unit	Department of Oral Surgery
E-mail	dbrajdic@kbd.hr
History of Promotions	
2011. Assistant	
Participating in Teaching	
Oral Surgery – graduate study	
Participating in Scientific Projects	
Revascularisation of oral structures after traumatic damage (Grant No. 065-1080057-0429)	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Medical Association	
Croatian Society for esthetic dentistry	
Croatian Society for oral surgery	
Croatian Society for dental Implantology	
Croatian Society for maxillofacial, plastic and reconstructive head and neck surgery	
Foreign Languages	
English, German, Russian	

Osnovne informacije	
Name	Hrvoje Brkić
Employee designation	HB008
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of dental anthropology
E-mail	brkic@sfzg.hr
Povijest izbora u zvanja	
1997 assistant professor 2000 associate professor 2004 full professor 2009 full professor in tense	
Sudjelovanje u nastavi predmeta	
Tooth morphology with dental anthropology (G) Forensic dental medicine (G) - leader Dental identification (P) - leader Craniofacial identification (P) - leader Forensic dentistry (P) - leader	
Sudjelovanje u znanstvenim projektima	
Investigator in scientific project supported by Ministry of science, education and sports 1991 Craniofacial characteristics in gonadal dysgenesis 1996 Dental identification of war victims in Croatia 2002 Tooth analysis in human remains in Croatia 2006 Human dentition in forensic and archaeological remains 2009 HRSTON	
Članstva u stručnim i znanstvenim udrugama	
Croatian dental association Croatian society of forensic dentistry Croatian endodontic society International Association for Dental Research International Association of Forensic Odonto-Stomatology	
Strani jezici kojima se služi	
English	

General Information	
Name	Dino Buković
Employee designation	DB057
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Removable Prosthodontics
E-mail	bukovic@sfzg.hr
History of Promotions	
1999 Junior Researcher	
2009 Assistant Professor	
Participation in Teaching	
Preclinical and laboratory removable prosthodontics (G)	
Removable prosthodontics (G)	
Participation in Scientific Projects	
The impact of the retention of total and partial dentures to pronunciation - MSES (grant #065901)	
Membership in Professional and Scientific Associations	
Foreign Languages	
English	

General Information	
Name	Danijel Buljan
Employee designation	DB079
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of psychology
E-mail	danije.buljan@kbcsm.hr
History of Promotions	
1997 assistant professor	
2003 associated professor	
2008 full professor	
Participation in Teaching	
Psychology (G)	
Dental medicine in elderly population (G)	
Dental psychology (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian association for biology and psychopharmacology	
World Federation of Societies of Biological Psychiatry	
Foreign Languages	
English	

General Information	
Name	Marija Buljan
Employee designation	MB231
Title	Senior assistant
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of dermatovenerology
E-mail	buljan.marija@gmail.com
History of Promotions	
2008 assistant	
2011 senior assistant	
Participation in Teaching	
Dermatovenerology (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian dermatovenerological society	
European Academy od Dermatology and Venereology	
International Dermoscopy Society	
Foreign languages	
English, Germany, Italian	

General Information	
Name	Andreja Carek
Employee designation	AC007
Title	Junior Researcher
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	acarek@sfzg.hr
History of Promotions	
2003 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G)	
Fixed prosthodontics (G)	
Participation in Scientific Projects	
Investigation of the therapeutic efficacy of prosthetic restorative materials - MSES (grant #065-0650448-0439)	
Membership in Professional and Scientific Associations	
Croatian Society for Prosthetic Dentistry	
Croatian Dental Chamber	
European Prosthodontic Association	
Croatian Society for Materials and Tribology	
Croatian Society for Dental Implantology	
Foreign Languages	
English, German	

General Information	
Name	Gordana Cerjan-Letica
Employee designation	GC003
Title	Associate professor
Academic degree	PhD
Professional title	Sociologist
Employer	School of dental medicine University of Zagreb
Unit	Chair of General and Social Subjects
E-mail	letica@sfzg.hr
History of Promotions	
1999 assistant professor	
2005 associate professor	
2010 associate professor	
Participation in Teaching	
Sociology (G)	
Etics in dental medicine (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian society of sociology	
International Dental Ethics and Law Society	
European Society of Health and Medical Sociology	
Foreign Languages	
English	

General information	
Name	Ljerka Cvitanović Šojat
Employee designation	LC009
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical Hospital Center Sestre Milosrdnice
Unit	Chair of pediatric medicine
E-mail	ljerka-cvitanovic.sojat@zg.t-com.hr
History of Promotions	
1989 assistant	
2006 assistant professor	
2011 associate professor	
Participation in Teaching	
Pediatric medicine (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian society for epilepsy	
Foreign Languages	
English, France	

General Information	
Name	Asja Čelebić
Employee designation	AČ009
Title	Full Professor - permanent title
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Removable Prosthodontics
E-mail	celebic@sfzg.hr
History of Promotions	
1995 Assistant Professor 1999 Associate Professor 2002 Full Professor 2007 Full Professor - permanent title	
Participation in Teaching	
Removable prosthodontics (G) Preclinical and laboratory removable prosthodontics (G) Reflexes in the stomatognathic system – leader (P) Qualitative and quantitative analysis of bone tissue – leader (P) Prosthetic appliance and the patient: quality assessment, subjectivity and objectivity, the impact of oral health on quality of life– leader (P) Ion release from dental alloys and analysis of surface roughness– leader (P)	
Participation in Scientific Projects	
1990-1996 Analysis of function and shape of the stomatognathic system - MSES (grant No. 3-02-329) 1996-2002 Analysis of shape and function of the stomatognathic system - MSES (grant No. 065911) 2002 Influence of prosthetic construction and various factors on the stomatognathic system - MSES (grant No. 0065014) 2004-2006 Bilateral project with Slovenia, MSES 2004 Member of collaborative group on international project of prof. Akira Taguchi, "Osteoporosis - Screening Project in Dentistry" 2006 bilateral two-year project with Slovenia - MSES 2007 Color of teeth and Ishara test 2007 Metals - biocompatibility and stress in alopecia, depression, and diabetes - MSES (grant No. 022-0222412-2405) 2007 Influence of prosthetic appliance, and other factors on the stomatognathic system and health - MSES (grant No. 065-0650446-0420) 2007 Oral health and pathological conditions: a multidisciplinary approach and multiregional approach	
Membership in Professional and Scientific Associations	
Croatian Medical Association Dental Section of the Croatian Medical Association Croatian Society for Prosthetic Dentistry	

Croatian Anthropological Society Croatian Society for Medical Informatics European Prosthodontic Association COREMA & CROMBES International Association of Dental Research
<b>Foreign Languages</b>
English

General Information	
Name	Samir Čimić
Employee designation	SČ028
Title	Junior Researcher
Academic degree	University Degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	scimic@sfzg.hr
History of Promotions	
2009 Junior Researcher	
Participation in Teaching	
Removable prosthodontics (G) Preclinical and laboratory removable prosthodontics (G)	
Participation in Scientific Projects	
Occlusion and Craniomandibular dysfunction – MSES (grant No. 065-0650448-0438)	
Membership in Professional and Scientific Associations	
Croatian Society for Prosthetic Dentistry IADR European Prosthodontic Association College of Gerodontology	
Foreign Languages	
English, Italian	

General Information	
Name	Ivana Čuković Bagić
Employee designation	IČ009
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	bagic@sfzg.hr
History of Promotions	
2000 Assistant Professor	
2005 Associate Professor	
2010 Full Professor	
Participation in Teaching	
Oral hygiene (U)- leader	
Child neglect and abuse (U)- leader	
Paediatric and Preventive Dentistry (U)	
Dental treatment of medically compromised patients (P) - leader	
Protection of dentally neglected and abused child (P) - leader	
Epidemiology of dental erosion in adolescents (P) - leader	
Management in dentistry (P)	
Epidemiology of caries activity in adolescents (P)	
Participation in Scientific Projects	
1992 Orofacial anomalies and general genetic disturbances – MSES (3-01-280)	
1994 Etiology and prevention of dental traumatism - MSES (3-02-323)	
1998 Dental trauma in children - MSES (065-006)	
2003 Oral health status and measures for improvement in children in Croatia - MSES (065-903)	
2006 Etiology and pathogenesis of dental trauma in children - MSES (065-006)	
2007 Human dentition in forensic and archeological investigations - MSES (065-0650445-0423)	
2007 Epidemiology of carious and non-carious lesions in children in Republic of Croatia - MSES (065-0650445-0408)	
2009 HRSTON Croatian Dental Dictionary – Croatian Foundation for Science	
Membership in Professional and Scientific Associations	
European Academy of Paediatric Dentistry	
International Association of Paediatric Dentistry	
International Society for Prevention of Child Abuse and Neglect	
International Association of Dental Traumatology	
International Association of Orofacial Myology	
Croatian Association for Paedodontics	
Croatian Association for Dental Traumatology	
International Association for Paleodontology	
Croatian Dental Chamber	
Foreign Languages	
English	

General information	
Name	Hrvoje Čupić
Employee designation	HČ000
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical Hospital Center Sestre Milosrdnice
Unit	Chair of pathology
E-mail	hcupic@kbsm.hr
History of Promotions	
2003 assistant	
2005 assistant professor	
2010 associate professor	
Participation in Teaching	
Pathology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian medical chamber	
Croatian society of pathology and forensic medicine	
European society of pathology	
Foreign Languages	
English	

General Information	
Name	Amir Ćatić
Employee designation	AĆ005
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	catic@sfzg.hr
History of Promotions	
2001 Junior Researcher	
2007 Assistant Professor	
Participation in Teaching	
Fixed prosthodontics (G)	
Preclinical and laboratory fixed prosthodontics (G)	
Gerontostomatology (G)	
Basic computer skills (P)-leader	
Participation in Scientific Projects	
1997 Kinematics of the human jaws - Academic Center for Dentistry Amsterdam, The Netherlands	
2001 Investigation of materials and biological basis of works - MSES	
2005 Investigation of materials and biological basis of crowns and bridges - MSES (grant No. 0065015)	
2007 Teeth, prosthetic materials and prosthetic appliances in adolescent and gerontological population	
Membership in Professional and Scientific Associations	
Croatian Medical Association	
Croatian Society for Prosthetic Dentistry	
Croatian Society for Dental Implantology	
Croatian Society for Education in Implantology	
European Prosthodontic Association	
International Association for Dental Research	
European College for Gerodontology	
International College of Prosthodontists	
European Association of Osseointegration	
Foreign Languages	
English, French	

General Information	
Name	Adnan Ćatović
Employee designation	AĆ004
Title	Full Professor - permanent title
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	catovic@sfzg.hr
History of Promotions	
1978 Assistant 1988 Assistant Professor 1995 Associate Professor 1999 Full Professor 2004 Full Professor - permanent title	
Participation in Teaching	
Fixed prosthodontics (G) Preclinical and laboratory fixed prosthodontics (G) Dental medicine of older age (G) - leader Dental materials (G) Biological and technological durability of fixed prosthodontic appliances (P) Gerontostomatology (P)	
Participation in Scientific Projects	
1978 - 1988 Project V-56 i 3-02 -376 MST 2001 - 2005 Project / 0065015 / MSES 2006 Project / 065-0650448-0433 / MSES	
Membership in Professional and Scientific Associations	
Croatian Academy of Medical Sciences Croatian Dental Chamber Section of Prosthodontics of the Croatian Medical Association European College of Gerodontology International Association for Dental Research European Prosthodontic Association	
Foreign Languages	
English	

General Information	
Name	Robert Ćelić
Employee designation	RĆ000
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Removable Prosthodontics
E-mail	celic@sfzg.hr
History of Promotions	
1996 Junior Researcher	
2007 Assistant Professor	
Participation in Teaching	
Dental materials (G)	
Occlusion (G)	
Removable prosthodontics (G)	
Preclinical and laboratory removable prosthodontics (G)	
Participation in Scientific Projects	
Occlusion and craniomandibular dysfunction	
Membership in Professional and Scientific Associations	
Croatian Society for Prosthetic Dentistry	
Croatian Dental Chamber	
Croatian Society for Dental Implantology	
International Consortium for TMD	
European Prosthodontics Association	
International College of Prosthodontists	
European Association for Osseointegration	
International team for Implantology	
Foreign Languages	
English, Italian	

General Information	
Name	Walter Dukić
Employee designation	WD000
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	dukic@sfzg.hr
History of Promotions	
2001 Junior Researcher - Assistant	
2009 Assistant Professor	
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Participation in Scientific Projects	
Prevention of early childhood caries: evaluation of clinical and preventive measures (065-0653147-2056)	
Membership in Professional and Scientific Associations	
Croatian Society for Paediatric and Preventive Dentistry	
European Academy of Paediatric Dentistry	
International Association of Paediatric Dentistry	
Croatian Dental Chamber	
Foreign Languages	
English	

General Information	
Name	Nikša Dulčić
Employee designation	ND013
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Removable Prosthodontics
E-mail	dulcic@sfzg.hr
History of Promotions	
2000 Junior Researcher	
2010 Assistant Professor	
Participation in Teaching	
Removable prosthodontics (G)	
Preclinical and laboratory removable prosthodontics (G)	
Participation in Scientific Projects	
Occlusion and craniomandibular dysfunction - MSES (grant No. 065-0650448-0438)	
Membership in Professional and Scientific Associations	
Croatian Society for Prosthetic Dentistry	
Croatian Society for Dental Implantology	
Deutsche gesellschaft fur Implantologie	
Foreign Languages	
English, German	

General information	
Name	Jelena Dumančić
Employee designation	JD012
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of dental anthropology
E-mail	dumancic@sfzg.hr
History of Promotions	
2000 young research, assistant	
2010 assistant professor	
Participation in Teaching	
Tooth morphology with dental anthropology (G)	
Forensic dental medicine (G)	
Dental history (G) - leader	
Introduction in dental medicine (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian dental association	
Croatian dental chamber	
International association for dental research	
Croatian endodontic society	
Foreign Languages	
English	

General information	
Name	Irina Filipović-Zore
Employee designation	IF008
Title	Associate Professor
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	filipovic@sfzg.hr
History of Promotions	
1988. Junior Researcher	
2001. Assistant Professor	
2006. Associate Professor	
Participating in Teaching	
Preclinical Oral Surgery – graduate study	
Oral Surgery – graduate study	
Participating in Scientific Projects	
Healing of bone defects after immediate implantation (Grant No. 065-0000000-0424)	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Medical Association	
Croatian Society for oral surgery	
Croatian Society for dental Implantology	
Croatian Society for maxillofacial, plastic and reconstructive head and neck surgery	
EAOS	
Foreign Languages	
English, Italian	

General information	
Name	Ana Frobe
Employee designation	AF014
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of oncology and nuclear medicine
E-mail	afrobe@irb.hr
History of Promotions	
2009 assistant professor	
Participation in Teaching	
Clinical oncology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian Medical Association	
European Society for Therapeutic Radiology and Oncology	
Östereichische Gesellschaft für Onkologie und Radiotherapie	
Radiation Research Society	
Foreign Languages	
English, Germany	

General information	
Name	Dragana Gabrić Pandurić
Employee designation	DG036
Title	Junior Researcher - Assistant
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	dgabric@sfzg.hr
History of Promotions	
2006. Junior Researcher - Assistant	
Participating in Teaching	
Preclinical Oral Surgery – graduate study	
Oral Surgery – graduate study	
Participating in Scientific Projects	
Healing of bone defects after immediate implantation (Grant No. 065-0000000-0424)	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Medical Association	
Croatian Society for oral surgery	
Croatian Society for dental Implantology	
Foreign Languages	
English, German	

General information	
Name	Petar Gaćina
Employee designation	
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of internal medicine
E-mail	petar.gacina@zg.t-com.hr
History of Promotions	
2011 assistant professor	
Participation in Teaching	
Internal medicine (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian Medical Association	
Croatian society of hematology	
Foreign Languages	
English, Italian	

General Information	
Name	Nada Galić
Employee designation	NG021
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	ngalic@sfzg.hr
History of Promotions	
1989 Junior Researcher - Assistant	
1998 Assistant Professor	
2004 Associate Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Morphological and Histological Properties of Endodontic Space (P) – leader	
Investigation of the Toxicity of Dental Restorative Materials and its Influence on Human Body and Environment (P) - leader	
Participation in Scientific Projects	
Experimental and Clinical Endodontology	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
Croatian Dental Chamber	
European Society of Endodontology	
Foreign Languages	
English	

General information	
Name	Goran Geber
Employee designation	GG014
Title	Assistant
Academic degree	Ph.D.
Professional title	M.D.
Employer	Clinical Hospital Center Sestre milosrdnice
Unit	Catheda for otorhinolaryngology
E-mail	goran.geber@zg.t-com.hr
History of Promotions	
2006. Assistant	
Participating in Teaching	
Otorhinolaryngology – graduate study	
Participating in Scientific Projects	
Membership in Professional and Scientific Associations	
Croatian Society for Otorhinolaryngology and head and neck surgery	
Croatian Society for improvement of Croatian Otorhinolaryngology	
Foreign Languages	
English	

General Information	
Name	Domagoj Glavina
Employee designation	DG024
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Paediatric and Preventive Dentistry
E-mail	glavina@sfzg.hr
History of Promotions	
1991 Junior Researcher - Assistant	
2002 Assistant Professor	
2005 Associate Professor	
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Orofacial genetics (U)	
Dental materials (U)	
Dental materials in paediatric dentistry (P) - leader	
Participation in Scientific Projects	
1991 - 1996 Orofacial anomalies and general genetic disturbances – MSES (3-02-280)	
1996 - 2000 Dental trauma in children - MSES (065-006)	
1997 - 2000 Reconstruction of traumatised teeth with Cerec method - MSES (065-101)	
2001 - 2006 Etiology and pathogenesis of dental trauma in children - MSES (0065-006)	
2007 - Dental trauma in children: prevention and therapy - MSES (065-0653147-1197)	
Membership in Professional and Scientific Associations	
European Academy of Paediatric Dentistry	
International Association for Dental Research	
Academy of Dental Materials	
Croatian Society for Dental Traumatology	
Croatian Paedodontic Society	
Foreign Languages	
English, French	

Osnovne informacije	
Name	Kristina Goršeta
Employee designation	KŠ011
Title	Junior Researcher - Assistant
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine Universit of Zagreb
Unit	Department of Paediatric and Preventive Dentistry
E-mail	gorseta@sfzg.hr
History of Promotions	
2002 Junior Researcher - Assistant	
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Participation in Scientific Projects	
065-0653147-1197 Dental trauma in children: prevention and therapy	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber Croatian Society for Dental Traumatology Croatian Paedodontic Society Croatian Anthropological Association European Academy of Paediatric Dentistry International Association for Dental Research International Association for Paediatric Dentistry International Association of Dental Traumatology Academy of Dental Materials	
Foreign Languages	
English, German	

General information	
Name	Marko Granić
Employee designation	MG107
Title	Junior Researcher - Assistant
Academic degree	D.M.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	granic@sfzg.hr
History of Promotions	
2008. Junior Researcher - Assistant	
Participating in Teaching	
Preclinical Oral Surgery – graduate study	
Oral Surgery – graduate study	
Participating in Scientific Projects	
Healing of bone defects after immediate implantation (Grant No. 065-0000000-0424)	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German, Dutch (Flemish)	

General information	
Name	Jakša Grgurević
Employee designation	JG018
Title	Associate Professor
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	jgrgurevic@sfzg.hr
History of Promotions	
1975. Assistant	
1996. Assistant Professor	
2000. Associate Professot – 1. election	
2005. Associate Professot – 2. election	
Participating in Teaching	
Oral Surgery – graduate study	
Dental Materials – graduate study	
Dental Implantology – graduate study	
Participating in Scientific Projects	
Evaluation of treatment methods of benign odontogenic and nonodontogenic jaw lesions	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Medical Association	
Croatian Society for Oral Surgery	
Croatian Society for Dental Implantology	
Foreign Languages	
English	

General information	
Name	Lovro Grgurević
Employee designation	LG013
Title	Junior Researcher - Assistant
Academic degree	D.M.D.
Professional title	D. M.D.
Employer	School of Dental Medicine
Unit	Catheda for Maxillofacial Surgery
E-mail	lgrgurevic@sfzg.hr
History of Promotions	
2007. Junior Researcher - Assistant	
Participating in Teaching	
Maxillofacial Surgery – graduate study	
Participating in Scientific Projects	
Investigation of quality of life of patients with oral cavity cancer	
Biomechanical investigation of forces and osteosynthetic materials on skull model	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General information	
Name	Ino Husedžinović
Employee designation	IH010
Title	Full Professor – permanent title
Academic degree	Ph.D.
Professional title	M.D.
Employer	University Hospital Dubrava
Unit	Catheda for Anesthesiology and Reanimatology
E-mail	ino@kdb.hr
History of Promotions	
1996. Assistant 1997. Assistant Professor 2000. Associate Professot 2005. Full Professot	
Participating in Teaching	
Anesthesiology and Reanimatology – graduate study	
Participating in Scientific Projects	
Modulation of systemic inflammatory response in cardiac surgery. Grant No. 0198019 Study of model of curculation and respiration. Grant No. 3-01-474 Extracorporeal circulation in emergencies. Grant No. 533-02-97-01	
Membership in Professional and Scientific Associations	
European Association of cardiothoracic anesthesiologists American Association of cardiovascular anesthesiologists American Association of anesthesiologists European Association of anesthesiologists	
Foreign Languages	
English	

General Information	
Name	Davor Illeš
Employee designation	DI006
Title	Junior Researcher
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	dilles@sfzg.hr
History of Promotions	
2000 Junior Researcher	
Participation in Teaching	
Occlusion (G)	
Removable prosthodontics (G)	
Preclinical and laboratory removable prosthodontics (G)	
Participation in Scientific Projects	
Biodynamics masticatory system, restorative procedures, function and aesthetics – MSES (grant No. 065-0650448-0957)	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General information	
Name	Renata Iveković
Employee designation	RI002
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of ophtalmology
E-mail	renata.ivekovic@zg,t-com.hr
History of Promotions	
2001 assistant professor	
2006 associate professor	
2011 full professor	
Participation in Teaching	
Ophtalmology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian Medical Association	
Croatian society of othorinolaringology	
European Society of catract and refractive surgery	
American Academy of Ophthalmology	
Deutsche Ophtahlmologische Gesellscaft	
European Society of plastic and reconstructive surgery	
Foreign Languages	
English, Germany	

General Information	
Name	Marija Ivić-Kardum
Employee designation	MI008
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Periodontology
E-mail	ivic@sfzg.hr
History of Promotions	
1977 Assistant	
2001 Assistant Professor – 1st election	
2006 Assistant Professor – 2nd election	
Participation in Teaching	
Clinical Periodontology (U)	
Pre-clinical Periodontology (U)	
Participation in Scientific Projects	
2007 Systemic Aspects in Periodontal Deaseses Onset – MSES (0650650444-0415)	
Membership in Professional and Scientific Associations	
Croatian Society for Periodontology	
Croatian Society for Oral Medicine	
Croatian Medical Association	
European federation of periodontology	
Foreign Languages	
German, English	

General Information	
Name	Marko Jakovac
Employee designation	MJ084
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	
History of Promotions	
2001 Junior Researcher	
2009 Assistant Professor	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G)	
Fixed prosthodontics (G)	
Participation in Scientific Projects	
Investigation the therapeutic efficacy of prosthetic restorative materials - MSES (grant No. 065-0650448-0439)	
Membership in Professional and Scientific Associations	
Croatian Society for Prosthetic Dentistry	
European Prosthodontic Association	
Croatian Medical Association	
Croatian Society for Dental Implantology	
Croatian Dental Chamber	
Foreign Languages	
English	

General Information	
Name	Bernard Janković
Employee designation	BJ012
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	jankovic@sfzg.hr
History of Promotions	
2008 Assistant Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Participation in Scientific Projects	
Nanostructure of Restorative Materials and Interactions with Hard Dental Tissue“ - 065-0352851-0410)	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
International Association for Dental Research	
Foreign Languages	
English	

General Information	
Name	Jelka Jukić
Employee designation	JJ029
Title	Assistant
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	jelka.jukic@zg.htnet.hr
History of Promotions	
2002 Assistant	
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Participation in Scientific Projects	
Dental trauma in children: prevention and therapy	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber Croatian Medical Society Croatian Society for Dental Traumatology Croatian Society for Paediatric and Preventive Dentistry Croatian Dental Society Croatian Anthropological Society Croatian association for optimization of development "Smile"	
Foreign Languages	
English, Russian	

General Information	
Name	Hrvoje Jurić
Employee designation	HJ001
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	juric@sfzg.hr
History of Promotions	
2003 Assistant Professor	
2007 Associate Professor	
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Prevention of hard tissue diseases (P) - leader	
Evaluation of biological activity of agents for caries prevention (P) - leader	
Participation in Scientific Projects	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Medical Society	
Croatian Society for Paediatric and Preventive Dentistry	
Croatian Endodontic Society	
European Academy of Pediatric Dentistry	
European Organisation for Caries Research	
International Association for Dental Traumatology	
Foreign Languages	
English	

General Information	
Name	Zoran Karlović
Employee designation	ZK032
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	karlovic@sfzg.hr
History of Promotions	
2006 Assistant Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Participation in Scientific Projects	
„Experimental and Clinical Endodontology“ br. 065-0650444-041810	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
European Society of Endodontology	
Croatian Dental Implantology Association	
Croatian Oral Surgery Association	
Foreign Languages	
English	

General information	
Name	Davor Katanec
Employee designation	DK056
Title	Associate Professor
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	katanec@sfzg.hr
History of Promotions	
1996. Assistant Professor	
2003. Associate Professot – 1. election	
2008. Associate Professot – 2. election	
Participating in Teaching	
Oral Surgery – graduate study	
Preclinical Oral Surgery – graduate study	
Computerised densitometry in dental implantology – postgraduate study - leader	
Modern techniques in dental implantology - postgraduate study - leader	
Participating in Scientific Projects	
Healing of bone defects after immediate implantation – leader – Grant No. 065-0000000-0424	
Membership in Professional and Scientific Associations	
Croatian Medical Association	
European Association for Osteology	
Croatian Endodontic Society	
Croatian Dental Chamber	
Croatian Medical Association	
Foreign Languages	
English, German	

General Information	
Name	Marina Katunarić
Employee designation	MK077
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	
History of Promotions	
1997 Assistant Professor	
2002 Associate Professor – first election	
2008 Associate Professor – second election	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Non-carious Lesions of Hard Dental Tissues (P) - leader	
Endogenous and Exogenous Ion Release from Hard Dental Tissues (P) - leader	
Participation in Scientific Projects	
1993-1996 Mineralization and Demineralization of Hard Dental Tissues - MSES (302279)	
1996-2002 Materials for Reconstruction of Hard Dental Tissues -MSES (065007)	
2002 Materials for Reconstruction of Hard Dental Tissues - MSES(0065007)	
2006 Experimental and Clinical Endodontology - MSES (0650444-0418)	
Membership in Professional and Scientific Associations	
Croatian Medical Association	
Croatian Dental Chamber	
Croatian Endodontic Society	
European Society of Endodontology	
Foreign Languages	
English, German	

General information	
Name	Jadranka Keros
Employee designation	JK026
Title	Full professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of dental anthropology
E-mail	keros@sfzg.hr
History of Promotions	
1992 assistant professor 1997 associate professor 2001 full professor 2006 full professor in tense	
Participation in Teaching	
Introduction in dental medicine (G) - leader Tooth morphology with dental anthropology (G) Forensic dentistry (G) Biomechanical dental research (P)- leader Bone in dental research (P)- leader	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian Medical Association Croatian endodontic society Croatian sociaty for esthetic dentistry Croatian anthropological society International Association for Dental Research European antropological association Fedetaron Dentaire International European federation of experimental morphology	
Foreign Languages	
English, Germany, Italian	

General Information	
Name	Eva Klarić
Employee designation	EK022
Title	Junior Researcher - Assistant
Academic degree	High Expertise
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	eklaric@sfzg.hr
History of Promotions	
2009 Junior Researcher - Assistant	
Participation in Teaching	
Restorative Dental Medicine (D)	
Endodontics (D)	
Participation in Scientific Projects	
Nanostructure of Restorative Materials and Interactions with Hard Dental Tissue“ - 065-0352851-0410)	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Foreign Languages	
English, German	

General information	
Name	Petar Klarić
Employee designation	PK009
Title	Associate professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of gynecology
E-mail	petar.klarić@zg.hinet.hr
History of Promotions	
1988 assistant	
2002 assistant professor	
2010 associate professor	
Participation in Teaching	
Gynecology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian Medical society	
Croatian society of gynecology	
Croatian society of oncology	
Foreign Languages	
English, German, Italian	

General Information	
Name	Dubravka Knezović Zlatarić
Employee designation	DK059
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Removable Prosthodontics
E-mail	dkz@sfzg.hr
History of Promotions	
2006 Assistant Professor	
Participation in Teaching	
Removable prosthodontics (G)	
Participation in Scientific Projects	
1996 Analysis of shape and function of the stomatognathic system - MSES (grant No. 065911)	
2002 Influence of prosthetic construction and various factors on the stomatognathic system - MSES (grant No. 0065014)	
2006 Influence of prosthetic appliance, and other factors on the stomatognathic system and health - MSES (grant No. 065-0650446-0420)	
Membership in Professional and Scientific Associations	
European Prosthodontic Association	
International College of Prosthodontists	
Foreign Languages	
English	

General Information	
Name	Alena Knežević
Employee designation	AK030
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	ma505ak@yahoo.com
History of Promotions	
1999 Junior Researcher - Assistant	
2005 Assistant Professor	
Participation in Teaching	
Restorative Dental Medicine (D)	
Endodontics (D)	
Photopolymerization of Dental Materials (P) - leader	
Experimental Photopolymerization (P) – leader	
Participation in Scientific Projects	
1996-2002 „Materials for Supplying of Hard Dental Tissue“ - MSES (0065 007)	
2002-2007 „Materials for Supplying of Hard Dental Tissue“ - MSES (0065 007)	
2003 „Development of Technological Procedures for Making Long Term Adhesive Restorations“	
2007 – „Nanostructure of Restorative Materials and Interactions with Hard Dental Tissue“ - MSES (065-0352851-0410)	
2008 A prospective, observational study of Implantium implants in immediate occlusal loading after insertion, Herman Ostrow School of Dentistry, University of Southern California, Los Angeles	
Membership in Professional and Scientific Associations	
International Association for Dental Research	
Croatian Dental Chamber	
Croatian Endodontic Society	
European Society of Endodontology	
American Association for the Advancement of Science	
Foreign Languages	
English	

General information	
Name	Predrag Knežević
Employee designation	PK010
Title	Assistant Professor
Academic degree	Ph.D.
Professional title	M.D.
Employer	University Hospital Dubrava
Unit	Catheda for Maxillofacial Surgery
E-mail	pknezev@kbd.hr
History of Promotions	
2000. Assistant	
2010. Assistant Professor	
Participating in Teaching	
Maxillofacial Surgery – graduate study	
Participating in Scientific Projects	
Biomechanical investigation of forces and osteosynthetic materials on scull model. Grant No. , 065-0000000-3392	
Investigation of quality of life of patients with oral cavity cancer. Grant No. 0198015	
Membership in Professional and Scientific Associations	
Association of patients of children with cleft lip/palate – SMILE (leader)	
Foreign Languages	
English	

General Information	
Name	Dragutin Komar
Employee designation	DK057
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	komar@sfzg.hr
History of Promotions	
1998 Assistant Professor 2003 Associate Professor 2008 Full Professor	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G) Fixed prosthodontics (G) Dental Materials (G) Combined fixed-mobile appliances (P) leader	
Participation in Scientific Projects	
Testing of materials and improvement of laboratory and clinical procedures in fixed prosthodontics 1.08.09.00. Materials, epidemiology and clinical procedures in fixed prosthodontics – MSES (grant No. 3-02-376) MSES Investigation of the biological basis and building materials of fixed prosthodontic appliances – MSES (grant No.065 015)	
Membership in Professional and Scientific Associations	
Croatian Medical Association Section of Prosthodontics of the Croatian Medical Association Croatian Society for Prosthetic Dentistry European Prosthodontic Association European College of Gerodontology International College of Prosthodontics	
Foreign Languages	
English, German	

General information	
Name	Ana Kotarac Knežević
Employee designation	AK097
Title	Junior Researcher - Assistant
Academic degree	M.Sc.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	akotarac@sfzg.hr
History of Promotions	
2005. Junior Researcher - Assistant	
Participating in Teaching	
Preclinical Oral Surgery – graduate study	
Participating in Scientific Projects	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General information	
Name	Vladimir Krajinović
Employee designation	VK105
Title	Assistant
Academic degree	Assistant
Professional title	Doctor of medicine
Employer	Medical school University of Zagreb
Unit	Chair of infectology
E-mail	vkrajinovic@bfm.hr
History of Promotions	
2006 assistant	
Participation in Teaching	
Infectology (G)	
Participation in Scientific Projects	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, Germany, France	

General Information	
Name	Sonja Kraljević-Šimunković
Employee designation	SK034
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Removable Prosthodontics
E-mail	kraljevic@sfzg.hr
History of Promotions	
2004 Assistant Professor	
2009 Associate Professor	
Participation in Teaching	
Removable prosthodontics (G)	
Preclinical and laboratory removable prosthodontics (G)	
Participation in Scientific Projects	
1996-2002 Occlusion and craniomandibular dysfunction - MSES (grant No. 065010)	
2002-2007 Occlusion and craniomandibular dysfunction - MSES (grant No. 0065010)	
2008 Occlusion and craniomandibular dysfunction - MSES (grant No. 065-0650448-0438)	
Membership in Professional and Scientific Associations	
Croatian Society for Prosthetic Dentistry	
Croatian Society for Dental Implantology	
Croatian Medical Association	
Foreign Languages	
English, German, French	

General Information	
Name	Josip Kranjčić
Employee designation	JK080
Title	Junior Researcher
Academic degree	University Degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	kranjcic@sfzg.hr
History of Promotions	
2011 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G)	
Participation in Scientific Projects	
Investigation of materials and clinical procedures in prosthetic dentistry	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General Information	
Name	Silvana Krmek
Employee designation	SK035
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	jukic@sfzg.hr
History of Promotions	
2002 Assistant Professor	
2006 Associate Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Participation in Scientific Projects	
1994-1995 Endodontic Diseases and Caries - Experimental and Clinical Study MSES (3-02-277)	
1996-2002 Experimental and Clinical Endodontology MSES (00650005)	
2003-2006 Experimental and Clinical Endodontology MSES (0065999)	
2007 Epidemiological Aspects of Endodontics in the Republic of Croatia MSES (065 – 0650445-0434)	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
European Society of Endodontology	
Croatian Dental Chamber	
Foreign Languages	
English, Italian	

General information	
Name	Ivan Krolo
Employee designation	IK038
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of radiology
E-mail	krolo@sfzg.hr
History of Promotions	
1984 assistant	
1997 assistant professor	
2004 associate professor	
2009 full professor	
Participation in Teaching	
Radiology (G)	
Dental radiology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian Medical society	
Croatian society of radiology	
European sociaty of radiology	
Foreign Languages	
English, Germany, France	

General information	
Name	Krunoslav Kuna
Employee designation	KK029
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of gynecology
E-mail	krunoslav.kuna@kbcsm.hr
History of Promotions	
2011 assistant professor	
Participation in Teaching	
Gynecology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian Medical society	
Croatian society of gynecology	
European sociaty of gynecology	
Foreign Languages	
English	

General information	
Name	Tihomir Kuna
Employee designation	TK021
Title	Assistant Professor
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	kuna@sfzg.hr
History of Promotions	
2000. Assistant	
2007. Assistant Professor	
Participating in Teaching	
Preclinical Oral Surgery – graduate study	
Oral Surgery – graduate study	
Participating in Scientific Projects	
Healing of bone defects after immediate implantation – leader – Grant No. 065-0000000-0424	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Society for Dental Implantology	
Croatian Society for Oral Surgery	
Croatian Medical Association	
Foreign Languages	
English	

General Information	
Name	Marina Lapter Varga
Employee designation	ML058
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Orthodontics
E-mail	lapter@sfzg.hr
History of Promotions	
1999 Assistant Professor 2003 Associate Professor 2009 Full Professor	
Participation in Teaching	
Orthodontics (U) Preclinical orthodontics (U) Dental photography (U)- leader Functional aspects of orthodontic therapy (P) - leader Conventional and digital cephalometry in orthodontics (P)- leader	
Participation in Scientific Projects	
2002-2006 Morphometric and biomechanical analysis of craniofacial complex-MSES(0065-013) 2004-2007 Reorganization and modernization of specialist network for orthodontics in Zagreb city based on evaluation of ortodontic treatment needs in school children, and epidemiological investigation and quality evaluation , three-yrs program – city of Zagreb 2006 New diagnostic methods in orthodontics and biocompatibility of appliances - MSES (065-0650444-0436) 2008-2010 Investigation of application of new technologies in orthodontics – periodontal, microbiological and qualitative assessment- Foundation Adris	
Membership in Professional and Scientific Associations	
Croatian orthodontic society European orthodontic society World Federation of Orthodontists	
Foreign languages	
English	

General information	
Name	Mario Ledinsky
Employee designation	ML026
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of general surgery
E-mail	mario.ledinsky@kbcsm.hr
History of Promotions	
1982 assistant	
1999 assistant professor	
2004 associate professor	
2011 full professor	
Participation in Teaching	
General surgery (G)	
First aid (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian Medical society	
Croatian society of surgery	
Croatian gastroenterological society	
Academy of medical sciences	
Foreign Languages	
English	

General Information	
Name	Božana Lončar
Employee designation	BL026
Title	Scientific Novice - Assistant
Academic degree	DMD degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Oral Medicine
E-mail	loncar@sfzg.hr
History of Promotions	
2008 Scientific Novice - Assistant	
Participation in Teaching	
Oral Medicine (U)	
Participation in Scientific Projects	
Molecular Mechanisms in Onset of Precancerous and Cancerous Oral Lesions	
Croatian Dental Terminology - HRSTON	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General information	
Name	Arijana Lovrenčić-Huzjan
Employee designation	AL006
Title	Associate professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of neurology
E-mail	ahuzjan@kbsm.hr
History of Promotions	
2003 assistant professor	
2008 associate professor	
Participation in Teaching	
Neurology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian Medical society	
Croatian society of neurology	
World Stroke Organisation	
European Society for Neurosonology and Cerebral Hemodynamic	
International Headache Society	
Neurosonology Researach Group, World Federation of Neurology	
Foreign Languages	
English, France, Germany	

General information	
Name	Liborija Iugović Mihić
Employee designation	LL009
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of dermatovenerology
E-mail	liborija@yahoo.com
History of Promotions	
2003 assistant	
2007 assistant professor	
Participation in Teaching	
Dermatovenerology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian Medical society	
Croatian society of dermatovenerology	
Foreign Languages	
English, German, Italian	

General information	
Name	Josip Lukač
Employee designation	JL016
Title	Full professor
Academic degree	PhD
Professional title	Biology ing.
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of imunology
E-mail	jlukac@inet.hr
History of Promotions	
1994 associate professor	
2000 full professor	
2006 full professor in tense	
Participation in Teaching	
Imunology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian academy of medical sciences	
Croatian medical association	
Croatian society of imunology	
International Society of Cancer Chemoprevention	
Foreign Languages	
English	

General information	
Name	Neven Ljubičić
Employee designation	NL004
Title	Associate professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of internal medicine
E-mail	neven.ljubicic@kbcsm.hr
History of Promotions	
1995 assistant	
2003 assistant professor	
2006 associaite professor	
Participation in Teaching	
Internal medicine (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical society	
The American College of Gastroenterology	
The American Gastroenterological Association	
The American Institute of Ultrasound in Medicine	
The New York Academy of Science	
The European Society of Gastrointestinal Endoscopy	
Foreign Languages	
English	

General information	
Name	Darko Macan
Employee designation	DM051
Title	Full Professor – 1. election
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	darkom@kbd.hr
History of Promotions	
1999. Assistant Professor	
2003. Associate Professor	
2009. Full Professor -1. election	
Participating in Teaching	
Oral Surgery – graduate study- leader	
Preclinical Oral Surgery – graduate study	
Forensi Stomatology – graduate study	
Etiology and epidemiology of oral cavity cancer – postgraduate study - leader	
Differential Diagnosis and Treatment of Cystic Jaw Transparencies – postgraduate study	
Participating in Scientific Projects	
Revascularisation of oral structures after traumatic damage (Grant No. 065-1080057-0429)	
Membership in Professional and Scientific Associations	
Croatian Society for oral surgery	
Croatian Society for dental Implantology	
Croatian Society for maxillofacial, plastic and reconstructive head and neck surgery	
Croatian Society for Treatment of Pain	
Croatian Society for Medical Expertise	
Croatian Society for Court Experts	
European Association of Cranio-Maxillofacial Surgery	
International Association for Oral and Maxillofacial Surgery	
International Association for Pain and Chemical Dependency	
Foreign Languages	
English, German	

Basic Information	
Name	Martina Majstorović
Employee designation	MM079
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	majstorovic@sfzg.hr
History of Promotions	
1995	Junior Researcher - Assistant
2003	Assistan Professor
2008	Associate Professor
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Fear and anxiety in clinical paedodontic praxis – diagnostics, prevention and therapy (U)	
Participation in Scientific Projects	
Dental trauma in children: prevention and therapy (065-0653147-1197)	
Prevention of dental trauma in school-children in Zagreb	
Membership in Professional and Scientific Associations	
Society for the Advancement of Anaesthesia in Dentistry	
European Academy of Paediatric Dentistry	
American Academy for Pediatric Dentistry	
Croatian Medical Society	
Croatian Dental Chamber	
Croatian Society for Dental Traumatology	
Croatian Dental Society	
Foreign Languages	
English	

General information	
Name	Zdravko Mandić
Employee designation	ZM013
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of ophtalmology
E-mail	zdravko.mandic@inet.hr
History of Promotions	
2002 Associate professor	
2007 Full professor	
Participation in Teaching	
Ophtalmology (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, aducation and sports	
Membership in Professional and Scientific Assoaciations	
ESCR	
AAO	
Croatian ophtalmology society	
Foreign Languages	
English, Germany	

General information	
Name	Šime Manola
Employee designation	ŠM003
Title	Assistant
Academic degree	Assistant
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of internal medicine
E-mail	sime.manola@zg.t-com.hr
History of Promotions	
2005 Assistant	
Participation in Teaching	
Internal medicine (G)	
Participation in Scientific Projects	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, Germany, France	

General information	
Name	Aljoša Matejčić
Employee designation	AM038
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of internal medicine
E-mail	aljosa.matejcic@kbcsm.hr
History of Promotions	
1992 assistant	
1995 assistant professor	
2000 Associate professor	
2005 Associate professor	
2010 Full professor	
Participation in Teaching	
General surgery (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian surgical society	
Foreign Languages	
English, Germany, Slovenian	

General Information	
Name	Jurica Matijević
Employee designation	JM069
Title	Junior Researcher - Assistant
Academic degree	High Expertise
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	matijevic@sfzg.hr
History of Promotions	
2007 Junior Researcher - Assistant	
Participation in Teaching	
Restorative Dental Medicine (D) Endodontics (D) Cariology (D)	
Participation in Scientific Projects	
2007 Epidemiological Aspects of Endodontics in the Republic of Croatia MSES (065 – 0650445-0434)	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
Foreign Languages	
English, German	

General Information	
Name	Danijela Marović
Employee designation	DM118
Title	Junior Researcher - Assistant
Academic degree	High Expertise
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	matosevic@sfzg.hr
History of Promotions	
2007 Junior Researcher - Assistant	
Participation in Teaching	
Restorative Dental Medicine (D)	
Endodontics (D)	
Participation in Scientific Projects	
Nanostructure of Restorative Materials and Interactions with Hard Dental Tissue“ - 065-0352851-0410)	
Membership in Professional and Scientific Associations	
International Association for Dental Research	
Croatian Dental Chamber	
Croatian Endodontic Society	
Foreign Languages	
English, German	

General Information	
Name	Ketij Mehulić
Employee designation	KM016
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	mehulic@sfzg.hr
History of Promotions	
1993 Assistant	
1999 Assistant Professor	
2004 Associate Professor	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G)	
Fixed prosthodontics (G)	
Dental Materials (G)	
Ceramic systems in prosthodontics (P) leader	
Participation in Scientific Projects	
1989 Materials, epidemiology and clinical procedures in fixed prosthodontics – MSES (grant No. 3-02-376)	
2004 Investigation of the building materials and biological basis of fixed prosthodontic appliances – MSES (grant No.0-65-0-15)	
2007 Investigation of ceramic materials and allergy in dental prosthetics– MSES (grant No. 065-0650446-0435)	
Membership in Professional and Scientific Associations	
Croatian Medical Association	
Section of Prosthodontics of the Croatian Medical Association	
Croatian Dental Chamber	
European Prosthodontic Association	
Foreign Languages	
English	

Basic Information	
Name	Senka Meštrović
Employee designation	SM027
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Orthodontics
E-mail	mestrovic@sfzg.hr
History of Promotions	
1999 Assistant Professor	
2003 Associate Professor	
2009 Full Professor	
Participation in Teaching	
Orthodontics (U)	
Preclinical orthodontics (U)	
Experimental methods in biomechanics of craniofacial complex (P) - leader	
Materials in orthodontics (P) - leader	
Participation in Scientific Projects	
2002-2006 Morphometric and biomechanical analysis of craniofacial complex- MSES (0065013)	
2006 New diagnostic methods in orthodontics and biocompatibility of appliances - MSES (065-0650444-0436)	
Membership in Professional and Scientific Association	
Croatian orthodontic society	
European orthodontic society	
World Federation of Orthodontics	
Foreign languages	
English, German, Italian	

General information	
Name	Iva Mihatov-Štefanović
Employee designation	IM113
Title	Assistant
Academic degree	Master of science
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of pediatric medicine
E-mail	iva.mihatov@kbcsrn.hr
History of Promotions	
assistant	
Participation in Teaching	
Pediatric medicine (G)	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General information	
Name	August Mijić
Employee designation	AM039
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of general surgery
E-mail	august.mijic@kbcsm.hr
History of Promotions	
1990 assistant	
1997 assistant professor	
2003 associate professor	
2008 fullprofessor	
Participation in Teaching	
General surgery (G)	
Participation in Scientific Projects	
Investigaror in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
Croatian society of biology	
Croatian gastroenterology society	
French Society of Digestive Surgery	
International Gastro-Surgical Club	
Foreign Languages	
English, Germany	

General Information	
Name	Slađana Milardović
Employee designation	SM113
Title	Junior Researcher
Academic degree	University Degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	
History of Promotions	
2009 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G)	
Participation in Scientific Projects	
Investigation of ceramic materials and allergy in dental prosthetics– MSES (grant No. 065-0650446-0435)	
Membership in Professional and Scientific Associations	
EPA	
IADR	
Foreign Languages	
English, German	

General information	
Name	Aleksandar Milenović
Employee designation	AM040
Title	Assistant Professor
Academic degree	Ph.D.
Professional title	M.D.
Employer	University Hospital Dubrava
Unit	Catheda for Maxillofacial Surgery
E-mail	alemilenovic@hotmail.com
History of Promotions	
2000. Assistant	
2010. Assistant Professor	
Participating in Teaching	
Maxillofacial Surgery – graduate study	
Participating in Scientific Projects	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General Information	
Name	Ivana Miletić
Employee designation	IK039
Title	Full Professor – first election
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	
History of Promotions	
2001 Assistant Professor	
2005 Associate Professor	
2008 Full Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Introduction to Scientific Work (D)	
Participation in Scientific Projects	
1996 Experimental and Clinical Endodontology -MSES (0065005)	
2002 Experimental and Clinical Endodontology -MSES (0065999)	
2007 Experimental and Clinical Endodontology -MSES (065-0650444-0418)	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
European Society of Endodontology	
ESOLA	
Croatian Dental Chamber	
Croatian Medical Association	
Foreign Languages	
English	

General Information	
Name	Marinka Mravak Stipetić
Employee designation	MM078
Title	Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Oral Medicine
E-mail	mravak@sfzg.hr
History of Promotions	
1996 Assistant Professor 2000 Associate Professor 2004 Professor – 1st election 2009 Professor – permanent title	
Participation in Teaching	
Oral Medicine (U) Oral Hygiene (U) History of Dental medicine (U) Diagnosis of Oral Diseases (P) Molecular Diagnostics in Oral Medicine (P)	
Participation in Scientific Projects	
2007 Molecular Mechanisms in Onset of Precancerous and Cancerous Oral Lesions – MSES (065-0982464-2532) 2006 DNA Chip Technology in Global Genetic Tumor Profiling, HAZU, # 0101023.	
Membership in Professional and Scientific Associations	
Croatian Medical Association Croatian Dental Chamber Croatian Society for Oral Medicine and Pathology European Association of Oral Medicine Committee for Oncogenes and Growth Factors of Croatian Academy of Medical Sciences	
Foreign Languages	
English, German	

Basic Information	
Name	Dubravka Negovetić-Vranić
Employee designation	DN005
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	negovetic@sfzg.hr
History of Promotions	
1999	Junior Researcher - Assistant
2009	Assistant Professor
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Participation in Scientific Projects	
Dental trauma in children: prevention and therapy, MSES, 065-0653147-1197	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber Croatian society for dental traumatology Croatian paedodontic society European Academy of Pediatric Dentistry International Association of Dental Research Academy of Dental Materials	
Foreign Languages	
English	

General information	
Name	Marko Nikolić
Employee designation	MN037
Title	Assistant
Academic degree	Master of science
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of internal medicine
E-mail	marko.nikolic72@gmail.com
History of Promotions	
2009 assistant	
Participation in Teaching	
Internal medicine (G)	
Participation in Scientific Projects	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian medical chamber	
European Society of Clinical Nutrition and Metabolism	
International Associations of Surgeons, Gastroenterologists and Oncologists	
Foreign Languages	
English	

General information	
Name	Vera Njemirovskij
Employee designation	VN004
Title	Associate professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of dental anthropology
E-mail	njemirovskij@sfzg.hr
History of Promotions	
1973 assistant	
1987 assistant professor	
2003 associate professor	
2008 associate professor	
Participation in Teaching	
Tooth morphology with dental anthropology (G) leader	
Comparative odontology (G) leader	
Participation in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German, Italian	

General Information	
Name	Vlatko Pandurić
Employee designation	VP020
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	vpanduric@sfzg.hr
History of Promotions	
1996 Junior Researcher - Assistant	
2007 Assistant Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Participation in Scientific Projects	
Nanostructure of Restorative Materials and Interactions with Hard Dental Tissue“ - 065-0352851-0410)	
Membership in Professional and Scientific Associations	
International Association for Dental Research	
Croatian Dental Chamber	
Croatian Endodontic Society	
Foreign Languages	
English	

General Information	
Name	Božidar Pavelić
Employee designation	BP021
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	bozidar.pavelic@zg.t-com.hr
History of Promotions	
1999 Assistant Professor	
2004 Associate Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Possibilities of Esthetic Treatment in Restorative Dentistry (P) - leader	
Participation in Scientific Projects	
1992 - 2007 " Experimental and Clinical Endodontology" MSES (0065999)	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Endodontic Society	
European Society of Endodontology	
Foreign Languages	
English, German	

General Information	
Name	Ivica Pelivan
Employee designation	IP028
Title	Junior Researcher
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	pelivan@sfzg.hr
History of Promotions	
2004 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory removable prosthodontics (G)	
Removable prosthodontics (G)	
Occlusion (G)	
Basic computer skills (G)	
Participation in Scientific Projects	
Biodynamics masticatory system, restorative procedures, function and aesthetics – MSES (grant No. 065-0650448-0957)	
Membership in Professional and Scientific Associations	
Croatian Dental Society	
Croatian Endodontic Society	
Croatian Society for Dental Implantology	
International Association for Dental Research	
European Prosthodontics Association	
IEEE Society of Engineering in Medicine and Biology	
Foreign Languages	
English, German	

General information	
Name	Berislav Perić
Employee designation	BP022
Title	Assistant Professor
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	bperic@kbd.hr
History of Promotions	
1994. Junior Researcher - Assistant	
2003. Assistant Professor	
2008. Assistant Professor - 2. election	
Participating in Teaching	
Oral Surgery – graduate study- leader	
Preclinical Oral Surgery – graduate study	
Sinus lift – evaluation in different surgical techniques - postgraduate study - leader	
Surgical Procedures in Dental Implantology - postgraduate study - leader	
Participating in Scientific Projects	
Revascularisation of oral structures after traumatic damage (Grant No. 065-1080057-0429)	
Evaluation of treatment methods of benign odontogenic and nonodontogenic jaw lesions	
Membership in Professional and Scientific Associations	
Croatian Medical Association	
Croatian Society for oral surgery	
Croatian Society for dental Implantology	
Foreign Languages	
English	

General Information	
Name	Kristina Peroš
Employee designation	KB008
Title	Senior Assistant
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of pharmacology
E-mail	peros@sfzg.hr
History of Promotions	
2006 assistant	
2009 senior assistant	
Participation in Teaching	
General pharmacology (G)	
Dental pharmacology (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian society of pharmacology	
European society of pharmacology	
Croatian society of forensic medicine	
Foreign Languages	
English, Italian	

General information	
Name	Jasminka Peršec
Employee designation	JP081
Title	Assistant
Academic degree	Ph.D.
Professional title	M.D.
Employer	University Hospital Dubrava
Unit	Catheda for Anesthesiology and Reanimatology
E-mail	jpersec@xnet.hr
History of Promotions	
1996. Assistant	
Participating in Teaching	
Anesthesiology and Reanimatology – graduate study	
Participating in Scientific Projects	
Modulation of systemic inflammatory response in cardiac surgery. Grant No. 0198019	
Membership in Professional and Scientific Associations	
Croatian Society for Anesthesiology and Intensive Therapy	
Croatian Society of Intensive Medicine	
Croatian Society for Regional Anesthesia	
European Association of Anesthesiologists	
Foreign Languages	
English	

General Information	
Name	Sanja Peršić
Employee designation	SP091
Title	Junior Researcher
Academic degree	University Degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	persic@sfzg.hr
History of Promotions	
2009 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory removable prosthodontics (G)	
Participation in Scientific Projects	
Influence of prosthetic appliance, and other factors on the stomatognathic system and health - MSES (grant No. 065-0650446-0420)	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General Information	
Name	Ivanka Petrić Vicković
Employee designation	IP144
Title	Senior assistant
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of ophtalmology
E-mail	ivanka.petric@kbcsn.hr
History of Promotions	
2011 senior assistant	
Participation in Teaching	
Ophtalmology (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
Croatian society of ophtalmology	
Foreign Languages	
English	

General Information	
Name	Nikola Petričević
Employee designation	NP021
Title	Junior Researcher
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	
History of Promotions	
2004 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory removable prosthodontics (G)	
Occlusion (G)	
Removable prosthodontics (G)	
Participation in Scientific Projects	
Influence of prosthetic appliance, and other factors on the stomatognathic system and health - MSES (grant No. 065-0650446-0420)	
Membership in Professional and Scientific Associations	
Foreign Languages	
English	

General Information	
Name	Hrvoje Pintarić
Employee designation	HP005
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of internal medicine
E-mail	hrvojepintaric@yahoo.com
History of Promotions	
2003 assistant	
2009 assistant professor	
Participation in Teaching	
Internal medicine (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
Croatian hearth society	
Croatian society for intensive medicine	
Foreign Languages	
English	

General Information	
Name	Darije Plančak
Employee designation	DP047
Title	Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Periodontology
E-mail	plancak@sfzg.hr
History of Promotions	
1995 Assistant Professor 2001 Associate Professor 2005 Professor – 1st election 2010 Professor – permanent title	
Participation in Teaching	
Clinical Periodontology (U) - Leader Pre-clinical Periodontology (U) - Leader Standard and Advanced Methods in Periodontal Surgery (P) - Leader	
Participation in Scientific Projects	
1984 Epidemiologic Data Collection on Periodontal and Other Diseases Incidence in SR Croatia – Project 57 SIZ V (1981-86) 1984 Oral Diseases Incidence and Treatment Needs in Zagreb - - Project of City of Zagreb (1984-86) 1991 Orofacial Anomalies and General Genetic Disorders MSES (3-02-280) (1991-93) 2003 Periodontal Disease and Caries Prevalence in Zagreb - Project of City of Zagreb 2002 Periodontal Disease and Caries Incidence in Croatia – MSES (0065102) (2002-2005) 2007 Systemic Aspects in Periodontal Deasese Onset – MSES (0650650444-0415) 2007 Implant and Regenerative Procedures in Chronic Periodontitis Treatment	
Membership in Professional and Scientific Assoaciations	
Croatian Medical Association Croatian Dental Society CMA Croatian Society for Periodontology CMA International Association for Dental Research Croatian Dental Chamber Croatian Society for Endodontology Croatian Society for Oral Medicine CMA	
Foreign Languages	
English	

General Information	
Name	Dijana Podoreški
Employee designation	DP105
Title	Assistant
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of general and dental radiology
E-mail	podoreski@sfzg.hr
History of Promotions	
2010 assistant	
Participation in Teaching	
General radiology (G)	
Dental radiology (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Foreign Languages	
English	

General Information	
Name	Goranka Prpić-Mehičić
Employee designation	GP009
Title	Full Professor – tenured position
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	prpic@sfzg.hr
History of Promotions	
1982 Assistant 1989 Assistant Professor 1995 Associate Professor 2001 Full Professor – first election 2006 Full Professor – tenured position	
Participation in Teaching	
Endodontics (D)- leader Restorative Dental Medicine (D) Cariology (D) Dental Materials (D)	
Participation in Scientific Projects	
Epidemiological Aspects of Endodontics in the Republic of Croatia, No. 065-0650445-0434	
Membership in Professional and Scientific Associations	
European Society of Endodontology Croatian Medical Association Dental Society of Croatian Medical Association Croatian Endodontic Society HDMBT Croatian Dental Chamber	
Foreign Languages	
English, German	

General Information	
Name	Katica Prskalo
Employee designation	KP013
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	prskalo@sfzg.hr
History of Promotions	
1991 Assistant 1999 Assistant Professor 2005 Assistant Professor – second election 2010 Associate Professor	
Participation in Teaching	
Cariology (D) - leader Restorative Dental Medicine (D) Endodontics (D) Glass Ionomer Cements (P) - leader	
Participation in Scientific Projects	
1989 Mineralization and Demineralization of Hard Dental Tissues – MSES (302279) 1996 Materials for Supplying of Hard Dental Tissue - MSES (065007) 2002 Materials for Supplying of Hard Dental Tissue - MSES (0065007) 2003 Development of Technological Procedures for Making Long Term Adhesive Restorations - MSES 2007 Nanostructure of Restorative Materials and Interactions with Hard Dental Tissue -MSES (065-0352851-0410)	
Membership in Professional and Scientific Associations	
Croatian Medical Association International Association for Dental Research Croatian Dental Chamber Croatian Endodontic Society European Society of Endodontology Croatian Society for Biomedical Research	
Foreign Languages	
English	

General Information	
Name	Ivan Puhar
Employee designation	IP071
Title	Scientific Novice - Assistant
Academic degree	DMD degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Periodontology
E-mail	
History of Promotions	
2007 Scientific Novice - Assistant	
Participation in Teaching	
Clinical Periodontology (U)	
Pre-clinical Periodontology (U)	
Participation in Scientific Projects	
Systemic Aspects in Periodontal Deasese Onset	
Croatian Dental Terminology	
Membership in Professional and Scientific Assoaciations	
Croatian Society for Periodontology	
Croatian Medical Association	
European federation of periodontology	
Foreign Languages	
English	

General Information	
Name	Jagoda Roša
Employee designation	JR010
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of physiology
E-mail	jrosa@sfzg.hr
History of Promotions	
1986 assistant	
1996 assistant professor	
2005 associate professor	
2009 full professor	
Participation in Teaching	
Physiology (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian society of biochemistry	
Croatian society of physiology	
European Association for the Study of Diabetes (EASD)	
Foreign Languages	
English, French	

General Information	
Name	Kata Rošin-Grget
Employee designation	KR005
Title	Associate professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of pharmacology
E-mail	rosin@sfzg.hr
History of Promotions	
1987 assistant	
1996 assistant professor	
2002 associate professor	
2007 associate professor	
Participation in Teaching	
General pharmacology (G)	
Dental pharmacology (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
Croatian dental chamber	
Croatian society of pharmacology	
Foreign Languages	
English, Germany	

General Information	
Name	Slavko Sakoman
Employee designation	SS008
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of pshyhiatry
E-mail	slavko.sakoman@gmail.com
History of Promotions	
1979 assistant	
1991 assistant professor	
1998 associate professor	
2004 full professor	
2009 full professor in tense	
Participation in Teaching	
Pshyhiatry (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
Croatian society of pshyhiatry	
Foreign Languages	
English, Germany	

General Information	
Name	Ivana savić Pavičin
Employee designation	IS031
Title	Assistant
Academic degree	Assistant
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of dental anthropology
E-mail	savic@sfzg.hr
History of Promotions	
2004 assistant	
Participation in Teaching	
Tooth morphology with dental anthropology (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
Croatian dental chamber	
Foreign Languages	
English, Germany	

General Information	
Name	Paris Simeon
Employee designation	PS003
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	
History of Promotions	
1994 Junior Researcher - Assistant	
2007 Assistant Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Business Management in Dental Medicine (D) leader	
Participation in Scientific Projects	
Epidemiological Aspects of Endodontics in the Republic of Croatia MSES (065 – 0650445-0434)	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
Croatian Dental Implantology Association	
Croatian Dental Chamber	
Croatian Medical Association	
Foreign Languages	
English	

General Information	
Name	Tonči Staničić
Employee designation	TS008
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	tstanicic50@hotmail.com
History of Promotions	
1975 Assistant	
1989 Assistant Professor	
2004 Associate Professor – first election	
2010 Associate Professor – second election	
Participation in Teaching	
Endodontics (D)	
Restorative Dental Medicine (D)	
Electronic Microscopy of Initial Carious Lesion (P)	
Participation in Scientific Projects	
Nanostructure of Restorative Materials and Interactions with Hard Dental Tissue, 065-0352851-0410	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
Foreign Languages	
English, French	

General Information	
Name	Jasmina Stipetić-Ovčariček
Employee designation	JS014
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	stipetic@sfzg.hr
History of Promotions	
1997 Assistant Professor 2002 Associate Professor 2008 Full Professor	
Participation in Teaching	
Fixed prosthodontics (G) Preclinical and laboratory fixed prosthodontics (G)	
Participation in Scientific Projects	
1983 Project (56) 1984 Investigation of the status of function and needs for prosthetic rehabilitation of the stomatognathic system in Zagreb University students 1988 Testing of materials and improvement of laboratory and clinical procedures in fixed prosthodontics (108090000) 1993 Materials, epidemiology and clinical procedures in fixed prosthodontics – (3-02-376) 1998 Investigation of the building materials and biological basis of fixed prosthodontic appliances (0650152003) Influence of prosthetic construction and different factors on the stomatognathic system (065114) 2007 Oral health and pathological conditions: a multidisciplinary approach and multiregional approach 2007 Metals - biocompatibility and stress in alopecia, depression, and diabetes - MSES (grant No. 022-0222412-2405)	
Membership in Professional and Scientific Associations	
Croatian Medical Association Section of Prosthodontics of the Croatian Medical Association Croatian Society for Prosthetic Dentistry Croatian Anthropological Society European Prosthodontic Association IADR International College of Prosthodontics	
Foreign Languages	
English	

Basic Information	
Name	Mihovil Strujić
Employee designation	MS046
Title	Junior Researcher - Assistant
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Orthodontics
E-mail	strujic@sfzg.hr
History of Promotions	
2004 Junior Researcher - Assistant	
Participation in Teaching	
Preclinical orthodontics (U) Orthodontics (U) Basic computer skills (U) Dental photography (U)	
Participation in Scientific Projects	
New diagnostic methods in orthodontics and biocompatibility of appliances (MSES)	
Membership in Professional and Scientific Associations	
Croatian Orthodontic Society European Orthodontic Society American Association of Orthodontists World Federation of Orthodontics European Federation of Orthodontic Specialists Associations	
Foreign languages	
English, French, Italian	

General information	
Name	Mato Sušić
Employee designation	MS053
Title	Assistant Professor
Academic degree	Ph.D.
Professional title	D.M.D.
Employer	School of Dental Medicine
Unit	Department of Oral Surgery
E-mail	susic@sfzg.hr
History of Promotions	
2007. Assistant Professor	
Participating in Teaching	
Preclinical Oral Surgery – graduate study	
Oral Surgery – graduate study- leader	
Participating in Scientific Projects	
Healing of bone defects after immediate implantation – leader – Grant No. 065-0000000-0424	
Revascularisation of oral structures after traumatic damage (Grant No. 065-1080057-0429)	
Membership in Professional and Scientific Associations	
Foreign Languages	
English	

General Information	
Name	Sanja Šegović
Employee designation	SŠ055
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	segovic@sfzg.hr
History of Promotions	
1989 Junior Researcher	
1999 Assistant Professor	
2005 Associate Professor	
Participation in Teaching	
Cariology (D)	
Restorative Dental Medicine (D)	
Endodontics (D)	
Introduction to Scientific Work (D)	
Microbiology in Endodontics (P) - leader	
Materials for Root Canal Filling and Postendodontic Treatment (P)	
Quality Testing of Postendodontic Systems (P) – leader	
Participation in Scientific Projects	
„Experimental and Clinical Endodontology“ br. 065-0650444-0418	
Membership in Professional and Scientific Associations	
Croatian Endodontic Society	
Foreign Languages	
English	

General information	
Name	Vesna Šerić
Employee designation	VŠ005
Title	Associate professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of neurology
E-mail	sericvesna@yahoo.com
History of Promotions	
2002 assistant professor	
2008 associate professor	
Participation in Teaching	
Neurology (G) - leader	
Participation in Scientific Projects	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian medical chamber	
Foreign Languages	
English, Italian	

General information	
Name	Mirna Šitum
Employee designation	MŠ018
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of dermatovenerology
E-mail	situm@sfzg.hr
History of Promotions	
1999 assistant professor	
2003 associate professor	
2007 full professor	
Participation in Teaching	
Dermatovenerology (G) - leader	
Participation in Scientific Projects	
Investigator in scientific projects supported by the ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian medical chamber	
European academy of dermatovenerology	
Croatian academy of science and arts	
Referral center for malignioma malignum in Croatia	
Foreign Languages	
English	

General information	
Name	Višnja Škerk
Employee designation	VŠ024
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinic for infective diseases „Dr. Fran Mihaljević“
Unit	Chair of infectology
E-mail	vskerk@bfm.hr
History of Promotions	
1997 assistant professor	
1999 associate professor	
2003 full professor	
2008 full professor in tens	
Participation in Teaching	
Infectology (G) - leader	
Participation in Scientific Projects	
Investigator in scientific projects supported by the ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian medical chamber	
Croatian society of infectology	
Foreign Languages	
English	

Basic Information	
Name	Ilija Škrinjarić
Employee designation	IŠ021
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	skrinjaric@sfzg.hr
History of Promotions	
1987 Assistant Professor	
1989 Full Professor	
1996 Full Professor (permanent)	
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Orofacial genetics (U)	
Participation in Scientific Projects	
1991 - 1996 Orofacial anomalies and general genetic disturbances-MSES (3-02-280)	
1996 - 2000 Dental trauma in children-MSES (065-006)	
2001 - 2006 Etiology and pathogenesis of dental trauma in children-MSES (0065-006)	
2007 – Dental trauma in children: prevention and therapy-MSES (065-0653147-1197)	
Membership in Professional and Scientific Associations	
European Academy of Paediatric Dentistry	
International Association for Dental Research	
International Association of Dentistry for Children	
International Association for Dental Traumatology	
Society of Craniofacial Genetics	
American Dermatoglyphic Association	
Croatian Medical Society	
Croatian society for dental traumatology	
Croatian paedodontic society	
Foreign Languages	
English, Russian	

Basic Information	
Name	Tomislav Škrinjaric
Employee designation	TŠ024
Title	Junior Researcher- Assistant
Academic degree	
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	tskrinjaric@sfzg.hr
History of Promotions	
2007 Junior Researcher- Assistant	
Participation in Teaching	
Paediatric and Preventive Dentistry (U)	
Participation in Scientific Projects	
Epidemiology of carious and noncarious lesions in children in Republic of Croatia, MSES, 065-0650445-0408	
Membership in Professional and Scientific Associations	
Croatian Society for Dental Traumatology	
Croatian Paedodontic Society	
Society for the Advancement of Anaesthesia in Dentistry	
European Academy of Paediatric dentistry	
Foreign Languages	
English	

Basic Information	
Name	Martina Šljaj
Employee designation	MŠ040
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Orthodontics
E-mail	msljaj@sfzg.hr
History of Promotions	
2001 Junior Researcher - Assistant	
2009 Assistant Professor	
Participation in Teaching	
Orthodontics (U)	
Preclinical orthodontics (U)	
Participation in Scientific Projects	
New diagnostic methods in orthodontics and biocompatibility of appliances, MSES	
Reorganization and modernization of specialist network for orthodontics in Zagreb city based on evaluation of ortodontic treatment needs in school children, and epidemiological investigation and quality evaluation , three-yrs program – city of Zagreb	
Membership in Professional and Scientific Associations	
Croatian Orthodontic Society	
European Orthodontic Society	
World Federation of Orthodontics	
Foreign Languages	
English	

Basic Information	
Name	Mladen Šljaj
Employee designation	MŠ041
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Orthodontics
E-mail	slaj@sfzg.hr
History of Promotions	
1991 Assistant Professor 1996 Associate Professor 2000 Full Professor 2005 Full Professor (permanent)	
Participation in Teaching	
Orthodontics (U) – leader Preclinical orthodontics (U) - leader Oral epidemiology (P) - leader Biomechanics (P) - leader	
Participation in Scientific Projects	
1984-1990 International projects with University of Mainz 1985-1990 Craniofacial growth and orthodontic aspects in twins Problems of growth and development in children and adolescents, and prenatal development - MSES Orthodontic aspects of growth and development and functional characteristics of orofacial region- MSES 2002-2006 Morphometrical and biomechanical analysis of craniofacial complex-MSES(0065013) 2005-2007 Reorganization and modernization of specialist network for orthodontics in Zagreb city based on evaluation of orthodontic treatment needs in school children, and epidemiological investigation and quality evaluation , three-yrs program – city of Zagreb 2007 New diagnostic methods in orthodontics and biocompatibility of appliances, MSES (065-0650444-0436)	
Membership in Professional and Scientific Associations	
Croatian Medical Society Croatian Dental Society Croatian Orthodontic Society European Orthodontic Society American Association of Orthodontists World Federation of Orthodontists International College of Dentists Federatio Europea Orthodontica	
Foreign Languages	
English	

Basic Information	
Name	Jadranka Štefanac-Papić
Employee designation	JŠ041
Title	Full Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Orthodontics
E-mail	jstefanac@sfzg.hr
History of Promotions	
1988 Assistant Professor	
1993 Associate Professor	
2000 Full Professor	
2005 Full Professor (permanent)	
Participation in Teaching	
Orthodontics (U)	
Preclinical orthodontics (U)	
Dental and osseous age (P)- leader	
Participation in Scientific Projects	
Memberships in Professional and Scientific Associations	
Croatian Orthodontic Society	
European Orthodontic Society	
Croatian medical society	
Foreign Languages	
English, German, Italian	

General information	
Name	Lidija Štefić
Employee designation	LŠ007
Title	Senior Lecturer
Academic degree	Master of Arts, MA (linguistics)
Professional title	Bachelor of Arts (English and Italian language and literature)
Employer	School of Dental Medicine, University of Zagreb
Unit	Chair of General and Social Subjects
E-mail	stefic@sfzg.hr
History of Promotions	
1996 lecturer	
2001 senior lecturer	
2006 senior lecturer	
2012 senior lecturer	
Participation in Teaching	
English in Dental Medicine I (D), course leader	
English in Dental Medicine II (D), course leader	
Participation in Scientific Projects	
HRSTON	
Membership in Professional and Scientific Associations	
HUPE, HPDL	
Foreign Languages	
English, Italian, Latin	

General information	
Name	Ivana Šutej
Employee designation	IŠ057
Title	Assistant
Academic degree	Assistant
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Chair of pharmacology
E-mail	sutej@sfzg.hr
History of Promotions	
2003 assistant	
2011 senior assistant	
Participation in Teaching	
Pharmacology (G)	
Dental pharmacology (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian society of pharmacology	
European society of pharmacology	
Foreign Languages	
English, Italian	

General Information	
Name	Zrinka Tarle
Employee designation	ZT007
Title	Full Professor – tenured position
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Endodontics and Restorative Dentistry
E-mail	tarle@sfzg.hr
History of Promotions	
1997 Assistant Professor 2002 Associate Professor 2006 Full Professor 2011 Full Professor – tenured position	
Participation in Teaching	
Cariology (D) Restorative Dental Medicine (D) - leader Endodontics (D) Dental Materials (D) Composite Materials (P) - leader Enamel-dentine Adhesive Systems (P) - leader Ozone Application in Clinical Practice (P) - leader Experimental Procedures for Testing of Efficiency of Adhesive Systems (P) - leader Experimental Procedures for Testing of Quality of Composite Materials (P) - leader	
Participation in Scientific Projects	
1993-1996 „Mineralization and Demineralization of Hard Dental Tissues“ - MSES (3 02 279) 1996-2002 „Materials for Supplying of Hard Dental Tissue“ - MSES (065 007) 2002-2006 „Materials for Supplying of Hard Dental Tissue“ - MSES (0065 007) 2003 „Development of Technological Procedures for Making Long Term Adhesive Restorations“ 2007 – „Nanostructure of Restorative Materials and Interactions with Hard Dental Tissues“ - MSES (065-0352851-0410)	
Membership in Professional and Scientific Associations	
Croatian Medical Association International Association for Dental Research Board Member of the Central European Division of IADR Croatian Dental Chamber Croatian Endodontic Society European Society of Endodontology	
Foreign Languages	
English	

General information	
Name	Zlatko Trkanjec
Employee designation	ZT008
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of neurology
E-mail	zlatko.trkanecj@kbcsm.hr
History of Promotions	
1999 assistant professor	
2003 associate professor	
2008 full professor	
Participation in Teaching	
Neurology (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian medical chamber	
European Federation of Neurologic Societies	
New York Academy of Sciences	
American Academy of Neurology	
American Association for the Advancement in Science	
Kuratorium International Neuropsychiatric Pula Congresses	
Generalni tajnik Central and East Europe Stroke Societ	
Foreign Languages	
English	

General information	
Name	Robert Trotić
Employee designation	RT001
Title	Associate Professor
Academic degree	Ph.D.
Professional title	M.D.
Employer	School of Dental Medicine University of Zagreb
Unit	Cathedra for otorhinolaryngology
E-mail	trotic@gmail.com
History of Promotions	
2001. Assistant Professor	
2006. Associate Professor	
Participating in Teaching	
Otorhinolaryngology – graduate study – leader	
Endocranial Spread of Inflammatory Dental Lesions – postgraduate study - leader	
Participating in Scientific Projects	
Prognostic factors of cochlear implantation in very small children	
Membership in Professional and Scientific Associations	
International Association of Audiology	
European Academy for Otology and Neuro-Otology	
Croatian Medical Association	
Croatian Society for otorhinolaryngology and head and neck surgery	
Croatian Society for Audiology and Phoniatry	
Croatian Society for Otology and Neuro-Otology - leader	
Foreign Languages	
English, German, French	

General information	
Name	Vedran Uglešić
Employee designation	VU002
Title	Full Professor – permanent election
Academic degree	Ph.D.
Professional title	M.D.
Employer	School of Dental Medicine University of Zagreb
Unit	Catheda for Maxillofacial Surgery
E-mail	vuglesic@kbd.hr
History of Promotions	
1995. Assistant Professot 2002. Associate Professor 2005. Full Professor 2011. Full Professor – permanent election	
Participating in Teaching	
Maxillofacial Surgery – graduate study Principles of Plastic and Reconstructive Head and Neck Surgery – postgraduate study - leader Orthodontic-Surgical Treatment of Sceletal Facial Deformities – postgraduate study - leader	
Participating in Scientific Projects	
2004.-Investigation of quality of life of patients with oral cavity cancer. Grant No. 0198015 2007.- Study of Factors of Quality of life of patients with intraoral cancer –Grant No. 065-1080057-0431 2008.-Biomechanical investigation of forces and osteosynthetic materials on skull model. Grant No. , 065-0000000-3392	
Membership in Professional and Scientific Associations	
Croatian Society for Maxillofacial, Plastice and Reconstructive Head and Neck Surgery European Association for Cranio Maxillofacial Surgery AOASIF European CMF faculty member	
Foreign Languages	
English	

General information	
Name	Zlatko Ulovec
Employee designation	ZU002
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Chair of social medicine and epidemiology
E-mail	Zlatko.ulovec@sfzg.hr
History of Promotions	
2003 assistant professor	
Participation in Teaching	
Social dental medicine (G) – leader	
Epidemiology research (P)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian medical chamber	
Croatian dental chamber	
Croatian society for social health	
Foreign Languages	
English	

General information	
Name	Davor Vagić
Employee designation	DV086
Title	Assistant
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of othorinolaringology
E-mail	davor.vagic@kbcsm.hr
History of Promotions	
2008 assistant	
Participation in Teaching	
Othorinolaringology (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Foreign Languages	
English	

General Information	
Name	Melita Valentić-Peruzović
Employee designation	MV032
Title	Full Professor - permanent title
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Removable Prosthodontics
E-mail	valentic@sfzg.hr
History of Promotions	
1986 Assistant Professor 1989 Associate Professor 1997 Full Professor 2003 Full Professor - permanent title	
Participation in Teaching	
Removable prosthodontics (G) Occlusion – leader (G) Contemporary digital methods in dental diagnostics (P) - leader Gnathological methods in dentistry (P) - leader	
Participation in Scientific Projects	
1998 Measuring of biological sizes with new impedance methods -MST (02-07-259) 1998 Analysis of function and shape of the stomatognathic system – MST (3-02-329) 2001 Analysis of shape and function of the stomatognathic system – MST (065911) 2002 Gnathology online-IT project and the MST (2001-013) 2005 Analysis of the shape and function of healthy and disordered stomatognathic system-MST (0065911) 2007 Biomechanical properties of the masticatory system, therapeutic procedures, aesthetics and function-MSES (448-0957)	
Membership in Professional and Scientific Associations	
International Association for Dental Research Educational Group of IADR European Prosthodontic Association International College of Prosthodontists Croatian Society for Prosthetic Dentistry Croatian Society for Medical Informatics Croatian Medical Association Croatian Academy of Medical Sciences Croatian Society of Biomedical and measuring technique	
Foreign Languages	
English, German	

Basic Information	
Name	Željko Verzak
Employee designation	ŽV009
Title	Associate Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	School of Dental Medicine University of Zagreb
Unit	Department for Paediatric and Preventive Dentistry
E-mail	verzak@sfzg.hr
History of Promotions	
2003 Assistant Professor	
2007 Associate professor	
Participation in Teaching	
General and social dental medicine (U) – leader	
Paediatric and preventive dentistry	
Management in dentistry (U) - leader	
Epidemiology of caries activity in adolescents (P) - leader	
Dental erosion in adolescents (P)	
Participation in Scientific Projects	
1992 Etiology and prevention of dental traumatism (3-02-323)	
1996 Dental trauma in children (065-006)	
2002 Oral health status and improvement measures in children in Croatia - MSES (065-903)	
2006 Etiology and pathogenesis of dental trauma in children - MSES (065-006)	
2007 Epidemiology of carious and non-carious lesions in children in Republic of Croatia - MSES (065-0650445-0408)	
Membership in Professional and Scientific Associations	
Croatian society for paediatric and preventive dentistry	
Croatian society for osteogenesis imperfecta	
Croatian society for dental traumatology	
Croatian society for leukemia and lymphoma	
Croatian dental chamber	
Croatian medical society	
Foreign Languages	
English, German	

General information	
Name	Dinko Vidović
Employee designation	DV101
Title	Assistant
Academic degree	Master of science
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of general surgery
E-mail	dinko.vidovic@gmail.com
History of Promotions	
2010 assistant	
Participation in Teaching	
General surgery (G)	
Participation in Scientific Projects	
Membership in Professional and Scientific Assoaciations	
AO TRAUMA CHAPTER CROATIA	
ESSKA	
AAF	
Foreign Languages	
English	

General Information	
Name	Joško ViskiĆ
Employee designation	JV042
Title	Junior Researcher
Academic degree	University Degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	viskic@sfzg.hr
History of Promotions	
2009 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G)	
Fixed Prosthodontics (G)	
Participation in Scientific Projects	
Investigation of ceramic materials and allergy in dental prosthetics (MSES)	
Croatian dental professional terminology (HRSTON)	
Membership in Professional and Scientific Associations	
European Prosthodontic Association	
International Association of Dental Research	
Foreign Languages	
English	

General information	
Name	Marin Vodanović
Employee designation	MV045
Title	Assistant
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of dental medicine university of Zagreb
Unit	Department of dental anthropology
E-mail	vodanovic@sfzg.hr
History of Promotions	
2001 assistant	
2008 senior assistant	
Participation in Teaching	
Tooth morphology (G)	
Forensic dental medicine (G)	
Participation in Scientific Projects	
HRSTON, investigation in scientific project supported by Ministry of sciences, education and sports	
Membership in Professional and Scientific Associations	
International Association for Paleodontology - voditelj Hrvatska udruga forenzičnih stomatologa Croatian Endodontic Association Croatian Catholic Medical Society International Association for Dental Research Croatian Dental Society - Croatian Medical Association Croatian Dental Chamber	
Foreign Languages	
English, Germany	

General Information	
Name	Denis Vojvodić
Employee designation	DV029
Title	Full Professor - permanent title
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	vojvodic@sfzg.hr
History of Promotions	
1997 Assistant Professor	
2002 Associate Professor	
2006 Full Professor	
2011 Full Professor - permanent title	
Participation in Teaching	
Preclinical and laboratory fixed prosthodontics (G)	
Fixed prosthodontics (G)	
Dental Materials (G)	
Contemporary impression procedures and materials (P) - leader	
Bonding systems of polymer and metal in dental prosthetics (P) - leader	
Participation in Scientific Projects	
2004 Improvement of materials and clinical procedures in prosthodontics	
2007 Investigation of materials and clinical procedures in prosthodontics	
Membership in Professional and Scientific Associations	
Croatian Society for Prosthetic Dentistry	
Croatian Society for Medical Expertise	
European Prosthodontic Association	
Foreign Languages	
English	

General Information	
Name	Domagoj Vražić
Employee designation	DV091
Title	Scientific Novice – Assistant
Academic degree	DMD degree
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department of Periodontology
E-mail	vrazic@sfzg.hr
History of Promotions	
2009 Scientific Novice - Assistant	
Participation in Teaching	
Clinical Periodontology (U)	
Pre-clinical Periodontology (U)	
Participation in Scientific Projects	
Systemic Aspects in Periodontal Deasese Onset (0650650444-0415)	
Croatian Dental Terminology	
Membership in Professional and Scientific Assoaciations	
Croatian Society for Periodontology	
Croatain Medical Association	
Foreign Languages	
English	

General information	
Name	Majda Vučić
Employee designation	MV046
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Department of pathology
E-mail	majda.vucic@kbcsm.hr
History of Promotions	
2003 assistant	
2005 senior assistant	
2006 assistant professor	
Participation in Teaching	
Pathology (G)	
Participation in Scientific Projects	
HRSTON, investigation in scientific project supported by Ministry of sciences, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical society	
Croatian society for pathology	
Society for neurosciences	
Foreign Languages	
English	

General Information	
Name	Vanja Vučićević-Boras
Employee designation	VV014
Title	Assistant Professor
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Oral Medicine
E-mail	boras@sfzg.hr
History of Promotions	
1999 Scientific Novice	
2007 Assistant Professor	
Participation in Teaching	
Oral Medicine (U) - Leader	
Participation in Scientific Projects	
Salivary Markers of Oral Diseases and Application	
Membership in Professional and Scientific Associations	
Croatian Society for Oral Medicine and Pathology - Croatian Medical Association	
European Association of Oral Medicine	
HUHIV	
Foreign Languages	
English, German, Italian	

General information	
Name	Lea Vuletić
Employee designation	LV015
Title	Assistant
Academic degree	Assistant
Professional title	Doctor of dental medicine
Employer	School of dental medicine University of Zagreb
Unit	Department of phisiology
E-mail	vuletic@sfzg.hr
History of Promotions	
2006 assistant	
Participation in Teaching	
Phisiology (G)	
Participation in Scientific Projects	
HRSTON	
Membership in Professional and Scientific Assoaciations	
Foreign Languages	
English	

General information	
Name	Ivan Zajc
Employee designation	IZ013
Title	Junior Researcher - Assistant
Academic degree	D.M.D.
Professional title	D.M.D.
Employer	School of Dental Medicine University of Zagreb
Unit	Department of Oral Surgery
E-mail	zajc@sfzg.hr
History of Promotions	
2007. Junior Researcher - Assistant	
Participating in Teaching	
Oral Surgery – graduate study	
Preclinical Oral Surgery – Graduate Study	
Participating in Scientific Projects	
Revascularisation of oral structures after traumatic damage (Grant No. 065-1080057-0429)	
HRSTON	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General Information	
Name	Zora Zakanj
Employee designation	ZZ008
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of pediatric medicine
E-mail	zakanj@sfzg.hr
History of Promotions	
2007	assistant professor
Participation in Teaching	
Pediatric medicine (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
Croatian society of pediatric medicine	
Foreign Languages	
English, Germany	

General Information	
Name	Zvonimir Zoričić
Employee designation	ZZ012
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of physiatry
E-mail	zoran.zoricic@kbcsm.hr
History of Promotions	
2003 assistant	
2008 assistant professor	
Participation in Teaching	
Physiatry (G)	
Participation in Scientific Projects	
Investigator in scientific projects supported by the Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian society of physiatry	
Foreign Languages	
English	

General Information	
Name	Mario Zovak
Employee designation	MZ013
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Clinical hospital center Sestre milosrdnice
Unit	Chair of general surgery
E-mail	mario.zovak@kbcsm.hr
History of Promotions	
2006 assistant	
2011 assistant professor	
Participation in Teaching	
Firs aid (G)	
Participation in Scientific Projects	
Investigator in scientific projects duported by the Ministry of science, education and sports	
Membership in Professional and Scientific Assoaciations	
Croatian medical association	
International Hepato-Pancreato-Biliary Association	
Foreign Languages	
English	

General Information	
Name	Domagoj Žabarović
Employee designation	DŽ017
Title	Senior Assistant
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	zabarovic@sfzg.hr
History of Promotions	
2001 Assistant	
Participation in Teaching	
Removable prosthodontics (G)	
Preclinical and laboratory removable prosthodontics (G)	
Participation in Scientific Projects	
Improvement of materials and clinical procedures in prosthodontics - MSES (grant No. 065-0650445-0413)	
Healing of bone defect after immediate implant placement - MSES (grant No. 065-0000000-0424)	
Membership in Professional and Scientific Associations	
Croatian Dental Chamber	
Croatian Medical Association	
Croatian Society for Prosthetic Dentistry	
Croatian Society for Dental Implantology	
Croatian Dental Society	
Croatian Society for Medical Expertise	
European Prosthodontic Association	
Foreign Languages	
English	

General Information	
Name	Maja Žagar
Employee designation	MŽ022
Title	Junior Researcher
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	mpavic@sfzg.hr
History of Promotions	
2005 Junior Researcher	
Participation in Teaching	
Preclinical and laboratory removable prosthodontics (G)	
Removable Prosthodontics (G)	
Participation in Scientific Projects	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General Information	
Name	Jasenska Živko-Babić
Employee designation	JŽ004
Title	Full Professor - permanent title
Academic degree	PhD
Professional title	Doctor of dental medicine
Employer	Dental School University of Zagreb
Unit	Department for Fixed Prosthodontics
E-mail	zivko@sfzg.hr
History of Promotions	
1982 Assistant 1988 Assistant Professor 1997 Associate Professor 2002 Full Professor 2008 Full Professor - permanent title	
Participation in Teaching	
Fixed prosthodontics (G) Preclinical and laboratory fixed prosthodontics (G) Dental Implantology (G) Dental Materials (G) - leader	
Participation in Scientific Projects	
Investigation the therapeutic efficacy of prosthetic restorative materials (065-0650448-0439)	
Membership in Professional and Scientific Associations	
Academy of Medical Sciences Croatian Medical Association Croatian Society for Prosthodontics European Prosthodontic Association International College of Prosthodontists Croatian Society of Chemical Engineers Croatian Society for Materials and Tribology Recognition Board of the World Congress of Arts, Science and Communications	
Foreign Languages	
English, German	

#### 4.6 Information on teachers engaged under agreement about external cooperation

General information	
Name	Maja Balarin
Employee designation	MB006
Title	Assistant
Academic degree	MSc
Professional title	Engineer of Physics
Employer	School of Medicine, University of Zagreb
Unit	Department of Biophysics
E-mail	maja@mef.hr
History of Promotions	
2003 Assistant	
Participating in Teaching	
Physics (U)	
Participating in Scientific Projects	
Lipoprotein Structure Derangement Mechanisms by Action of Extrinsic Factors	
Male and Female Reproductive Systems: Development, Normal Histophysiology and Infertility	
Membership in Professional and Scientific Associations	
Croatian Physical Society	
Foreign Languages	
English	

General information	
Name	Ljerka Banek
Employee designation	LB006
Title	Associate Professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of Medicine, University of Zagreb
Unit	Department of Histology and Embryology
E-mail	ljbanek@mef.hr
History of Promotions	
1975 Assistant	
1987 Assistant Professor	
1998 Associate Professor	
Participating in Teaching	
Histology and Embryology (U)	
Participating in Scientific Projects	
Male and Female Genital Systems: Development, Normal Histophysiology and Infertility, MSES, 108-1080399-0383	
Membership in Professional and Scientific Associations	
CAMS	
Section for Electronic Microscopy	
Foreign Languages	
English	

General information	
Name	Nataša Beader
Employee designation	NB014
Title	Senior Assistant
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of Medicine, University of Zagreb
Unit	Department of Microbiology and Parasitology
E-mail	natasaeli@gmail.com
History of Promotions	
1995 Assistant	
2008 Senior Assistant	
Participating in Teaching	
Microbiology and Parasitology (U)	
Participating in Scientific Projects	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, French, Italian	

General information	
Name	Borislav Belev
Employee designation	BB013
Title	Assistant
Academic degree	MSc
Professional title	Medical Doctor
Employer	School of Medicine, University of Zagreb
Unit	Department of Pathophysiology
E-mail	borislavbelev@gmail.com
History of Promotions	
1996 Scientific Novice	
2004 Assistant	
Participating in Teaching	
Pathophysiology (U)	
Participating in Scientific Projects	
Breast Cancer - molecular characterization of tumour	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General information	
Name	Želimir Bradamante
Employee designation	ŽB005
Title	Professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of Medicine, University of Zagreb
Unit	Department of Histology and Embryology
E-mail	zelimir.bradamante@mef.hr
History of Promotions	
1971 Assistant 1981 Assistant Professor 1987 Associate Professor 1994 Professor 2005 Professor - Permanent Title	
Participating in Teaching	
Histology and Embryology	
Participating in Scientific Projects	
Stability of Cellular Differentiation Experimental Embryonic Tumours and Development of Mammals' Embryos In Vitro and In Vivo	
Membership in Professional and Scientific Associations	
Croatian Society of Anatomists, Histologists and Embryologists Croatian Biological Society European federation for experimental morphology	
Foreign Languages	
English, Italian	

General information	
Name	Ana Budimir
Employee designation	AB105
Title	Assistant Professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of Medicine, University of Zagreb
Unit	Department of Microbiology and Parasitology
E-mail	abudimir@hi.t-com.hr; abudimir@kbc-zagreb.hr
History of Promotions	
2007 Senior Assistant	
2008 Assistant Professor	
Participating in Teaching	
Microbiology and Parasitology (U)	
Participating in Scientific Projects	
Genotypes and Virulence Factors in Hospital Infections' Pathogens, 108-1080114-0017, 2007. Resistant Microorganisms: Mechanisms, Genotypes and Interactions with Antibiotics, 1080114, 2007	
Membership in Professional and Scientific Associations	
Croatian Society for Microbiology and Parasitology Croatian Medical Association Croatian Medical Chamber European Society for Microbiology and Infective Diseases	
Foreign Languages	
English, French	

General information	
Name	Floriana Bulić-Jakuš
Employee designation	FB000
Title	Professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of Medicine, University of Zagreb
Unit	Department of Biology
E-mail	floriana@mef.hr
History of Promotions	
1983 Junior Researcher 1989 Assistant 1995 Assistant Professor 2002 Associate Professor 2007 Professor	
Participating in Teaching	
Cell Biology and Genetics (U)	
Participating in Scientific Projects	
Experimental Embryonic Tumours and Development of Mammals' Embryos In Vitro and In Vivo, MSES Biomedical Investigation of Reproduction and Development, MSES	
Membership in Professional and Scientific Associations	
International Society of Developmental Biologists Croatian Biological Society Croatian Society for Laboratory Animals Science Croatian Society for Clinical Genetics Croatian Microscopy Society	
Foreign Languages	
English, Italian, Swedish, German	

General information	
Name	Melita Čačić Hribljan
Employee designation	MČ003
Title	Senior Assistant
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of Medicine, University of Zagreb
Unit	Department of Biochemistry
E-mail	mcacic@yahoo.com
History of Promotions	
2004 Senior Assistant	
Participating in Teaching	
Biochemistry (U)	
Participating in Scientific Projects	
The Role of Gangliosides in Cerebral Maturation and Placticity	
Membership in Professional and Scientific Associations	
Croatian Paediatric Society	
League Against Epilepsy	
Croatian Society for Rare Diseases	
Foreign Languages	
English, French, German	

General information	
Name	Vladimir Damjanović
Employee designation	VD038
Title	Scientific Novice - Assistant
Academic degree	Chemical Engineering degree
Professional title	Engineer of Chemical Technology
Employer	School of Medicine, Univ. of Zagreb
Unit	Department of Chemistry
E-mail	vladimir.damjanovic@mef.hr
History of Promotions	
2009 Scientific Novice - Assistant	
Participating in Teaching	
Chemistry (U)	
Participating in Scientific Projects	
Iron Complexes with Biologically Active Ligands	
Membership in Professional and Scientific Associations	
Foreign Languages	
English	

General information	
Name	Ivančica Delaš
Employee designation	ID001
Title	Associate Professor
Academic degree	PhD
Professional title	Engineer of Biotechnology
Employer	School of Medicine, Univ. of Zagreb
Unit	Department of Biochemistry
E-mail	idelas@sfzg.hr; ivancica.delas@mef.hr
History of Promotions	
2000 Assistant Professor	
2009 Associate Professor	
Participating in Teaching	
Biochemistry (U)	
Participating in Scientific Projects	
1986-1990 "Fatty Acids' Modulation Influenced by Non-conventional Nutrition and by Lipophilic Environmental Factors", MSES	
1991-1995 "Lipid Molecules' Modulation: Influence of Food and Environment" MSES	
1996-2001 "Lipid Molecules' Variations Influenced by Food and Environment" MSES	
2001-2007 "Organism Response to Dietary Change", MSES	
2009 - "Correlation of Lipid Metabolism and PTSD", CASA	
Membership in Professional and Scientific Associations	
Croatian Society of Biochemists and Molecular Biologists	
Croatian Society of Nutrition Technologists, Biotechnologists and Nutritionists	
Croatian-Austrian Society for Cultural and Economic Relations	
Foreign Languages	
English, German	

General information	
Name	Sanja Dolanski-Babić
Employee designation	SD002
Title	Assistant Professor
Academic degree	PhD
Professional title	Engineer of Physics
Employer	School of Medicine, Univ. of Zagreb
Unit	Department of Biophysics
E-mail	dolanski@mef.hr
History of Promotions	
1994 Assistant	
2010 Assistant Professor	
Participating in Teaching	
Physics (U)	
Participating in Scientific Projects	
Strongly correlated inorganic, organic and biomaterials, MSES 035-0000000-2836	
Membership in Professional and Scientific Associations	
Croatian Physical Society	
Croatian Biophysical Society	
Foreign Languages	
English	

General information	
Name	Lana Feher-Turković
Employee designation	LF007
Title	Lecturer
Academic degree	Chemical Engineering degree
Professional title	Chemical Engineer
Employer	School of Medicine, Univ. of Zagreb
Unit	Department of Biochemistry
E-mail	lana.feher-turkovic@zvu.hr
History of Promotions	
1997 scientific Novice - Assistant	
Participating in Teaching	
Biochemistry (U)	
Participating in Scientific Projects	
Membership in Professional and Scientific Associations	
Croatian Society for Biochemistry and Molecular Biology	
Foreign Languages	
English, German	

General information	
Name	Blaženka Foretić
Employee designation	BF000
Title	Associate Professor
Academic degree	PhD
Professional title	Physics and Chemistry Professor
Employer	School of Medicine, Univ. of Zagreb
Unit	Department of Chemistry
E-mail	bforetic@mef.hr
History of Promotions	
1991 Scientific Novice - Assistant	
2007 Associate Professor	
Participating in Teaching	
Chemistry (U)	
Participating in Scientific Projects	
Iron Complexes with Biologically Active Ligands, MSES	
Structural and Functional Glycolipidomics of Cerebral Development and Malignant Transformation, MSES	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, French	

General information	
Name	Srećko Gajović
Employee designation	SG003
Title	Associate Professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of Medicine, Univ. of Zagreb
Unit	Department of Histology and Embryology
E-mail	srecko.gajovic@hiim.hr
History of Promotions	
1999 Assistant Professor	
2005 Associate Professor	
Participating in Teaching	
Histology and Embryology (U)	
Biomorphological Investigations in Dentistry (P)	
Participating in Scientific Projects	
1996-2000 Nol1 Gene Expression in Mouse MSES (Incentive Project)	
2001-2004 Expression and Function of Nucleolar Protein 1 (Nol1) in Mouse - International Centre for Genetic Engineering and biotechnology	
2003-2006 Investigation of Function of Nucleolar Protein 1 (Nol1) in mouse - MSES	
2006-2009 FP6 SSA Neuroimage - EU (Third Party Participant)	
2007-2009 Endosomes and the mouse nervous system: function of signal transducing adaptor molecule 2 (STAM2) - International Centre for Genetic Engineering and biotechnology	
2007-2011 Role of Genes in Murine Central Nervous System Differentiation and Plasticity - MSES	
Membership in Professional and Scientific Associations	
Croatian Microscopy Society	
Croatian Society for Neuroscience	
Croatian Society of Genetic Engineers	
Foreign Languages	
English, German, Italian, French, Slovene	

General information	
Name	Ozren Gamulin
Employee designation	OG000
Title	Assistant Professor
Academic degree	PhD
Professional title	Engineer of Physics
Employer	School of Medicine, Univ. of Zagreb
Unit	Department of Biophysics
E-mail	ozren@mef.hr
History of Promotions	
2008 Assistant Professor	
Participating in Teaching	
Physics (U) (Leader)	
Participating in Scientific Projects	
Lipoprotein Structure Derangement Mechanisms by Action of Extrinsic Factors / 108-1080134-3105	
Male and Female Reproductive Systems: Development, Normal Histophysiology and Infertility / 108-1080399-0383	
Membership in Professional and Scientific Associations	
Croatian Physical Society	
Foreign Languages	
English	

General information	
Name	Đurđica Grbeša
Employee designation	ĐG001
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of medicine <university of Zagreb
Unit	Department of histology and embriology
E-mail	dgrbesa@mef.hr
History of Promotions	
1985 assistant	
1990 assistant professor	
1999 associate profesoe	
2005 associate professor	
Participating in Teaching	
Histology and embryology (G)	
Participating in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
International Society for Stereology	
Society for Stereology and Quantitative Image Analysis	
International Federation of Anatomical Association	
Croatian medical association	
Foreign Languages	
English	

General information	
Name	Lovorka Grgurević
Employee designation	LG001
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of Medicine
Employer	School of Medicine University of Zagreb
Unit	Department of anatomy
E-mail	lgrgurev@mef.hr
History of Promotions	
2000 assistant	
2008 assistant professor	
Participating in Teaching	
Anatomy (G)	
Participating in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian society of anatomy, histology and embriology	
Foreign Languages	
English	

General information	
Name	Davor Ivanković
Employee designation	DI001
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of Medicine University of Zagreb
Unit	Department of statistics and informatics
E-mail	davor.ivankovic@snz.hr
History of Promotions	
1987 Assistant professor	
1997 Full professor	
2003 Full professor in tense	
Participating in Teaching	
Statistics and informatics (G)	
Statistic analysis in dentistry (G)	
Participating in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian society of byometrics	
Croatian society of statistics	
Croatian medical association	
Foreign Languages	
English, Germany	

General information	
Name	Davor Ježek
Employee designation	DJ004
Title	Associate professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of medicine University of Zagreb
Unit	Department of histology and embriology
E-mail	davor@mef.hr
History of Promotions	
1989 assistant	
1999 assistant professor	
2005 associate professor	
Participating in Teaching	
Histology and embryology (G)	
Participating in Scientific Projects	
Investigator in projects supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian Biochemical Society	
European Developmental Biology Organisation	
Society for Stereology and Quantitative Analysis	
The New York Academy of Sciences	
Confederation of European Societies for Electron Microscopy	
Society for the Study of Reproduction	
Alps Adria Society for Immunology of Reproduction	
European Academy of Andrology	
Foreign Languages	
English, Germany	

General information	
Name	Gordana Jurić-Lekić
Employee designation	GJ001
Title	Associate professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	Medical school University of Zagreb
Unit	Department of histology and embriology
E-mail	gjuric@mef.hr
History of Promotions	
1986 assistant	
1994 assistant professor	
2003 associate professor	
Participating in Teaching	
Histology and embriology	
Participating in Scientific Projects	
Investigator in scientific projects supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Croatian medical association	
Croatian society of anatomy, histology and embriology	
European Developmental Biology Organisation	
Foreign Languages	
English	

General information	
Name	Smilja Kalenić
Employee designation	SK013
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of medicine University of Zagreb
Unit	Cgair of mycrobiology
E-mail	skalenic@mef.hr
History of Promotions	
1992 assistant professor	
1997 associate professor	
2002 full professor	
2007 full professor in tense	
Participating in Teaching	
Mycrobiology	
Participating in Scientific Projects	
Invstigator in scientific projects supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
European Society of Clinical Microbiology and Infectious Diseases	
American Society for Microbiology	
Society for Healthcare associated Infections	
International Federation for Infection Control	
Foreign Languages	
English, France	

General information	
Name	Vedran Katavić
Employee designation	VK007
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of medicine University of Zagreb
Unit	Chair of anatomy
E-mail	vkatavic@mef.hr
History of Promotions	
2005 Assistant professor	
Participating in Teaching	
Participating in Scientific Projects	
Investigator in scientific projects supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, Germany	

General information	
Name	Ana Katušić
Employee designation	AK018
Title	Assistant
Academic degree	PhD
Professional title	Ing. byochemistry
Employer	School of medicine University of Zagreb
Unit	Chair of Biology
E-mail	ana.katusic@mef.hr
History of Promotions	
2006 assistant	
Participating in Teaching	
Cell biology (G)	
Participating in Scientific Projects	
Investigator in scientific project supported my Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, Germany	

General information	
Name	Nataša Kovačić
Employee designation	NK056
Title	Assistant professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of medicine University of Zagreb
Unit	Chair of anatomy
E-mail	natasa@mef.hr
History of Promotions	
2007 assistant	
2010 assistant professor	
Participating in Teaching	
Anatomy (G)	
Participating in Scientific Projects	
Investigator in scientific project supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, Germany	

General information	
Name	Dubravka Krilov
Employee designation	DK002
Title	Associate professor
Academic degree	PhD
Professional title	Engineer of Physics
Employer	School of medicine University of Zagreb
Unit	Department of biophysics
E-mail	krilov@mef.hr
History of Promotions	
1974 assistant	
1990 assistant professor	
1998 associate professor	
2004 associate professor	
Participating in Teaching	
Biophysics (G)	
Participating in Scientific Projects	
Investigator in scientific projects supported by Ministry of science, education and sports	
Membership in Professional and Scientific Associations	
Society for free radical research	
Foreign Languages	
English, Italian	

General information	
Name	Zvonko Kusić
Employee designation	ZK010
Title	Full professor
Academic degree	PhD
Professional title	Doctor of medicine
Employer	School of medicine University of Zagreb
Unit	Department of oncology and nuclear medicine
E-mail	zvonko.kusic@zg.t-com.hr
History of Promotions	
1992 full professor	
1999 full professor in tense	
Participating in Teaching	
Clinical oncology (G)	
Participating in Scientific Projects	
20 (7 domestics and 13 international projects)	
Membership in Professional and Scientific Associations	
US-Croatian Oncology Task Force	
European Organisation for Research and Treatment of Cancer	
American Thyroid Association	
European Thyroid Association	
International Council for Control of Iodine Deficiency Disorders	
Foreign Languages	
English	

General information	
Name	Jasna Lovrić
Employee designation	JL001
Title	Associate professor
Academic degree	PhD
Professional title	Engineer of Chemistry
Employer	School of medicine University of Zagreb
Unit	Chair of Chemistry
E-mail	jlovric@mef.hr
History of Promotions	
1987 assistant	
2000 assistant professor	
2006 associate professor	
Participating in Teaching	
Chemistry (G)	
Participating in Scientific Projects	
1986-1996. JF493/DOE	
1988-1994. EUROTRAC	
1990-1996 "Reactivity and reaction mechanisms "	
1990-19996. " Reactions of oximes and carbonyl compounds in the iron complexes "	
2007. FP7/EUWIDW interdisciplinary Metastructure for the Generation and Support of Multicentric Clinical Research Studies	
2007. Therapeutic effect of newly synthesized compounds in organophosphorus poisoning	
Membership in Professional and Scientific Associations	
Croatian-Chemical Society	
Croatian Pharmacological Society	
Foreign Languages	
English	

General information	
Name	Marko Mesarić
Employee designation	MM007
Title	Full professor in tense
Academic degree	PhD
Professional title	Engineer of Biotechnology
Employer	School of medicine University of Zagreb
Unit	Chair of Biochemistry
E-mail	mmesaric@mef.hr
History of Promotions	
1992 assistant professor 1998 associate professor 2004 full professor 2009 full professor in tense	
Participating in Teaching	
Biochemistry (G)	
Participating in Scientific Projects	
Studies of natural hydrocarbons, topic 6-VII / 3 1972 - 1976. Influence of glyceryl ether lipids on enzymes in the blood, the task B.5.14. 1976 - 1980. Disturbed relations in the metabolism of carbohydrates, 62-64 issue, 1981 - 1986. Glycosphingolipids extraneural tissues during development of the human, the task 2.04.01.03.06., From 1987 to 1990, Experimentelle und klinische Hepatologie, SFB 154, 1989 to 1990 Contribution to the knowledge glycolipid metabolism, project 1-07-073, 1991 - 1995. Microbial biomass as a source of biologically active substances - sphingolipids potential anticancer agents, project 108 151, 1996 - 2002. The role and importance of the sphingolipid nutrition, diagnostics and therapy, Project 0108186, 2002 - 2006. Sphingolipids - biologically active compounds, project 108-0000000-0045, 2007	
Membership in Professional and Scientific Associations	
Foreign Languages	
English, German	

General information	
Name	Tamara Nikuševa Martić
Employee designation	TN000
Title	Assistant
Academic degree	University degree
Professional title	Engineer of Biology
Employer	School of medicine University of Zagreb
Unit	Chair of Biology
E-mail	tmartic@mef.hr
History of Promotions	
assistant	
Participating in Teaching	
Cell biology with genetics (G)	
Participating in Scientific Projects	
The role of wnt signaling path in embryogenesis and brain tumorigenesis, 108-1081870-1905	
Membership in Professional and Scientific Associations	
Croatian Society biochemists and molecular biologists; Croatian Society for Neuroscience Croatian Biological Society Croatian Association for Cancer Research	
Foreign Languages	
English, German	

General information	
Name	Daria Pašalić
Employee designation	DP004
Title	Assistant professor
Academic degree	PhD
Professional title	Engineer of Medical Biochemistry
Employer	School of medicine University of Zagreb
Unit	Chair of Biochemistry
E-mail	dpasalic@mef.hr
History of Promotions	
2008 assistant professor	
Participating in Teaching	
Biochemistry (G)	
Participating in Scientific Projects	
Molecular basis of atherosclerosis, 108-1080316-0298	
Membership in Professional and Scientific Associations	
Croatian Society of Medical Biochemists	
Croatian Society of Biochemistry and Molecular Biology	
Foreign Languages	
English, French, German	

General information	
Name	Nives Pećina-Šlaus
Employee designation	NP002
Title	Associate professor
Academic degree	PhD
Professional title	Engineer of Biology
Employer	School of medicine University of Zagreb
Unit	Chair of Biology
E-mail	nina@mef.hr;npecina@sfzg.hr
History of Promotions	
1990 assistant	
2002 assistant professor	
2007 associate professor	
Participating in Teaching	
Cell biology with genetics (G)	
Participating in Scientific Projects	
1997-2002. "Role of the APC gene in human tumorigenesis and embryogenesis," (108 509)	
2002-2005, "The role of the wnt signaling pathway genes in human neoplasms (0108 215)	
2004. "Development of plasticity and recovery after perinatal brain damage"	
2007 "The role of the wnt signaling pathway in tumorigenesis and embryonic brain (108-1081870-1905)"	
Membership in Professional and Scientific Associations	
Croatian Biological Society	
Croatian Association for Cancer Research	
European Society for Cancer Research	
Croatian Medical Association	
Croatian Society for Neuroscience	
Foreign Languages	
English, German, French	

General information	
Name	Zdravko Petanjek
Employee designation	ZP002
Title	Associate professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of medicine University of Zagreb
Unit	Chair of Anatomy
E-mail	zpetanjek@net.hr
History of Promotions	
2002 assistant professor	
2007 associate professor	
Participating in Teaching	
Anatomy (G)	
Participating in Scientific Projects	
Neuroimaging, neurogenomics and pharmacogenomics of the frontal lobe connectivity: normal development and developmental abnormalities in cognitive disorders, UKF project	
Development pre-frontal cortex in man MST	
Migration routes of GABA-ergic neurons in monkeys and humans	
Membership in Professional and Scientific Associations	
Croatian / European Society of Histology and Embryology	
Croatian / European Society for Neuroscience	
Foreign Languages	
English, German, French	

General information	
Name	Igor Picek
Employee designation	IP085
Title	Assistant
Academic degree	University degree
Professional title	Engineer of Chemical Technology
Employer	School of medicine University of Zagreb
Unit	Chair of Chemistry
E-mail	ipicek@mef.hr
History of Promotions	
2003 assistant	
Participating in Teaching	
Chemistry (G)	
Participating in Scientific Projects	
Iron complexes and biologically active ligands, 108-1193079-3070	
Membership in Professional and Scientific Associations	
Foreign Languages	
English	

General information	
Name	Vanda Plečko
Employee designation	PV008
Title	Associate professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of medicine University of Zagreb
Unit	Chair of Microbiology with Parasitology
E-mail	vplecko@gmail.com
History of Promotions	
2006	assistant professor
2010	associate professor
Participating in Teaching	
Microbiology with Parasitology (G)	
Participating in Scientific Projects	
Molecular detection of microorganisms: impact on the use of antimicrobials	
Helicobacter pylori infection: the evolution of the disease and new treatment options	
Membership in Professional and Scientific Associations	
Croatian Microbiological Society	
Foreign Languages	
English, German	

General information	
Name	Stjepko Pleština
Employee designation	SP009
Title	Associate professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of medicine University of Zagreb
Unit	Chair of Patophysiology
E-mail	stjepko.plestina@kbc-zagreb.hr
History of Promotions	
1986 assistant	
2002 assistant professor	
2009 associate professor	
Participating in Teaching	
Patophysiology (G)	
Participating in Scientific Projects	
Molecular markers usolidious tumors - predictive and prognostic significance of "MZOS 108-1080058-0047"	
The "Predictive and prognostic molecular markers of solid tumors"	
Membership in Professional and Scientific Associations	
Croatian Medical Association	
Croatian Medical Chamber	
Croatian society for medical oncology	
ESMO (European Society for Medical Oncology)	
MMOF (Mediterranean Multidisciplinary Oncology Forum) (Head of the Republic of Croatia)	
Croatian Society for Atherosclerosis	
Croatian Society for Medical Expert	
Foreign Languages	
English, French, Italian	

General information	
Name	Ljiljana Šerman
Employee designation	LŠ000
Title	Assistant professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of medicine University of Zagreb
Unit	Chair of Biology
E-mail	sermanl@mef.hr
History of Promotions	
2002 assistant	
2007 assistant professor	
Participating in Teaching	
Cell biology with genetics (G)	
Participating in Scientific Projects	
Experimental tumors and embryonic development of mammalian embryos in vitro and in vivo	
Membership in Professional and Scientific Associations	
Croatian Medical Chamber	
Croatian Biological Society	
Croatian Society of biochemists and molecular biologists	
Croatian Microscopy Society	
Foreign Languages	
English, German	

General information	
Name	Goran Šimić
Employee designation	GŠ000
Title	Associate professor
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of medicine University of Zagreb
Unit	Chair of Anatomy
E-mail	gsimic@hiim.hr
History of Promotions	
2002 assistant professor	
2007 associate professor	
Participating in Teaching	
Anatomy (G)	
Participating in Scientific Projects	
Phosphorylation of tau protein in development and the Alzheimer's disease, the project MSES RC no. 108-1081870-1942,	
The role of membrane lipids in brain development, aging and neurodegeneration, MSES RC no. 108-1081870-1877	
Membership in Professional and Scientific Associations	
Croatian Association for Alzheimer's disease	
Foreign Languages	
English	

General information	
Name	Ivan Vinter
Employee designation	IV002
Title	Full professor in tense
Academic degree	PhD
Professional title	Medical Doctor
Employer	School of medicine University of Zagreb
Unit	Chair of Anatomy
E-mail	
History of Promotions	
1981 assistant professor	
1988 associate professor	
2005 full professor in tense	
Participating in Teaching	
Anatomy (G), leader	
Participating in Scientific Projects	
"Anatomical and anthropological measurements of skull during growth"	
Membership in Professional and Scientific Associations	
Croatian Society of Histology and Embryology	
Anatomische Gesselschaft	
Croatian society for mineralized tissue	
Foreign Languages	
German, English	

General information	
Name	Maja Vlahović
Employee designation	MV001
Title	Associate professor
Academic degree	PhD
Professional title	Engineer of Biology
Employer	School of medicine University of Zagreb
Unit	Chair of Biology
E-mail	majav@mef.hr
History of Promotions	
2002 assistant professor	
2007 associate professor	
Participating in Teaching	
Cell biology with genetics (G)	
Participating in Scientific Projects	
Experimental tumors and embryonic development of mammalian embryos in vitro and in vivo, MSES	
Regulation of Na / H exchanger iso-form 3 (NHE3) mediated CAM kinase II, MSES	
Membership in Professional and Scientific Associations	
EDBO (European Developmental Biology Organization)	
ISDB (International Society of Developmental Biologists)	
Embryological section of Croatian Society of Anatomy, Histology and Embryology	
Croatian Society for Electron Microscopy	
Croatian Biological Society	
Croatian Society of Biochemistry and Molecular Biology	
Epigenetics Society	
Foreign Languages	
English, Italian, German	

General information	
Name	Željka Vukelić
Employee designation	ŽV001
Title	Assistant professor
Academic degree	PhD
Professional title	Professor of Chemistry
Employer	School of medicine University of Zagreb
Unit	Chair of Chemistry
E-mail	zvukelic@mef.hr, zvukelic@sfzg.hr
History of Promotions	
1998 assistant	
2002 senior assistant	
2007 assistant professor	
Participating in Teaching	
Chemistry (G)	
Participating in Scientific Projects	
Structural and functional glikolipidomic of the brain development and malignant alteration (MSES, code: 108-1081870-2415)	
The role of membrane lipids in brain development, aging and neurodegeneration (MSES, code: 108-1081870-1877)	
Membership in Professional and Scientific Associations	
Croatian Society of Biochemistry and Molecular Biology	
Croatian Society for Neuroscience	
Romanian Society for Mass Spectrometry	
Foreign Languages	
English, French	

#### 4.7 List of teaching bases for practical part of classes

- Clinical hospital center „Sestre milosrdnice“, Vinogradska cesta 29, Zagreb
- Clinical hospital „Dubrava“, Avenija Gojka Šuška 6, Zagreb
- Clinic for infectious diseases „dr. Fran Mihaljević“, Mirogojska 8, Zagreb
- Clinical hospital center Zagreb, Šalata 2, Zagreb

#### 4.8 Optimal number of students

The School of Dental Medicine, University of Zagreb enrolls 85 students per year strictly following the guidelines of the Ministry of Science, Education and Sports regarding the real needs of the society by following the work market.

#### 4.9 Evaluation of the costs of study per student

Cost analysis based on a 5-year study program

Expenses for employees	32,418,941.48
Material expenses	8,855,477.10
Financial expenses	51,378.98
Expenses for non-financial property	911,422.19
Total expenditure (in kuna)	42,237,219.74
Number of students	504.67

Evaluation of the costs of study per student per year:  $83.692,75 / 5 = 16,738.55$  KN

#### 4.10 Methods of quality and success monitoring of the study program; participation of the students in evaluation of the study program

Quality and success monitoring of the study program is regularly performed once a year as an internal evaluation at the end of the school year.