CURRICULUM AND STUDY GUIDE

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Vladimir Vatić, GRAFIT, Petrovaradin

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UNIVERSITY OF NOVI SAD
FACULTY OF MEDICINE NOVI SAD

CURRICULUM AND STUDY GUIDE

INTEGRATED ACADEMIC STUDIES
IN DENTAL MEDICINE
Accredited 2021

NOVI SAD, 2022.


ЗЕМЉОМЕРСКИ ФАКУЛТЕТ
НОВИ САД

FACULTY OF MEDICINE NOVI SAD

The Faculty of Medicine, as a part of the University of Novi Sad, is a public, autonomous educational and scientific institution, specialized in the field of higher medical education. It offers both undergraduate and postgraduate studies as well as various forms of training in the field of medical science. Since its foundation, on May 18th, 1960, the Faculty of Medicine Novi Sad has been educating students of Medicine, from 1976 also students of Dentistry, since 1999 students of Pharmacy, and after 2000 students of Nursing, Special Education and Rehabilitation, Medical Rehabilitation and Radiological Technology. Study programes of Integrated Academic Studies in Medicine, Integrated Academic Studies in Dental Medicine and Integrated Academic Studies in Pharmacy are organized in Serbian and English. Bilingual program is available since 1993.

So far, about 10,000 medical doctors, dentists and pharmacists have graduated from our School. Today, former students of our University are proud ambassadors of our school in Greece, Cyprus, Switzerland, Sweden, France, United Kingdom, Germany, Hungary, United States, Canada, India, Iran, Kuwait, Malaysia and China to name a few, and countries in the Middle East, Africa, Asia, Eastern Europe and around the world.

Experience gained during that period has been enough to qualify our Faculty as an autonomous center of excellence for health education and scientific progress. Following dynamic changes, innovations and the idea of common European area of education and science, implementation of Bologna Declaration in our curricula, lead to the fact that Faculty nowadays offers accredited study programs through first, second and third level of education, specialized studies and several other forms of knowledge innovation and education, such as continuous medical education, lifelong learning programs, etc.

Studies are based on approved or accredited programs of higher education in the field of medical science in accordance to the ECTS system and the accumulation of credit points. Closely relying on European standards and programs, our study programs are continuously restructured to focus more on practical forms of learning (practical work, demonstrations, seminars) and adapted to international study programs. At the same time, this educational system encourages medical students and grants them a chance in seeking their own perspectives and inspires them to become well trained and competent physicians and researchers in the field of medical science.

Faculty of Medicine in Novi Sad has a space that is required for the implementation of programs of study (undergraduate, second and third degree programs), information and library space segment as well as the space needed to perform the administrative tasks. Undergraduate and Master Study Secretariat has Department for Studies in English with non-teaching staff qualified for providing service in English. For the relization of practical classes in clinical subjects, which are a majority of study programs in medical sciences, the Faculty of Medicine also uses the available space in its teaching bases (clinics, institutes, departments, healthcare centers, pharmacies, spas, preschool institutions, schools, social institutions) with which the Faculty has a special agreement on teaching process.

To all employees and students, School of Medicine provides ready access to different types of information in electronic form and information technologies, so they can use this information for scientific and educational purposes. The library is equipped with a sufficient number of textbooks required for specific programs of study. In addition to basic literature, library has additional literature (books, monographs, scientific journals, other periodicals). Faculty of Medicine provides enough library units in English language. Students are offered e-books published by Faculty of Medicine, as well. Each Department has coordinator for English studies who is responsable for distribution of teaching material.

CONTACT
University of Novi Sad
Faculty of Medicine
Hajduk Veljova 3
21000 Novi Sad
Serbia
Phone: +381 21 420 677, +381 21 420 678; fax: +381 21 66 24 153
Web-site: www.mf.uns.ac.rs
E-mail: dekan@mf.uns.ac.rs

Secretariat for Studies in English
Phone: +381 21 420 102
E-mail: medns.studiesinenglish@mf.uns.ac.rs

STUDY PROGRAMS

Program	Duration (semesters)	ECTS
Undergraduate Applied Studies – studies of the first level (in Serbian)		
Undergraduate Applied Studies in Radiological Technology	6	180
Undergraduate Academic Studies – studies of the first level (in Serbian)		
Undergraduate Academic Studies in Nursing	8	240
Undergraduate Academic Studies in Medical Rehabilitation	8	240
Undergraduate Academic Studies in Special Education and Rehabilitation (modules: Inclusive Education, Logopedics, Multiple Disabilities)	8	240
Integrated Academic Studies (in Serbian and English)		
Integrated Academic Studies in Medicine	12	360
Integrated Academic Studies in Dental Medicine	12	360
Integrated Academic Studies in Pharmacy	10	300
Master Academic Studies – studies of the second level (in Serbian)		
Master Academic Studies in Nursing	2	60
Master Academic Studies in Special Education and Rehabilitation	2	60
Master Academic Studies in Medical Rehabilitation	2	60
Specialist Academic Studies – studies of the second level (in Serbian)		
Specialist academic studies – Early Childhood Intervention	2	60
Doctoral Academic Studies (in Serbian and English)		
Doctoral Academic Studies in Biomedical Sciences	6	180

ORGANIZATION

Organizational Units:

- Departments
- Institutes
- Laboratories
- Research, Innovation and Educational Centres
- Dean's Office
- Teaching Bases

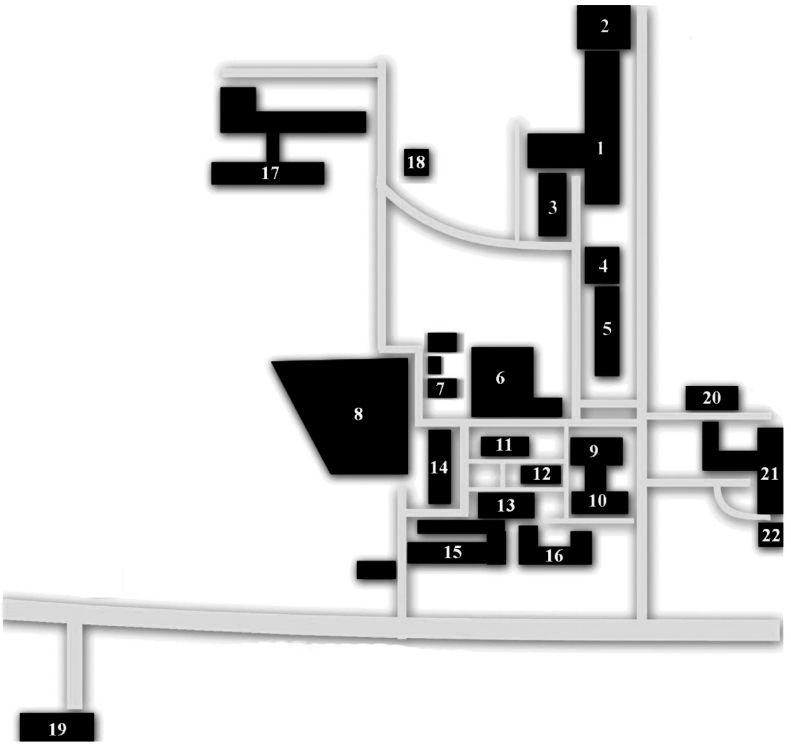
Departments

- Department of Anatomy
- Department of Anesthesiology and Perioperative Medicine
- Department of Biochemistry
- Department of Dental Medicine
- Department of Dermatovenereology
- Department of Emergency Medicine
- Department of Epidemiology
- Department of Forensic Medicine
- Department of General Education Subjects
- Department of General Medicine
- Department of Geriatrics
- Department of Gynecology and Obstetrics
- Department of Histology and Embryology
- Department of Hygiene
- Department of Infectious Diseases
- Department of Internal Medicine
- Department of Medical Rehabilitation
- Department of Microbiology with Parasitology and Immunology
- Department of Neurology
- Department of Nursing
- Department of Occupational Medicine
- Department of Oncology
- Department of Ophthalmology
- Department of Otorhinolaryngology
- Department of Pathology
- Department of Pathophysiology and Laboratory Medicine
- Department of Pediatrics
- Department of Pharmacology and Toxicology
- Department of Pharmacy
- Department of Physical Medicine and Rehabilitation

- Department of Physiology
- Department of Psychiatry and Psychological Medicine
- Department of Psychology
- Department of Radiology
- Department of Social Medicine and Health Statistics with Informatics
- Department of Special Education and Rehabilitation
- Department of Sports Medicine
- Department of Stomatology with Maxillofacial Surgery
- Department of Surgery

Teaching Bases

- University Clinical Center of Vojvodina
- Institute for Health Protection of Children and Youth of Vojvodina
- Institute of Public Health of Vojvodina
- Oncology Institute of Vojvodina
- Institute of Cardiovascular Diseases of Vojvodina
- Institute for Pulmonary Diseases of Vojvodina
- Dentistry Clinic of Vojvodina
- Special Hospital for Rheumatic Diseases Novi Sad
- Institute of Occupational Health Novi Sad
- National Reference Laboratory for Rabies – Pasteur Institute Novi Sad
- Health Centre Novi Sad
- Institute for Emergency Medical Service, Novi Sad
- Institute of Transfusion Medicine
- Institute for Student Health Care Novi Sad
- Health Centre Kula
- Medical School "7th April" Novi Sad
- "Benu" Pharmacies Novi Sad
- Home for Children with Disabilities Veternik
- Special Education School "Milan Petrovic" Novi Sad
- Center for Social Work Novi Sad
- Gerontology Center Novi Sad
- General Hospital "Đorđe Joanovic" Zrenjanin
- Special Hospital for Rheumatic Diseases "Banja Kanjiža"
- Special Hospital for Rehabilitation "Rusanda", Melenci
- Special Hospital for Rehabilitation "Termal", Vrdnik
- Primary School "Kosta Trifković" Novi Sad
- Primary School "Jovan Popović" Novi Sad
- Preschool Institution "Radosno detinjstvo" Novi Sad
- SOS Children's Village "Dr. Milorad Pavlović" Sremska Kamenica
- General Hospital Subotica
- General Hospital Vrbas
- Primary School "Dušan Radović" Novi Sad



1. Faculty of Medicine
2. Institute of Transfusion Medicine
3. Department of Pharmacy
4. Center of Forensic Medicine, Toxicology & Molecular Genetics
5. Center of Radiology
6. Outpatient Clinic
7. Clinic for Infectious Diseases
8. Center of Emergency Medicine
9. Clinic for Eye Diseases and ENT
10. Clinic for Maxillofacial and Oral Surgery, Clinic for Plastic and Reconstructive Surgery, Clinic for Urology
11. Clinic for Orthopedic Surgery and Trauma
12. Clinic for Dermatovenereological Diseases
13. Clinic for Neurosurgery, Clinic for Vascular and Transplant Surgery, Clinic for Anesthesiology and Intensive Therapy
14. Clinic for Nephrology and Clinical Immunology, Clinic for Endocrinology, Diabetes and Metabolic Diseases, Clinic for Gastroenterology & Hepatology, Clinic for Hematology, Center for Intensive Therapy & Toxicology
15. Clinic for Medical Rehabilitation
16. Clinic for Emergency Surgery, Clinic for Abdominal, Endocrine & Transplant Surgery
17. Clinic for Psychiatry, Clinic for Neurology
18. Center of Pathology and Histology
19. Institute of Public Health Vojvodina
20. Dentistry Clinic of Vojvodina
21. Institute for Health Protection of Children and Youth of Vojvodina (Children's Hospital)
22. Clinic for Pediatric Rehabilitation

INTEGRATED ACADEMIC STUDIES IN DENTAL MEDICINE

LEVEL
Integrated Academic Studies

LENGTH OF STUDIES
6 years (12 semesters)

TOTAL ECTS CREDITS EARNED
360

ACQUIRED TITLE
Doctor of Dentistry

LANGUAGE OF INSTRUCTION
English

ENTRY REQUIREMENTS
Previous education

The Integrated Studies of Dental Medicine can be enrolled by the candidates who have completed four-year secondary education (gymnasium or medical school). The applicants need to present a high school diploma/official transcript of grades from secondary school. Foreign citizens and applicants who completed secondary education abroad, need to present relevant secondary school documents validated and recognized by Serbian legal authority (National Agency for Qualification Recognition) confirming their eligibility for higher education studies.

Entrance exam

Applicants for admission into the first year undergraduate studies in English at the Faculty of Medicine Novi Sad must pass the following entrance exams:

- Biology
- Chemistry

The order of candidates for admission into the studies is established according to the results of the entrance examination and general results achieved at high school. The right for admission into the first year of studies is reserved for candidates according to their order in the frame of number determined for enrolment.

Enrolment contest into the first year of studies is carried out by the admission board appointed by the Educational Board of the Faculty of Medicine, whereas details about the procedure itself and entrance examination are arranged by a special record made by the Faculty Council.

Language requirements

Admission of students to the undergraduate studies in English open to students if they are fluent in English (i.e. the language of study), which is supported with relevant certificate on language skills or tested by a relevant board appointed by the Dean of the Faculty of Medicine.

AIMS

The objective of the study program is for students to acquire knowledge:

- From biomedical sciences which form the basis for the understanding of growth, development and human health;
- About the normal structure and function of the human organism, with special emphasis on the orofacial system;
- About oral biology, with detailed knowledge of form and function of teeth and surrounding structures, both in the state of health and in sickness;
- About the diseases of orofacial system from the standpoint of prevention, diagnosis and therapy;
- About the violation of the structure and/or function of the human organism and the etiology of the occurrence of disorders, especially of the orofacial system and the impact of these diseases on the whole organism;
- About the sources of infection and the ways to control infections;
- From respective clinical disciplines which enable the acquisition of manual skills necessary to work in dental medicine;
- About the communication between a doctor of dentistry and patients, their family, colleagues and the public in general;
- About the interpersonal skills necessary to work in a team;
- About the significant principles for the promotion of health, health education and disease prevention concerning the orofacial region;
- About the mental and physical diseases of humans and about human reproduction;
- About the understanding of the relationship between the health status and diseases of the orofacial region and the social environment;
- From the specific disciplines of dental medicine, including the sciences of dental biomaterials, fear and pain control, dental public health, oral and maxillofacial surgery, oral medicine, oral microbiology, oral pathology, oral radiology, orthodontics, pediatric dentistry, pharmacology and therapeutic tools, preventive dentistry, periodontology, operative dentistry and dental prosthetics;
- From deontology, ethics and legal responsibilities of doctors, especially in the field of dental medicine;
- From the necessary clinical experience, under expert supervision in healthcare institutions;
- About scientific methods and application of biomedical measurement, assessment of scientific facts and data analysis.

Graduate students should develop abilities to systematically present acquired knowledge, efficiently use time and resources and participate in team work as well as effectively solve actual problems in the field of oral health. The acquired knowledge, skills and professional attitudes will provide a Doctor in Dental Medicine relevant independence and competence for future work.

The objectives of the study are in accordance with the training outcomes and are available to the public.

COMPETENCIES OF GRADUATE STUDENTS

After completing the study programs of Integrated Academic Studies in Dental Medicine, students develop competencies and use their theoretical knowledge, clinical skills and professional communication standards during their professional and research activities.

Learning outcomes provided by the structure of the Curriculum Integrated Studies in Dental Medicine, enabling the acquisition of knowledge, skill and attitude/behaviour in the following categories of competencies (outcomes): integration of basic sciences in medicine, integration of clinical knowledge and skills in the care of patients, interpersonal and communication skills, professionalism, organization and systematic approach to medicine and continuing education and personal development.

After completing study programme Integrated Academic Studies in Dental Medicine, the students shall acquire competencies to apply theoretical knowledge in the field of medicine and dental medicine, clinical skills and standards of professional communication in performing professional and scientific activities.

Integration of basic sciences in medicine

- Knowledge of the normal structure of the human body (cell tissues and organs)
- Knowledge of the normal function of the human body (cell tissues and organs)
- Knowledge of the nature of the agents and mechanisms that lead to changes in the structure and functioning of the human body
- Knowledge of the nature and pace of change in the function produced by etiological agents and mechanisms (pathophysiology) of the body
- Knowledge of the nature and pace of change in the structure produced by the etiological agents and mechanisms (pathological anatomy) of the body
- Knowledge of the appropriate use of laboratory techniques to identify diseases or health problems
- Knowledge of the effects, metabolism and toxic effects of drugs
- Knowledge of the therapeutic use of drugs
- Knowledge of the normal growth and development
- Knowledge of the principles of health promotion and disease prevention
- Knowledge of the reaction / response of patients to disease

Integration of clinical knowledge and skills in patient care

- Ability to perform adequate physical / dental examination
- Ability to take adequate history
- Ability to use data from the history, the physical examination and the laboratory tests to identify health problems
- Ability to establish an appropriate differential diagnosis
- Ability to design an effective patient management (diagnostic, therapeutic and prevention strategies) in disease conditions and other problems related to dental health
- Ability to monitor the course of oral diseases and undertake appropriate revision of patient management plan
- Ability to perform routine technical procedures specific to a particular field of dental medicine
- Ability to keep record on clinical examination of the patient
- Ability to administer appropriate therapeutics and apply the acquired skills in patient management

- Ability to identify the relationship between healthy and disease condition, patient and his/her environment
- Ability to apply the principles and techniques of prevention and maintenance of oral health in providing of services within oral healthcare system
- Ability to make appropriate use of laboratory methods to identify oral diseases or problems related to oral health
- Knowledge of methods for pain management
- Ability to apply the principles of evidence-based dental medicine in clinical decision making
- Ability to recognize patients with a life-threatening condition
- Ability to interpret the findings obtained from history, clinical and laboratory examination of a specific area of dental medicine
- Ability to adopt therapeutic protocols based on the principles of modern dental medicine

Interpersonal and communication skills

- Ability to demonstrate the skills for effective patient-physician interactions
- Ability to use appropriate communication skills in history taking, diagnosis and implementation of an effective treatment plan
- Ability to communicate effectively with colleagues, patients, and their families, without prejudice to the language, culture, gender, race and lifestyle
- Ability to respect patient's right to refuse treatment or participation in educational or research activities
- Ability to act in accordance with the professional code of ethics and keep patients' data confidential, and to reveal it only in exceptional circumstances, i.e., if the patient or others at risk
- Ability to collect and arrange information, including the use of information technology
- Possession of communication competence, covering written and oral communication in one of the leading European languages

Professionalism

- Ability to apply humanistic values in dental health care
- Ability to collaborate with other health professionals in the provision of health care services
- Ability to respect the dignity, privacy and professional secrecy in the provision of health care services
- Ability of effective interactions with patients, colleagues and other health care workers from culturally diverse backgrounds

Organization and systemic approach to medicine

- Ability to apply concepts and principles of primary care and family medicine in the provision of health care services
- Ability to apply the principles of health promotion and prevention of oral diseases
- Ability to apply the principles and techniques of limiting the cost of providing oral healthcare services
- Knowledge of different healthcare systems, including social, economic and political dimensions
- Understanding of needs and values of consultation and reference of patients to different specialists in the provision of oral healthcare services
- Knowledge of ethical and legal issues relevant to the practice of medicine

Continuing education and personal training

- Recognizing the need for continuous education throughout the professional career in order to follow the latest relevant scientific achievements
- Ability to identify one's own needs concerning education and to use appropriate educational resources
- Ability to critically evaluate medical / scientific literature
- Ability to conceive, design, implement and develop research
- Knowledge of ethical and legal issues relevant to the practice of medicine

ASSESSMENT AND ADVANCEMENT OF STUDENTS

By passing exam student accomplished ECTS credits according to the study program. Number of ECTS credits is expressed in terms of student's workload.

Assessment of students is done by continuous monitoring of students during the study and on the basis of points gained by performing pre-exam requirements and passing the exam. The way and procedure, and other questions on the student assessment are defined by the Rulebook on the assessment of students of the Faculty of Medicine, University of Novi Sad. The method of examination and grading in each course is defined by the course curriculum (practical, written or oral final part). Students are informed in advance about grading, quantification of pre-exam commitments and final exam. During regular classes teachers are testing the students in different ways (practical, written, oral exam, or in combination with one another).

Depending on the individual course, points are scored by attending lectures and exercises, grading tests that are taken during school hours, as well as by writing seminar papers, if they are included. During the school the continuous monitoring of students' work is required. By fulfilling pre-exam commitments and taking exams a student can earn up to 100 points. The proportion of points gained in pre-exam activities and by taking the exam is determined by the study program. The number of points allocated to teaching activities cannot be less than 30 nor more than 70 points.

The final grade (5-10) for each particular course is a reflection of accomplished points:

- <50.99 points – grade 5
- 51-60.99 points – grade 6
- 61-70.99 points – grade 7
- 71-80.99 points – grade 8
- 81-90.99 – grade 9
- 91-100 points – grade 10.

CURRICULUM

The program comprises 70 subjects, including 12 elective blocks with a total of 35 elective subjects. The total number of classes in the curriculum of the study program is 5.805, out of which 2.160 classes are devoted to theoretical teaching, 2.820 classes to practices. Clinical practical work includes 600 classes performed during 11th and 12th semester. Graduate work includes 150 classes of scientific research and 75 classes for final diploma thesis preparation and defence.

When a student has finished all the courses and passed all the exams that are prescribed, he/she starts working on the preparation of graduation thesis and public defence thereof. The number of ECTS credits earned in the students' graduation thesis (20 ECTS) is included in the total number of credits required for completion of the study.

SCHEDULE OF SUBJECTS BY YEAR OF STUDY AND SEMESTER

I year of study												
No.	Course	No. of classes/week						No. of classes/year				ECTS
		Winter semester			Summer semester							
		L	P	OFT	L	P	OFT	L	P	Total	Other classes	
1.	Biophysics	2	1					30	15	45		5
2.	Chemistry in Medicine	3	2					45	30	75		6
3.	Biology with Human Genetics	3	2					45	30	75		6
4.	Ethics in Dental Medicine	2						30		30		2
5.	First Aid		2						30	30		3
6.	Anatomy	3	3		3	3		90	90	180		17
7.	English Language 1	2			2			60		60		4
8.	Medical Statistics and Informatics				2	2		30	30	60		4
9.	Medical Biochemistry				3	3		45	45	90		7
10.	**Elective course 1** 1. Medical Sociology 2. Health Psychology				2	1		30	15	45		3
11.	**Elective course 2** 1. Oral Hygiene 2. Introduction to Dental Medicine 3. Introduction to Scientific Research Work				1	2		15	30	45		3
Total:		No. of classes of active teaching:						420	315	735		60
	Professional practice:											
	Total no. of classes in a year:							735				

L – theoretical teaching (Lectures); **P** – practical teaching (Practice); **OFT** – other forms of teaching

II year of study												
No.	Course	No. of classes/week						No. of classes/year				ECTS
		Winter semester			Summer semester							
		L	P	OFT	L	P	OFT	L	P	Total	Other classes	
12.	Histology and Embryology	4	3					60	45	105		8
13.	Physiology	2	2		2	2		60	60	120		10
14.	English Language 2	2			2			60		60		4
15.	Operative Dentistry – Preclinical	1	3		1	3		30	90	120		10
16.	Cariology	1						15		15		2
17.	Dental Anatomy	1	2					15	30	45		4
18.	Communication Skills	2	1					30	15	45		2
19.	Microbiology with Parasitology and Immunology	4	2					60	30	90		6
20.	**Elective course 3** 1. History of Medicine and Dental Medicine 2. Clinically Oriented Embryology 3. General and Special Medical Cytology				2	1		30	15	45		3
21.	**Elective course 4** 1. Prevention and Infection Control in Dental Medicine 2. Prophylaxis of Oral Diseases				1	2		15	30	45		3
22.	Gnathology				2	3		30	45	75		5
23.	Dental Materials				2	1		30	15	45		3
Total:		No. of classes of active teaching:						435	375	810		60
	Professional practice:											
	Total no. of classes in a year:							810				

L – theoretical teaching (Lectures); **P** – practical teaching (Practice); **OFT** – other forms of teaching

III year of study												
No.	Course	No. of classes/week						No. of classes/year				ECTS
		Winter semester			Summer semester							
		L	P	OFT	L	P	OFT	L	P	Total	Other classes	
24.	General and Oral Pathology	4	2					60	30	90		6
25.	General Radiology	2	1					30	15	45		3
26.	Patophysiology	4	2					60	30	90		6
27.	Dental Prosthetic – Preclinical	2	3		2	3		60	90	150		12
28.	Operative Dentistry - Clinic I	1	3		1	6		30	135	165		12
29.	Pharmacology	2	2		3	2		75	60	135		8
30.	Propedeutics to Pedodontics	1	1					15	15	30		2
31.	**Elective course 5** 1. Dental Protection in the Community 2. Microscopic Laboratory Techniques in Medicine	1	2					15	30	45		3
32.	**Elective course 6** 1. Computer Use in Dental Medicine 2. Rational Phytotherapy	2	1					30	15	45		3
33.	Dental Radiology				1	1		15	15	30		2
34.	Dental Anesthesiology				2	1		30	15	45		3
Total:		No. of classes of active teaching:						420	450	870		60
	Professional practice:											
	Total no. of classes in a year:							870				

L – theoretical teaching (Lectures); **P** – practical teaching (Practice); **OFT** – other forms of teaching

IV year of study												
No.	Course	No. of classes/week						No. of classes/year				ECTS
		Winter semester			Summer semester							
		L	P	OFT	L	P	OFT	L	P	Total	Other classes	
35.	Internal Medicine	2	3					30	45	75		4
36.	Surgery	2	1		1	2		45	45	90		5
37.	Pediatrics	1	1					15	15	30		2
38.	Dermatovenereology	2	1					30	15	45		3
39.	Infectious Diseases	1	2					15	30	45		3
40.	Clinical Prosthetics 1	1	6		1	6		30	180	210		11
41.	Operative Dentistry - Clinic II		3						45	45		3
42.	**Elective course 7** 1. Dental Care of Elderly Patients 2. Dental Traumatology 3. Pharmacotherapy of Infections in Dentistry	2	1					30	15	45		3
43.	**Elective course 8** 1. Bloodborne Diseases and Professional Prophylaxis 2. Experimental Animals and Experimental Design in Medical Research	1	2					15	30	45		3
44.	Pediatric Dentistry I	1	2		1	3		30	75	105		7
45.	Oral Surgery with Implantology 1	2	3		1	4		45	105	150		7
46.	Anesthesia with Perioperative Medicine				1	1		15	15	30		2
47.	Periodontology I				1	2		15	30	45		3
48.	Endodontics I				1	3		15	45	60		4
Total:		No. of classes of active teaching:						330	690	1020		60
	Professional practice:											
	Total no. of classes in a year:							1020				

L – theoretical teaching (Lectures); **P** – practical teaching (Practice); **OFT** – other forms of teaching

V year of study												
No.	Course	No. of classes/week						No. of classes/year				ECTS
		Winter semester			Summer semester							
		L	P	OFT	L	P	OFT	L	P	Total	Other classes	
49.	Neurology	1	1					15	15	30		2
50.	Psychiatry and Psychological Medicine	1	1					15	15	30		2
51.	**Elective course 9** 1. Aesthetics in Dental Medicine 2. Clinical Genetics in Dental Medicine 3. Nanostructured Biomaterials in Dentistry 4. Patients at Risk in Dentistry 5. Professionally Orientated Education of Health Workers in Pharmaceutical Industry	1	2					15	30	45		3
52.	**Elective course 10** 1. Special Care Dentistry 2. Interprofessional Education 3. Ethics in Pediatrics 4. Health of School-Age Children and Adolescents 5. Gynecology with Obstetrics 6. Rational Drugs Use in Pregnancy and Lactation	2	1					30	15	45		3
53.	Oral Medicine	2	2		1	3		45	75	120		6
54.	Clinical Prosthetics II	2	5			4		30	135	165		9
55.	Endodontics 2	1	6			6		15	180	195		10
56.	Oral Surgery with Implantology 2				1	2		15	30	45		4
57.	Pediatric Dentistry 2	1	2		1	3		30	75	105		5
58.	Periodontology 2	1	3		1	3		30	90	120		6
59.	Orthodontics	2	4		2	4		60	120	180		10
Total:		No. of classes of active teaching:						300	780	1080		
	Professional practice:											60
	Total no. of classes in a year:							1080				

L – theoretical teaching (Lectures); **P** – practical teaching (Practice); **OFT** – other forms of teaching

VI year of study												
No.	Course	No. of classes/week						No. of classes/year				ECTS
		Winter semester			Summer semester							
		L	P	OFT	L	P	OFT	L	P	Total	Other classes	
60.	Management in Dental Medicine	2	1					30	15	45		2
61.	Maxillofacial Surgery	2	2		2	2		60	60	120		6
62.	Public Health	3	1					45	15	60		3
63.	Basics of Physical Medicine	1	1					15	15	30		2
64.	Ophthalmology	1	1					15	15	30		2
65.	Clinical Practice										150+450	12
66.	**Elective course 11** 1. Basics of Periodontal Surgery 2. Health Promotion 3. Healthcare Management 4. Professionalism in Healthcare	1	2					15	30	45		3
67.	**Elective course 12** 1. Salivary Theranostics 2. Orofacial Pain	2	1					30	15	45		3
68.	Otorhinolaryngology				2	2		30	30	60		4
69.	Forensic Medicine				1	1		15	15	30		3
70.	Graduation Paper									150*	75	20
Total:		No. of classes of active teaching:						255	210	615		60
	Professional practice:										675	
	Total no. of classes in a year:							1290				

L – theoretical teaching (Lectures); **P** – practical teaching (Practice); **OFT** – other forms of teaching; ***SRW** – Study-research work

Course title: Biophysics

Course status: compulsory

ECTS Credits: 5

Condition: –

Course aim

The aim of this programme is to provide students with the opportunity to develop knowledge of physics needed to understand the function of the major systems of the human body, linking physics to physiology and healthcare. The aim is also to obtain a fundamental understanding of physical phenomena and processes that may be applied in new technologies for healthcare.

Expected outcome of the course:

Upon successful completion of this course, students will demonstrate knowledge of basic physical principles and their applications to the understanding of human body and diagnostic systems used in many aspects of health sciences.

Course description

Theoretical education

1. Static Forces
2. Friction
3. Translational Motion
4. Angular motion
5. Elasticity and Strength of Materials
6. Fluids
7. The Motion of Fluids
8. Heat and Kinetic Theory
9. Thermodynamics
10. Transport Through Neutral Membranes
11. Waves, sound and ultrasound
12. Electricity
13. Impulses in Nerve and Muscle Cells
14. Electrocardiogram
15. Biomagnetism
16. Optics
17. Atomic Physics
18. Nuclear Physics and Nuclear Medicine

Practical education

1. Fluid Viscosity
2. Flow through a pipe
3. Microscope
4. Ultrasound
5. Magnetic resonance
6. Electrocardiogram
7. Optical Bench
8. Audiometry
9. Absorbed Radiation Dose
10. Radioactivity Measurement in Nuclear Medicine

Literature

Compulsory

1. Paul Davidovits. Physics in Biology and Medicine 5th Edition. Academic Press 2018. ISBN: 9780128137161
2. George Hademenos. Schaum's Outline of Physics for Pre-Med, Biology, and Allied Health Students. McGraw-Hill Education 1998. ISBN-13: 978-0070254749
3. Biophysics DeMystiFied 1st Edition McGraw-Hill Professional; 2010. ISBN-13: 978-0071633642

Additional

1. Russell K. Hobbie, Bradley J. Roth. Intermediate Physics for Medicine and Biology 4th Edition. Springer Science+Business Media 2007, LLC. ISBN-10:0-387-30942-X
2. Suzanne Amador Kane. Boris A Gelman. Introduction to Physics in Modern medicine Third Edition. CRC Press; 3 edition 2020. ISBN-13:

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Lectures, students practical work, teacher demonstrations, discussions, virtual science labs, projects, multimedia approach (ppt, video clips, animations)

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Test	60
Practices	20	Practical exam	
Colloquium			
Essay			

Course title: Chemistry in Medicine

Course status: compulsory

ECTS Credits: 6

Condition: –

Course aim

- to provide wide and balanced theoretical knowledge of chemistry and the chemical structure of molecules applied in modern medicine;
- to enable students to understand chemical reactions and processes in the human body.

Expected outcome of the course:

After successfully completing the course the student is able to:

- demonstrates acquired knowledge of chemical principles and reactions necessary for the functioning of the human body;
- lists biologically important elements, ions and biomolecules included in processes in human cells;
- correctly interprets the connection between the structure and activity of simple and complex molecules widely applied in medicine;
- independently analyzes and applies chemical trends in medicine.

Course description

Theoretical education

Atomic theories, chemical bonds, intermolecular forces. Radioisotopes. Water structure, hydrogen bonds, and hydrophobic interactions. Solutions, solubility, diffusion, dialysis, osmosis, osmodiuretics. Acids and bases. pH and buffer systems in the human body. Redox reactions in a living organism. Rate of chemical reactions and chemical equilibria in a living organism. Influence of concentration, pH, ionic strength and temperature on the rate of a chemical reaction. Molecular basis of life – biologically important elements, ions and biomolecules. Organic compounds in medicine. Isomerism, functional groups and reactivity of organic molecules. Heterocyclic compounds in medicine. Relationship between structure and activity of major organic molecules and pharmaceuticals. Chemistry of carbohydrates, lipids and steroids. Amino acids and proteins. Nucleotides and nucleic acids. Vitamins. Amphiphilic biologically active molecules. Fundamentals of thermodynamics of the human organism. Molecular modeling of medically important molecules and pharmaceuticals. Correlation between physicochemical properties and biological activity of molecules. Toxicity of inorganic and organic compounds.

Practical education

Theoretical exercises: Quantitative expression of solution composition. Colligative properties of the solution. Acid-base equilibria: calculation of pH in aqueous solutions of acids, bases and buffers. Salt hydrolysis. Chemical reaction rate. Molecular modeling.

Laboratory exercises: Measurement of mass and volume. Preparation of a solution of a certain concentration. Demonstration of diffusion and osmosis processes. pH measurement. Preparation of buffer solution. Reactions of functional groups of organic compounds. Reactions of biomolecules.

Literature

Compulsory

1. Weekly teaching load provided by lecturers
2. Fundamentals of Medicinal Chemistry, Gareth Thomas, University of Portsmouth, UK, 2003, John Wiley & Sons Ltd.
3. Medicinal Chemistry – A Molecular and Biochemical Approach, 3rd Edition, Thomas Nogrady and Donald F. Weaver, 2005, Oxford University Press, Inc.
4. Principles of Organic Medicinal Chemistry, R.R. Nadendla, India, 2005, New Age International (P) Ltd.

Number of active classes	**Theoretical classes:** 45	**Practical classes:** 30

Teaching methods:

Theoretical classes, practical classes, seminars, consultations

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Practical work	10	Written exam	60*
Tests	60	Oral exam	30

Course title: Biology with Human Genetics

Course status: compulsory

ECTS Credits: 6

Condition: –

Course aim

The aim of the course is to acquaint students with the organization and structure of the cell and cell organelles, the organization of the human genome and the expression of the human genome, as well as with the genetic mechanisms of hereditary diseases. Throughout the course, the student will use numerous sources of information through various forms of teaching activities and gain new knowledge of the fundamental concept and technological advances in human genome research, and will also gain insight into the human microbiome. The aim of the course is to understand and adopt the processes and mechanisms of transferring of the structure and expression of genetic information at the levels of molecules, chromosomes, organisms and populations**.**

Expected outcome of the course:

After completing the course, the student will understand theories about the evolution of life, learn the structure of the cell and cell organelles, and distinguish between prokaryotic and eukaryotic cells as well as between plant and animal cells. They will be able to recognize the importance of certain organelles in the transmission and regulation of gene expression. The student will understand basic genetic concepts and recognize the importance of genetics in modern science. They will learn about chromatin structure, morphological and functional organization of chromosomes. They will clearly distinguish between the stages of meiosis and understand the importance of cell division in transmission genetics. Through examples, they will apply Mendel's laws, understand the intra and inter locus interactions of genes. Students will anticipate possible mechanisms of inheritance and accurately construct pedigree based on given data. They will understand the mechanisms of mutations, and the mechanisms of DNA repair. They will understand and differentiate basic molecular genetics techniques in prenatal diagnosis, population genetics and forensics and understand the principles of gene therapy. After successfully completing the pre-exam and exam obligations, the student will be able to distinguish between levels of structural and functional organization of the human genome; identify mechanisms of regulation of gene expression; understand the processes of genetic experiments that explain causes of hereditary diseases of varying complexity and etiology; explain the methodology of basic molecular genetics techniques in prenatal diagnosis, population genetics and forensics; use internet sources and professional literature with understanding.

Course description

Theoretical education

Evolution of life and the formation of cells and nucleic acids. Cell structure, cell organelles, transport trough the cell membrane. Human microbiome. Nucleic acid structure, DNA replication and types of RNA molecules. Gene expression and control of gene expression. Molecular organization of chromosomes, organization of the human genome. Cell cycle and cell division, gametogenesis, causes of chromosome non-disjunction. Basic principles of inheritance, Mendel's laws, classification of genetic diseases, formation of pedigree. Extension of Mendel's laws: incomplete dominance, codominance, multiple alleles, mitochondrial inheritance. Extension of Mendel's laws: expressivity and penetrance, pleiotropy, phenocopies, genocopies, lethal alleles, linked genes, gene interactions. Autosomal dominant diseases, autosomal recessive diseases. Polygenic, multifactorial and complex diseases. Sex chromosomes and sex-related traits, traits influenced by sex. Sex determination in humans and disorders of gender differentiation. Chromosome aberrations: structural and numerical and analysis of selected syndromes caused by aberrations. Uniparental disomy and gene imprinting. Gene mutations, recombinations, DNA repair mechanisms and diseases associated with malfunctioning of DNA repair mechanisms. Molecular methods in human genetics. Prenatal and preimplantation diagnosis of genetic diseases; Genetic counseling. Possibilities of gene therapy.

Practical education

Nucleic acids and gene expression; Structural and mollecular organization of chromosomes; Cell division; Basic laws of inheritance; Pedigree analysis; Gene interactions. Multiple alleles and blood groups; Gene interactions. Partial dominance. Codominance. Epistasis; Sex determination. Sex-related traits; Chromosomal numeric aberrations; Chromosomal structural aberrations; Multifactorial inheritance; Molecular markers in human genetics.

Literature

Compulsory

1. Turnpenny P, Ellard S. Emery's elements of medical genetics. Elsevier; 2009.

Additional

1. Lewis R. Human Genetics, 12th edition Mc Graw-Hill Education, New York, 2018.
2. Alberts B, Johnson A, Lewis J, Morgan D, Raff M, Roberts K, Walter P. Molecular Biology of the Cell, Sixth Edition. Garland Science, Taylor & Francis Group, New York, US, 2015.

Number of active classes	**Theoretical classes:** 45	**Practical classes:** 30

Teaching methods:

Lectures and practical classes

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures		Written	65
Practices	5	Oral	
Colloquium	30		
Essay			

Course title: Ethics in Dental Medicine			
Course status: compulsory			
ECTS Credits: 2			
Condition: –			
Course aim To encourage students to develop and adopt ethical schemes for the future profession. Making the students familiar with the recent trends in medical ethics.			
Expected outcome of the course: To achieve familiarity with some basic ethical frameworks and understand how these ethical frameworks promote thinking through contemporary questions in medical ethics. To think clearly and carefully through the own positions about important issues in contemporary medical ethics and the compatibility of these positions with broader philosophical commitments (i.e. personality, human and personal rights, human flourishing, etc).			
Course description *Theoretical education* Ethical Theories. Doctor – Patient Relationship. Confidentiality. Truth Telling. Autonomy and Informed Consent. The Definition of Death and the Persistent Vegetative State. Decisional Capacity and the Right to Refuse Treatment. Abortion. Reproductive Control. Religious Ethical Considerations. Seriously Ill and Impared Infants. Euthanasia and Physician-Assisted Suicide. Human and Animal Research. Biotechnology and Reproductive Technology. Embryonic Stem-Cell Research. Plastic Surgery. *Practical education* Seminar paper on selected topics to show the understanding of and analytical engagement in the subject matter.			
Literature *Compulsory* 1. Bjelica A. An outline of medical ethics. Novi Sad: Faculty of Medicine; 2015.			
Number of active classes	**Theoretical classes:** 30		**Practical classes:** –
Teaching methods: Lectures and practical classes			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	50
Practices		Oral	
Colloquium	20		
Essay	20		

Course title: First Aid

Course status: compulsory

ECTS Credits: 3

Condition: –

Course aim

Basic goals of education are introducing students to principles of initial help to suddenly injured or diseased patients. Application of theoretical knowledge in practice. Learning skills for immediate management of the injured, protecting their life as well as the life of a helper and the environment.

Expected outcome of the course:

Teaching: Teaching students about forms of sudden disease and getting hurt and ways of management.
Skills: Skills of examining and recognizing signs and symptoms that require prompt and immediate reaction.

Course description

Theoretical education

1. ERC (European Resuscitation Council) e-platform 2016.

Practical education

Practical teaching is done on models and with situation simulations:

1. Assessment of vital functions and conscience. Maintenance of breathing and securing airways. Bolus obstruction – partial, total. Procedure algorithms in children and adults. Artificial respiration.
2. Appropriate position for injured or suddenly diseased patients (side-relaxing, semi-side position, supine, prond, itting up…).
3. Sudden heart arrest and basic resuscitation methods in adults and children. Application of automatic external defibrillators. Procedure algorithms for resuscitation in adults and children. Special injuries, diseases and conditions and care.

Literature

Compulsory

1. Piazza G. First aid manual. American College of emergency physicians. New York. 2015.

Additional

2. ERC (European Resuscitation Council) e- platform 2016. BLS manual 2016 (PDF)
3. ERC (European Resuscitation Council) ALS manual 2016 (PDF). Paediatric ALS 2016 (PDF).

Number of active classes	**Theoretical classes:** –	**Practical classes:** 30

Teaching methods:

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures		Written	60
Practices	40	Oral	
Colloquium			
Essay			

Course title: Anatomy

Course status: compulsory

ECTS Credits: 17

Condition: –

Course aim

Acquiring knowledge about human body that will be a basis for exploring histological built and form, as well as the possibility of practical application of the acquired knowledge in anatomy for better understanding of morphological structures of head and neck as a whole.

Expected outcome of the course:

Getting to know morphology and built of certain parts of the body. Acquiring knowledge from systematic and topographic anatomy, which will be of use in practical lectures primarily in branches, which are directly linked with pathological anatomy, all surgical branches, groups of conservative therapy, radiological and radiotherapeutical procedures as well as better understanding of biomedical procedures which are oriented towards the needs of pathology from the area.

Learning about practical topics related to anatomy, recognizing and noticing relations between certain anatomic structures on bones (certain parts of the body, organs, primarily of head and neck) as well as on X-ray, MRI and CT scanning. Knowing of anatomical structures represents the basis of surgical techniques, radiological and radiotherapeutical treatments as well as understanding of biomedical and disciplines close to dental medicine.

Course description

Theoretical education

1. General anatomy: general osteology, general arthrology, general myology, general angiology, general neurology. 2. Bones, joints, muscles, blood vessels, lymphatics and nerves of upper limb; regional anatomy of upper limb. 3. Bones, joints, muscles, blood vessels, lymphatics and nerves of lower limb; regional anatomy of lower limb. 4. Back. 5. Thoracic walls. 6. Division of thoracic cavity (pleural cavities, mediastinum). 7. Thoracic viscera (lungs and pleura, heart and pericardium, esophagus, blood vessels, lymphatic system and nerves). 8. Abdominal walls; 9. Division of abdominal cavity. 10. Abdominal viscera (organs, blood vessels, lymphatic system and nerves). 11. Pelvic walls. 12. Division of pelvic cavity. 13. Pelvic viscera (organs, blood vessels, lymphatic system and nerves). 14. Skull and facial bones, craniofacial cavities. 15. Joints, muscles, blood vessels, lymphatic system and nerves of head and neck. 16. Head and neck organs. 17. Regional anatomy of head and neck. 18. Sense organs – skin, eye, ear, sense of taste and sense of smell. 19. External morphology of central nervous system (CNS). 20. Built of central nervous system. 21. Brain pathways. 22. Meninges and ventricular system. 23. Blood vessels of CNS.

Practical education

1. Bones, joints, muscles, blood vessels, lymphatics and nerves of upper limb; regional anatomy of upper limb. 2. Bones, joints, muscles, blood vessels, lymphatics and nerves of lower limb; regional anatomy of lower limb. 3. Back. 4. Thoracic walls. 5. Division of thoracic cavity (pleural cavities, mediastinum). 6. Thoracic viscera (lungs and pleura, heart and pericardium, esophagus, blood vessels, lymphatic system and nerves). 7. Abdominal walls; 8. Division of abdominal cavity. 9. Abdominal viscera (organs, blood vessels, lymphatic system and nerves). 10. Pelvic walls, division of pelvic cavity and pelvic viscera. 11. Skull and facial bones, craniofacial cavities. 12. Joints, muscles, blood vessels, lymphatic system and nerves of head and neck. 13. Head and neck organs. 14. Regional anatomy of head and neck. 15. Sense organs – skin, eye, ear, sense of taste and sense of smell. 16. External morphology of central nervous system (CNS). 17. Sections of the brain. 18. Meninges and ventricular system. 19. Blood vessels of CNS.

Literature

Compulsory

1. Drake R, Vogl W, Mitchell A. Gray's anatomy for students. 3rd ed**.** London: Elsevier; 2014.
2. Netter FH. Atlas of human anatomy. 6th ed. London: Elsevier Health Sciences; 2014.
3. Norton N. Netter's Head and Neck Anatomy for Dentistry. 3rd ed. London: Elsevier; 2016.
4. Mtui E, Gruener G, Dockery P. Fitzgerald's Clinical Neuroanatomy and Neuroscience. 7th ed. London: Elsevier; 2015.

Additional

1. Outlines of lectures
2. Standring S. Grey's Anatomy-The Anatomical Basis of Clinical practice. 41st edition. London: Elsevier Churchill Livingstone; 2016.
3. Waschke J, Böckers TM, Paulsen F. Sobotta Anatomy Textbook. 1st ed. Munich, Germany: Elsevier GmbH; 2019.
4. Logan BM, Reynolds PA, Rice S. McMinn's color atlas of head and neck anatomy. 5th ed. London: Elsevier Inc; 2017.
5. Rubin M, Safdieh JE. Netter's Concise Neuroanatomy. Philadelphia, PA: Elsevier; 2017.
6. Vanderah TW. Nolte's The Human Brain in Photographs and Diagrams. 5th ed. Philadelphia, PA: Elsevier; 2020.
7. Snell RS. Clinical anatomy by regions. 9th ed. Baltimore: Lippincott Williams & Wilkins; 2012.
8. Moore KL, Dalley AF (eds). Clinically oriented anatomy. 5th ed. Baltimore: Lippincot Williams; 2006.
9. Hudak R, Kachlik D, Volny O. Memorix anatomy, 1st ed. Prague: Triton; 2015.

Number of active classes	**Theoretical classes:** 90	**Practical classes:** 90

Teaching methods:

Lectures and practical classes

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures		Test	20
Practices		Practical exam	50
Colloquium	30		
Essay			

Course title: English Language I

Course status: compulsory

ECTS Credits: 4

Condition: –

Course aim

Acquisition of the basic language skills which help students to use language actively and make progress in both general and medical English. To make students aware of how important it is to learn and use English as an international language of science.

Expected outcome of the course:

Learning terminology in both general and medical English. Learning grammar, but concentrating more on language in context. Helping students to understand the basic differences between ESL and ESP and acquire new knowledge in both areas. Improving reading, listening, writing and speaking skills. Active communication and usage of sources in the subject area.

Course description

Theoretical education

Introduction: the importance of using English in everyday life as well as in the professional area; the human body seen from a layman's and a doctors angle. Chemical elements and Compounds: structure of the atom, ions, isotopes, chemical bonds, basic elements that make up human body. The Cell: different living organisms (single-celled, multi-celled), the cell – structure and functions, different types of cells and their functions in the human body. The Skeletal System: types of bones; bone formation and structure – functions; the names of the major bones (their location in the skeleton); articulations. The Muscular System: types of muscles (their functions and structure); tendons and ligaments. The Digestive System: the main parts and other organs which take part in the process of digestion; general and specific functions. The Nervous System: nerve cell (structure and functions); generation and conduction of electrical impulses; the central nervous system; the peripheral nervous system (structure and functions). The Circulatory System: Lymphatic System (parts), Cardiovascular System (structure and functions), the heart, arteries and veins, blood pressure. The Respiratory System: respiration (external and internal); transport of gases; different parts of the system and their functions. The Excretory System: bodysistems and organs which remove waste products (skin, digestive and respiratory system); the urinary system – main organs and their functions. The Endocrine System: basic characteristics and functions, endocrine glands, different hormones and their roles. The Reproductive System: male and female reproductive systems (anatomy); gonads, fertilization, gastation, parturition. Senses: sense organs – their structure and functions (eye, ear, nose, tongue, skin). Body movements: words used for various body movements in everyday life. Physical appearance: description of appearance (hair, face, constitution, skin, general appearance). Character: description of various human characteristics (intelligence, attitudes, behavior, ambitions, righteousness and so on). Clothes: vocabulary on clothes and usage, materials, colors, general appearance, style. Interpersonal and Family Relationships: friendship, acquaintance, fellowship, kinship, love. Travel: means of transport, reasons for travel (business, adventure, touristic), planning, destinations, orientation. Food: various kinds of foods and their effects on health, national cuisines, food preparation, dining-out. Young People and Society: childhood, growing up, adolescence, man's role in the society, individuals as factors of change, students. Humor: humor as a reflection of intelligence and positive way of thinking, humor as a factor of health, cultural phenomenon, sense of humor. Fear: types of fear, causes of fear, overcoming fear, the role of fear in manipulating people. Memory: reliability of memories, training memory, motivation and memory, attention, learning. Loneliness: as a subjective phenomenon, circumstances leading to loneliness, solitude and loneliness.

Practical education

–

Literature

Compulsory

1. Marošan Z. English for medical students. Novi Sad: Ortomedics; 2008.
2. Momčinović V, Tanau V, Žurić Havelka S. Medical English. Zagreb: University of Zagreb School of Medicine; 1988.
3. Raymond M. English grammar in use. Cambridge: Cambridge University Press; 1988.

Additional

1. Mcarthy M, O'Dell F. English vocabulary in use. Cambridge: Cambridge University Press; 1996.
2. Hornby AS. Oxford advanced learner's dictionary of current English. Oxford: Oxford University Press; 1968.
3. MacLean J. English in basic medical science. Oxford: Oxford University Press; 1980.

Number of active classes	**Theoretical classes:** 60	**Practical classes:** –

Teaching methods:

Oral Approach and Situational Language Teaching; Audiolingual Method; Audio-visual method (video presentations, Internet); Lexical Approach; Communicative Approach; Task-Based Language Teaching.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	30	Written	70
Practices		Oral	
Colloquium			
Essay			

Course title: Medical Statistics and Informatics

Course status: compulsory

ECTS Credits: 4

Condition: –

Course aim

To enable students to use basic statistical-analytical procedures, to design simple surveys, to read critically professional and scientific literature and to apply informational technologies in the field of medical sciences.

Expected outcome of the course:

Students will be able to distinguish the statistical aspects of professional and scientific papers in the field of medical sciences, to use different statistical methods, to process and interpret the data collected in the study and to use computers to solve problems by using pre-built software solutions.

Course description

Theoretical education

Basic concepts in statistics. Statistical population, units and symbols. Stages of statistical processing and interpretation of results. Relative numbers. Measures of central tendency. Measures of variability. Homogeneity assessment. The types of samples. Trend. Correlation analysis. Parametric and non-parametric tests for testing statistical hypotheses. Method of population health status analysis. Basics of hardware and software architecture of the computer. System and application software. Basics of computer networks and the Internet. Text editing and calculation in tables.The use of computers in medicine (data processing, medical information systems, medical diagnostics, standards in medical informatics, telemedicine and e-health).

Practical education

Sampling. Selection and use of statistical methods based on problem and variables types. Presenting data in tables and charts. Interpretation of the results and making conclusions. Indicators for population health status analysis. Basic functions of operational system. Working with files. Text editing. Cross-table calculations.

Literature

Compulsory

1. Stewart A. Basics statistics and epidemiology. A practical guide. Abingdon, UK: Radcliffe Medical Press Ltd; 2002.
2. Harris M, Taylor G, editors. Medical statistics made easy, third edition. Banbury, UK: Scion Publishing; 2014.
3. Moore DS, editor. The basic practice of statistics, third edition. New York: W.H. Freeman and Company; 2004.

Additional

1. Peacock JL, Peacock PJ, editors. Oxford Handbook of Medical Statistics. Oxford: Oxford University Press; 2011.
2. Riffenburgh R. Statistics in Medicine. San Diego: Academic Press; 2005.
3. Coolidge LF, editor. Statistics: A Gentle Introduction**.** Third Edition. University of Colorado, Colorado Springs: SAGE publications; 2013.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 30

Teaching methods:

Lecture; Practice; Work on computer

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	70
Practices	20	Oral	
Colloquium			
Essay			

Course title: Medical Biochemistry

Course status: compulsory

ECTS Credits: 7

Condition: –

Course aim

The goal of teaching in medical biochemistry is to enable students to gain knowledge of basic biochemical and metabolic processes in the human body in order to better understand the physiological and basis of pathological processes and thus create the basis for further successful monitoring of medical studies. In addition, to provide an overview of the basic biochemical methods used in clinical biochemistry as a diagnostic tool and thus prepare future dentists to use those methods properly and with understanding.

Expected outcome of the course:

The knowledge of basic chemical constituents of human organism, general metabolic pathways and specific biochemical processes in some tissue types and system of organs in order to, understand the essence of many diseases. Appropriate taking of biological material for biochemical analysis. Assessing reliability of some biochemical methods and their use for diagnosis. Using results of biochemical analysis for diagnosis. Examining the metabolism of the most important constituents of the organism on a basis of measurement in biological samples. Proving basic laws of biochemistry based on laboratory methods.

Course description

Theoretical education

1. Introduction to biochemistry. 2. Water as biological solvent. Amino acids. 3. Peptides. Proteins – structure, qualities, classification. 4. Hemoproteins – haemoglobin, myoglobin and cytochromes. 5. Nucleic acids, general structure, types and function. DNA, genetic code, RNA.
6. Carbohydrates – structure, classification, characteristics. 7. Lipids – fatty acids, simple and complex lipids. Phospholipids and biological membranes. Transport mechanisms. 8. Glycoproteins, lipoproteins and phosphoproteins. 9. Enzymes – structure, characteristics, catalysis mechanism. Kinetics of enzyme reaction. Classification, Isoenzymes, diagnostic value. Coenzymes and vitamins. 10. Chemical thermodynamics. Bioenergetics. Biological oxidation. Transformation of energy. ETS, ATP. 11. Digestion and absorption of carbohydrates. Glycolysis. Oxidative decarboxylation of pyruvate. The Krebs cycle (the citric acid cycle). Pentose phosphate pathway. 12. Digestion and absorption of lipids. Beta oxidation of fatty acids, regulation. 13. Digestion of proteins and absorption of amino acids. Amino acids metabolism, ureogenesis. 14. Synthesis of DNA-replication. Synthesis of RNA-transcription. Synthesis of proteins. 15. Acid-base balance regulation. Electrolytes metabolism. 16. Calcium metabolism, physiological significance. 17. Parathormone, D-hormone and calcitonin. 18. Bone, dentine, cement and enamel. 19. Oral biochemistry – plaque, dental calculus, caries, saliva. 20. Hormones – classification, mechanism of action. Hormones of thyroid gland. Hormones of the adrenal medulla: adrenalin, noradrenalin, dopamine. Hormones of the pancreas. Hormones of the adrenal cortex: gluco-, and mineralocorticoids. Hormones of adeno- and neurohypophysis. Hormones of the gonads: oestrogens, progesterone, testosterone.

Practical education

1. Goals of the practical lessons. Short overview of the lecture program. Assessing reliability of biochemical methods. Introduction to biochemistry laboratory practice. Glass dishes, instruments. Assessing volume. Pipetting, glass and automatic pipettes. 2. Photometry – principles of the Lambert-Beer law. Absorbance (extinction) and molar extinction coefficient. Blank and the standard solution. Colorimeter and spectrophotometer. The absorption spectrum of bromothymol blue (BTB). Application of photometry. Colorimetric determination of bromothymol blue concentration via molar extinction coefficient. 3. Photometry – standard and construction of the calibration curve. Determination of the proportionality factor. Colorimetric determination of BTB concentration via standard solution and calibration curve. 4. Quantitative determination of blood plasma protein concentration – methodology review. Quantitative determination of blood plasma protein concentration using biuret test. 5. Serum protein fractions. Albumen/Globulin index. Plasma fibrinogen isolation using salting out method.
6. Quantitative determination of blood glucose – methodology. Quantitative determination of plasma glucose using o-toluidine reaction and GOD-PAP method. 7. Qualitative determination of urine glucose – methodology review. Polarimetry – principles of the Biot law. Specific optical rotation angle. Determination of specific optical rotation angle of glucose. Quantitative determination of urine glucose using polarimetry method. 8. Qualitative assessment of enzymatic activity of α-amylase from saliva. 9. Principles of quantitative determination of enzymatic activity. Determination of the initial reaction speed of p-nitrophenyl phosphate hydrolysis with alkaline phosphatase. Determination of enzymatic activity via reaction product and UV test. 10. Isoenzymes – definition, characteristics, diagnostic importance of isoenzyme profile. Demonstration of alkaline phosphatase isoenzymes. Vitamins and coenzymes. Quantitative determination of vitamin C in urine. 11. Protein metabolism. Amino acid metabolism. Ureogenesis. Quantitative determination of urea in plasma using the Berthelot method. 12. Metabolism of iron and hemoglobin. Quantitative determination of serum iron, UIBC, TIBC. Determination of hemoglobin concentration 13.Qualitative analysis of bile pigments. Importance of bile pigments metabolism. Demonstration of direct and indirect serum bilirubin. Demonstration of bilirubin, urobilinogen and urobilin in urine. 14. Metabolism of minerals. Quantitative determination of total calcium from blood plasma. Quantitative determination of phosphate in plasma. 15. Metabolism of minerals. Quantitative determination of chlorides in plasma.

Literature

Compulsory

1. Harvey R, Ferrier D. Lippincott's Illustrated Reviews: Biochemistry, 5th Edition. Wolters Kluwer Health, 2011.
2. Rodwell A, et al. Harper's Illustrated Biochemistry, 30th Edition. The McGraw-Hill Education, 2015.
3. Kovačević Z, Milošević Tošić M. Practical Biochemistry. Novi Sad, 2001.

Number of active classes	**Theoretical classes:** 45	**Practical classes:** 45
Teaching methods: Lectures for larger and smaller groups using multimedia. Testing. Practical knowledge – performing biochemical analysis and the interpretation of results.		

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	8	Written	
Practices	12	Practical	15
Colloquium	25	Oral	40
Essay			

Course title: Medical Sociology
Course status: elective
ECTS Credits: 3
Condition: –
Course aim Introducing students to the basic topics, problems and achievements of sociology and medical sociology. The aim is to get students acquainted with the understanding of social relations and contemporary social processes as well as the importance of social problems and challenges of the contemporary medical practice.
Expected outcome of the course: Students acquired knowledge about society and the most important contemporary social processes. Through theoretical, systematic and critical reflection and analysis of the most important issues and subjects of the Medical Sociology, students have knowledge about the connection between contemporary social processes and medical practice and the ability to apply that knowledge in future professional practice.
Course description *Theoretical education* The course covers sociological content that should enable students to think rationally and critically about social interactions, processes, and problems. The course covers the following thematic areas: 1. Sociology and Medical Sociology: subject, origin, development; 2. Sociology of Body; 3. Sociological aspects of health 4. Sociological aspects of disease; 5. Social interaction and communication in Medicine: doctor-patient relationship; 6. Professions and the professionalization in Medicine; 7. Social inequalities, health and public health; 8. Medicine and media; 9. Medicine and Risk society. *Practical education* Study research work Lectures, discussions, dialogue, presentation of literature, tutorial giving instructions for independent study of individual content units.
Literature *Compulsory* 1. Giddens, Anthony (2003). *Sociology. 6th Edition*. Cambridge: Polity Press.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15
Teaching methods		

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	30	Written	50
Practices	20	Oral	
Colloquium			
Essay			

Course title: Health Psychology

Course status: elective

ECTS Credits: 3

Condition: –

Course goals

Students will gain knowledge of the significance in relationship between psychology and medicine, as well as about the role of psychological constructs in the health care settings. They will acquire knowledge about the influence of psychological factors and the importance of stress in the onset of psychosomatic diseases. They will also gain knowledge of posible ways in overcoming stress and pain management. They will also be acquainted with current tendencies in interdisciplinary approaches (e.g. psychoneuroimmunology, psychooncology). They will master the knowledge that will enable them to recognize the burnout syndrome at work, along with appropriate strategies of how to overcome it.

Subject outcomes

After completing this course it is expected that students will be able to:

- Know and understand the definition of health psychology and the theoretical models on which it is based (biomedical; psychosomatic, bio-psychosocial model).
- Understand the psychological aspects of illness and health
- Recognize different psychological reactions to symptom, illness, and importance of seeking professional help and social support
- Understand the role of stress in the onset of psychosomatic diseases and possible ways in overcoming stress
- Recognize the role of personological factors in experiencing and managing pain (acute and chronic pain states)
- Understand the psychological aspects of serious illnesses and terminal conditions (e.g. cancer, AIDS, etc.),
- Understand the health psychology concepts in different periods of life (childhood, adolescence, adulthood and older life)
- Understand the psychological aspects of hospitalization in patients of different ages
- Understand and recognizes the phenomenon of burnout syndrome at work

Course content

Theoretical education

Defining health psychology (biomedical, psychosomatic and biopsychosocial model). Stressogenic life events. Stress management and social support. Psychosomatic diseases (asthma, obesity, addiction diseases, arthritis, diabetes, psychogenic headaches, heart disease and hypertension, irritable colon, etc.). Chronic fatigue syndrome. Experiences of pain and pain managament. Health psychology in different periods of life (childhood, adolescence, adulthood and older life). Psychoneuroimmunology. Psychosocial oncology. Placebo. Burnout syndrome at work.

Practical education

Health behavior and change, as well as coping mechanisms and coping with illness. Understanding the relationship between stress and disease. Psychological approach and interventions for patients with different chronic and acute diseases. Pain management (psychological treatment of pain). Understanding the relationship between patient and healthcare provider. Understanding the principles of establishing healthy habits at different ages. Factors that influence the development of healthy habits and healthy lifestyles. Relationship between social support and health. A review of models and strategies of health behavior change aimed at reducing health problems. Recognizing the symptoms of burnout syndrome and acquiring strategies to overcome it.

Literature

Obligatory

1. Albery I, Munafò M. Key concepts in health psychology. London: Sage, 2008. (selected chapters)
2. Baum A, Newman S, Weinman J, McManus C, West R. (Eds.). Cambridge handbook of psychology, health and medicine. New York: Cambridge University Pres, 1997. (selected chapters)

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Lectures, interactive teaching, reviewing and analyzing case studies, seminar papers, consultations

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	60
Practices	10	Oral	
Colloquium	20		
Essay			

Course title: Oral Hygiene

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

The objective of the course is to introduce students to the importance of maintaining oral hygiene in maintaining oral health and the various techniques and means for maintaining oral hygiene.

Expected outcome of the course:

Knowledge: It enables the student to understand the importance, role and possibilities of preventive measures.

Skills: To master the basic conditions for performing oral hygiene (possessing complete accessories, appropriate technique, regularity, frequency and length of tooth brushing), to properly use basic and auxiliary means for performing oral hygiene, to properly perform various techniques of tooth brushing, to diagnose the presence of deposits and plaque on the teeth and apply different methods for their removal (use of handpiece and prophylactic pastes), to properly use the interdental floss and the water jet apparatus in cleaning the approximate surfaces of the teeth and the interdices to understand the importance and manner of maintaining oral hygiene in patients with special needs, to take an anamnesis from the patient regarding the maintenance of oral hygiene (habits of patients regarding the maintenance of oral hygiene, whether the patient has complete accessories, whether regularly, properly and sufficiently long teeth brushing), to explain to the patient the purpose and importance of regular oral hygiene and to show how it is practically performed (demonstration of toothbrush technique), to recommend the patient a suitable toothpaste and to explain the effect of fluoride toothpaste and in the prevention of tooth decay and to motivate the child, parents and patients to regularly and properly maintain oral hygiene.

Course description

Theoretical education

1. Introduction to the subject of oral hygiene; Importance of oral hygiene for oral and systemic health
2. Basic conditions for maintaining oral hygiene in the prevention of oral diseases
3. The impact of nutrition on oral health
4. Dental biofilm
5. Mechanical control of dental biofilm
6. Chemical control of dental biofilm
7. Essential oral hygiene products
8. Oral hygiene aids
9. Toothbrush techniques
10. Toothbrush training methodology
11. Oral Hygiene Assessment Indices
12. The role of water jet apparatus in maintaining oral hygiene
13. Specific features of oral hygiene maintenance (orthodontic and prosthetic work, implants ...)
14. Specific features of oral hygiene in children
15. Specific features of maintaining oral hygiene in persons with special needs

Practical education

Practical classes that accompany the theoretical instruction program will be held at the appropriate faculty of the School of Medicine to familiarize themselves with the importance of oral hygiene in dentistry, as well as discussions about current knowledge of oral hygiene methods and materials

Literature

Compulsory

1. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures; Practices

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	60
Practices	20	Oral	
Colloquium			
Essay			

Course title: Introduction to Dental Medicine

Course status: elective

ECTS Credits: 3

Condition: –

Course aim is to acquaint the student with the role and organization of the activity of dental medicine in the healthcare system and society, as well as to gain insight into the professional development path.

Expected outcome of the course:
Student should understand the importance of dental medicine in maintaining general health, be familiar with the organization and basic principles of dental health care, as well as acquire basic knowledge of the forms of education and professional training of dental doctors. The aim of this course is to acquaint students with the basic concepts of the profession they will be dealing with, as well as the relationship between dental and general medicine, as well as the position of dental medicine in society. Also, the development of dental medicine in Serbia and in the world will be presented.

Course description
Theoretical education
1. The role and importance of dental medicine. 2. Public health aspects of oral diseases. 3. Obtaining the title Doctor of Dental Medicine. 4. Organization of dental medicine activities within the health care system. 5. Vocational education after studying dental medicine. 6. Dental medicine now and then. 7. Disciplines of dental medicine. 8. The role of dental medicine in maintaining general health.9. Dental clinic. 10. Dental team and organization of work in the dental office. 11. Professional and iatrogenic diseases of dentists. 12. Forms of continuing education. 13. Professional Associations. 14. Duty of professional development of dental doctors.15. Health insurance.

Practical education
Introduction in clinical work in the dental office (organization and staff)

Literature
Compulsory
1. Harold O Heymann, Edward J Swift, Andre V Ritter: Sturdevant s Art and Science of Operative Dentistry. 7th Edition, Elsevier 2016.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:
Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 points presence 15 points activities	Written	50
Practices	5 points presence 15 points activities	Oral	
Colloquium			
Essay	10		

Course title: Introduction to Scientific Research Work

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

The aim of this course is to point out the importance of research and provide students with knowledge about basic principles of research-scientific work in the field of biomedicine and special characteristic of scientific work in dentistry.

Expected outcome of the course:

Differentiate science from pseudoscience; know conditions for authorship, and know what authorship is not; know ethical aspects of research, and about dishonesty in science; know about necessary conditions for scientific research; understand and define scientific problems; understand and test hypothesis; differ scientific publications and their characteristics; know about electronic search services, databases and electronic journals; know basic characteristics of the descriptive method, cross-sectional studies, anamnestic studies, cohort studies, as well as experiments in the community and field expeiments, their application, advantages and disadvantages, sample sellection, result generalization, establishing and testing hypotheses; know the different measurement errors and understand their impact on the results of scientific research; understand importance of various statistical methods i research, as well as interpretation of scientific significance; understand basic principles of clinical trials, sample selection, and specificities of clinical drug investigations; know about scientific projects, their preparation, components, review and evaluation; know about modes of data collection and processing data; know the structure of a scientific work; understand citation, and rules in reference citation; know about evaluation criteria regarding scientific papers.

Course description

Theoretical education

Science and pseudoscience. Research problem. Hypothesis. Categories of scientific publications. Biomedical scientific information. Descriptive studies. Cross-sectional studies. Anamnestic studies. Cohort studies. Clinical trials. Clinical drug trials. Ethical principles in research. Bias and affiliation. Data collection. Sampling. Analysis of statistical results in research. Science projects. Authorship. Intellectual dishonety. Mentorship. Evaluation of scientific work. Research structure. Reference citation. Research presentation. Evidence-based medicine.

Practical education

Science and pseudoscience. Identification of a research problem. Setting a hypothesis. Research structure. Authorship. Electronic databases. Reference citation. Descriptive studies. Cross-sectional studies. Anamnestic studies. Cohort studies. Clinical trials. Clinical drug trials. Bias and affiliation. Research presentation. Analysis of statistical results. Sampling. Data collection and questionnaires. Science projects.

Literature

Compulsory

1. Rašković A, et al. Authorized handouts for Introduction to scientific research work.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures, practice.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	50
Practices	15	Oral	
Colloquium	30		
Essay			

Course title: Histology and Embryology

Course status: compulsory

ECTS Credits: 8

Condition: –

Course aim

Acquiring knowledge in cytology and tissue histology, as well as histological properties of all organ systems. Analysis of teeth structure and supporting and surrounding tissues and organs, including oral cavity, gums, periodontium, alveolar bone, temporomandibular joint, salivary glands and tonsils. Students should understand embryonic development, and acquire knowledge and skills necessary to distinguish specific phases in human embryonic and fetal development, histological structure of fetal organs with detailed knowledge on development of head and neck region of significance in dental medicine.

Expected outcome of the course:

Knowledge: Student needs to be able to: 1. specify ultrastructural, morphological and functional properties of the cell and organelles; 2. differentiate of all basic types of tissues, their morphological characteristics, location and function 3. morphological characteristics of organs in all organ systems, 4. recognize and differentiate histological features of developing organs in head and neck region, relevant for dental medicine; 5. Interpret morphological features of pre-embryonic, embryonic and fetal human development 6. differentiate morphological features of development of teeth, face, oral cavity, tonsils and salivary glands, 7. morphological basis of disorders in development of specific organs and organ systems.
Skills: Student will become capable to: 1. distinguish 4 basic types and all subtypes of tissues under light microscope 2. distinguish all organs presented in theoretical and practical classes, point to their elements relevant for structure and for differentiating them from other organs 3. describe and recognize in histological slides all histological structures of placenta, umbilical cord and of developing organs including teeth and fetal jaw as seen under light microscope.

Course description

Theoretical education

1. Histological characteristics of epithelial, connective, muscle and nervous tissue, subtypes, structure, function and localization in the body.
2. Fertilization, umbilical cord and placenta, pre-embryonic development, germ layers – ectoderm, mesoderm and endoderm and their further differentiation, embryonic and fetal development of tissues, folding of the embryo and formation of the primitive gut, formation of the head and neck, development of the digestive, respiratory, circulatory system, lymph organs, development of nervous, sensory and endocrine system, reproductive system, urinary system and skeleton. Malformations in the process of development, macroscopical and microscopical characteristics.
3. Embryonic development and histological properties of head and neck region, development of face, oral cavity, teeth with eruption process, salivary glands, tonsils and temporomandibular joint.
4. Development and histological structure of enamel, dentin, cement, pulp and periodontium.
5. Histological structure of organs of the circulatory and immune system, digestive system and glands of digestive system, respiratory system, urinary system, male and female reproductive system, endocrine and nervous system, sense organs, integumentary system, bone and joints.

Practical education

1. Epithelial tissue, covering, glandular and sensory epithelium, simple and stratified epithelium, connective tissues with liquid, viscous and solid matrix, muscle and nerve tissue.
2. Histological structure of the heart, arteries, capillaries, veins, thymus, lymph nodes, spleen, tonsils, mouth, pharynx, esophagus, stomach, small and large intestine, liver, gall bladder and pancreas, trachea, lungs, kidneys and urinary pathways, ovaries, fallopian tubes, uterus, breast, testes and extra testicular pathways, glands of the male reproductive system, pituitary and pineal gland, thyroid and parathyroid glands, adrenal glands, organs of the central and peripheral nervous system, organs of sense of sight, hearing, taste and smell, skin and derivatives of skin.
3. Histological structure of embryonic and fetal tissues and organs: umbilical cord, placenta, development of epithelial, connective, muscle and nervous tissue, development of skeleton, ossification, fetal liver, pancreas, lungs, kidneys, ovaries, testes.
4. Histological structure of jaw development, jaw ossification, supporting tooth apparatus, growth and development of permanent and milk teeth, tooth emergence.

Literature

Compulsory

1. Ross M, Kaye G, Pawlina W. Histology: A Text and Atlas. 8th ed. Wolters Kluwer Health; 2019. 928p.
2. Sadler TW. Langman's Medical Embryology. 14th ed. LWW Lippincott Williams and Wilkins; 2018. 456p.

Additional

1. Junqueira LC, Carneiro J (edited by Mescher AL). Junqueiras Basic Histology: Text and Atlas. 15th ed. The McGraw-Hill Companies; 2018. 480p.
(For the purposes of learning histology, older editions of the aforementioned literature are also appropriate.)

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 45

Teaching methods:
Lectures and Practice

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Practical	10
Practices	20	Written	
Colloquium	5	Oral	50
Essay	5		

Course title: Physiology

Course status: compulsory

ECTS Credits: 10

Condition: –

Course aim

The aim of the physiology study is that the students gain knowledge about the functioning, the mutual integration and interactions of cells, tissues, organs, organic systems and human organism as a single unit, as well as the forms of their organization, regulation and mechanisms for maintaining homeostasis in the changing external and internal conditions.

Expected outcome of the course:

The acquired knowledge in physiology should provide students with a logical understanding of the fundamental mechanisms of physiological processes in the body, ways of maintaining homeostasis at the level of the cell membrane, cell, organ and organic system and maintaining health in the human body. Students should understand the nervous and humoral regulatory mechanisms and the principles of functioning of the organism and organ systems in different states and under the influence of external and internal changes. Such knowledge should prepare them to work with different clinical subjects. Students should acquire basic knowledge of laboratory equipment and work in laboratory conditions, general principles and rules of the attitude towards the respondent or patient and to learn how to properly conduct basic examinations that give insight into the physiological state of the organism, which will enable them to participate safely in practical learning within professional within professional subjects and clinical practice.

Course description

Theoretical education

Introduction in physiology: Functional organisation of human body and control of homeostasis. Cells as basic living units of human body, their functional parts and their function. Special importance and role of the cell membrane and their structures. Transport through biological membranes. Basics of the homeostatic mechanisms. **Respiration:** Respiratory pathways. Respiratory surface. Ventilation. Phonation and speech. Lung volumes and capacities. Physiological characteristics of pulmonary circulations. Transport of gases to the cells. Main and accessory respiratory musculature. Interpleural pressure. Regulation of respiration. Kinds and types of respiration. Respiration in the conditions of decreased and increased atmospheric pressure. **Blood:** General functions of blood. Blood plasma. Red blood cells. White blood cells. Immunity and immune bodies. Platelets. Coagulation and homeostasis. Blood types. Transfusion and transplantation. **Heart, circulation and lymph**: Functional characteristics of circulation. Morphofunctional characteristics of the heart muscle. Pericardium. Specialized excitable and conductive system of the heart. Specific bioelectrical events in the working and specialized heart muscle. Heart cycle. Heart sounds. Heart hemodinamics. Registration and analysis of ECG. Regulation of the heart. Policardiography. Basic characteristics of the circulation. Blood vessels. Arteries. Capillaries and exchange of substances. Veins. Lymph system. Regulation of local blood flow. Regulation of blood pressure. Neurohumoral mechanisms of blood vessels diameter regulation. **Digestion** Basic functions of the digestive system. Basic movements in the digestive tract. Digestion in the mouth. Saliva, regulation of salivation. Vomiting. Digestion in the stomach. Digestion in the small intestine. Roles of the pancreas in digestion. Bile. Digestion in the large intestine. Resorption in different parts of digestive tract. Regulation of digestive juices excretion. Liver. Defecation. **Metabolism**: Role of nutrients. Minerals and vitamins. Methods of investigation of the metabolism. Respiratory quotient. Basal metabolism. Metabolism in physical activity. Design of the daily menu. **Thermoregulation**: Mechanisms of maintenance of the temperature balance of the body core. Physical and chemical thermoregulation. Physiological basis of hypo- and hyperthermia. **Excretion:** Physiological roles of the kidneys. Ultrastucture of the nephrons. Glomerular filtration, filtration membrane, pressures and autoregulation. Mechanism, level and changes of the tubular reabsorption and secretion. Tubulo-glomerular feedback. Role of kidneys in the homeostasis of the osmolality, volemia, ionia, blood pressure. Renal concentration power. Regulation of kidney function. Quantity and quality of the urine. Miction. **Excitable tissue:** Resting potential. Action potential. Laws of excitation. Local answer. Refractoriness. Action potential propagation. Accommodation. **Senses:** General features, division and basic function Senses. Receptors. Vision. Light refraction part of eye. Light receiving part of eye. Lences and ophthalmoscopy. Hearing. Equilibrium. Muscle-joint perceprion. Tactile and termal perception. Visceroreception. Smell and taste. Pain and analgesic system. **Muscles:** Division of muscles in body. Morpho-functional characteristics of sceletal muscles. Neuromuscular synapses. Conection between excitation and contraction. Sceletal muscle contraction. Different muscle contractions. Types of muscle fibers. Motor unit. Muscle tone. Energetics of muscle contraction. Work, power and muscle fatique. Morpho-physiological characteristics of smooth muscle. **Autonomous nervous system:** Sympathetic and parasympathetic nervous system: structure, classification, of the vegetative ganglia and their function, specific mediators. Division of vegetative reflexes and the significance of dual organ innervation. Effects of the autonoumous nervous system in the inner organs functioning. **Endocrinology:** Basic characteristics of hormones and endocrine glands. Thyroid gland. Parathyroid gland. Pancreas. Suprarenal gland. Male and female gonads. Pituitary gland: hormones, function, and regulation of secretion. Hypothalamo-pituitary complex. Regulation of glucose homeostasis. Regulation of calcium homeostasis. Other organs with endocrine role: thymus, epyphiseal gland, spleen, heart and kidney. Tissue hormones. **Physiology of central nervous system:** Neuron. Neuron types and classifications. Synapses in CNS. Neuromediators, neuromodulators and neurotrophic factors. Neuroglia. Nervous center. Organization of nervous system. Inhibition in CNS. Spinal cord. Medulla oblongata and pons. Reflex function. Functional significance of conductive pathways in medulla oblongata. Mid brain. Reticular formation of brainstem. Thalamus Hypothalamus. Limbic structures of the brain. Cortex. Specific organization of cortex cerebri. Functions of left and right hemisphere of the brain and their connection. Basal ganglia. Cerebellum. Alertness and sleeping. Cognitive functions. Memory and learning. Brain circulation and metabolism.

Practical education
Excitable tissue (registration and analysis of single muscle contraction, registration and analysis of complex muscle contraction – tetanus); **Respiratory system** (detection of CO2 in the inhaled and exhaled air; role of the intercostal muscles (model ribs); spirometry; forced expirogram analysis; spirography); **Blood** (blood plasma buffers; erythrocyte sedimentation rate, erythrocyte osmotic fragility; erythrocyte counting, leukocyte counting, differential blood count, determination of blood groups and Rh; bleeding time, clotting time); Kidney (determination of the general quality of the urine; glycosuria, ketonuria, proteinuria in physiological conditions); The cardiovascular system (auscultation of the heart sounds; measurement of arterial blood pressure; electrocardiography under conventional conditions); **The digestive system** (chemical processing of food in the mouth; qualitatively finding rhodanide in saliva; proving the acidity of the gastric juice); **Senses** (testing of the air and bone conduction of the sound: Rinne, Schwabach Weber tests; determination of the visual acuity, complex optical system construction; perimetry); **Nervous system** (analysis of the reflex arc; EEG; clinically important reflexes in human; reaction time examination).

Literature
Compulsory
1. Guyton AC. Textbook of Medical Physiology. Elsevier, 2019.
Additional
1. Despopulos A, Silbernagl S.. Color Atlas of Physiology. Thieme, 2009.
2. Bruce KM. Berme & Levy Physiology. Mosby, Elsevier, 2010.
3. Costanzo LS. Physiology. Elsevier, 2014.

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 60

Teaching methods:
Lectures; laboratory work.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	70
Practices	15	Oral	
Colloquium			
Essay			

Course title: English Language II

Course status: compulsory

ECTS Credits: 4

Condition: –

Course aim

The basic aims of the English Language Course are for the students to attain a higher level of general language competence, to improve their communication skills in the target language, to build their general and medical English vocabulary, to provide them with the basic of academic writing and enable them to study textbooks and medical journals in English, to promote their creative thinking and expression. The third semester includes discussions on acquired knowledge and exercises for apprehensive use of vocabulary and grammar structures in a text.

Expected outcome of the course:

Learning general and medical terminology. Learning and comprehensive grammar exercises in a text. Pointing to the differences between the common day and professional and academic English language. Furthering their knowledge in the four basic language skills – reading, writing, speaking and listening. General language skills – reading, writing, listening and speaking, academic writing, English for medical purposes. Active communication, research using English language sources.

Course description

Theoretical education

Preliminaries: Introduction to the course and methodology. Medical articles: The Challenge of Prevention – text analysis, lexical and grammar exercises, argumentation, discussion. Methods of Prevention – text analysis, lexical and grammar exercises, argumentation, discussion. Healthy Eating – text analysis, lexical and grammar exercises, argumentation, discussion. Stress – text analysis, lexical and grammar exercises, argumentation, discussion. Relaxation – text analysis, lexical and grammar exercises, argumentation, discussion. Dangers of Smoking – text analysis, lexical and grammar exercises, argumentation, discussion. Grammar Review: Past Tenses – formation, usage, time vs. tense. Basic Present Tenses – formation, usage, time vs. tense. Basic Future Tenses – formation, usage, time vs. tense. The Passive Voice – theoretical framework, usage. Indirect Speech – theoretical framework, usage. Conditional Sentences – formation and usage, three types of conditional clauses. Discussion Topics: Student Life – personal experiences, exchanging experiences, expectations and plans, future. Experiences with Diseases/Treatment – exchanging experiences, doctor-patient relations, both standpoints. Medicine Today, Medicine Tomorrow – perception of medicine, consideration of scientific issues.

Practical education

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Literature

Compulsory

1. Arneri Georgijev J. English for doctors and medical students. Beograd: Naučna knjiga; 1990.
2. Arneri Georgijev J. More medical words you need. Beograd: Savremena administracija; 2004.
3. Marošan Z. English for medical students. Novi Sad: Ortomedics; 2008.

Additional

1. Raymond M. English grammar in use. Cambridge: Cambridge University Press; 1988.
2. Mcarthy M, O'Dell F. English vocabulary in use. Cambridge: Cambridge University Press; 1996.
3. Hornby AS. Oxford advanced learner's dictionary of current english. Oxford: Oxford University Press; 1968.
4. MacLean J. English in basic medical science. Oxford: Oxford University Press; 1980.
5. Momčinović V, Tanau V, Žurić Havelka S. Medical English. Zagreb: University of Zagreb School of Medicine; 1988.

Number of active classes	**Theoretical classes:** 60	**Practical classes:** –

Teaching methods:

Oral and situational language learning; Audio-lingual method; Audio-visual methods (presentations, the Internet); Lexical and communicative approach; Frontal, individual and group work on selected topics.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	30	Written	20
Practices		Oral	50
Colloquium			
Essay			

Course title: Operative Dentistry – Preclinical

Course status: compulsory

ECTS Credits: 10

Condition: Dental Anatomy

Course aim

Acquisition of basic knowledge and skills related to dental pathology of dental hard tissues, diagnostic and therapeutic procedures for restoration of dental crown.

Expected outcome of the course:

Biology of pulpo-dentine complex and its reaction to diverse stimuli. Etiopathogenesis of caries, diagnosis and classification of carious lesions, principles cavity preparation, principles of restoration of dental crowns, materials for temporary and final reconstruction of dental crowns and accompanying instruments to work. With the knowledge of the materials for temporary and final reconstruction of the tooth crown as well as information on safety and hormonal substrates.

1. Conquering the way to access patient and techniques
2. Mastering the practical application of hand and mechanical instruments
3. Mastering the skills of cavity preparation
4. Conquering the principles of dental crown reconstruction with adequate instruments for
5. Adoption of the method of preparation and application of materials for temporary and definitive closure of the cavity and application of protective and medicament base.

Course description

Theoretical education

- Biology of the pulp – dentin complex (composition and morphology of enamel, dentin and cement structure the pulp
- The reaction of pulp and dentin in preparation and restorative materials. Dental plaque
- Dental caries (etiology, pathogenesis, histopathology of caries of enamel, dentin and cement. Classification of cavities. Deep cavities. Macroscopic appearance of carious lesions, diagnosis, prevention and therapy selection procedures. Caries predilection and caries immune localizations.
- Non-carious disorder of hard tooth tissue (abrasion, attrition, erosion, bruxism, tooth fracture)
- Dental records, preparation for restorative surgery (dry working field). Equipment and instruments in restorative procedure transparency. Clinical techniques for caries removal. Matrix. Polishing of direct restorations. Separation of teeth
- Application of basic Black's principles in restorative dentistry. Cavity preparation for amalgam restorations (I, II, MOD, V).
- Cavity preparation for restorative esthetic fillings (I – V) classes
- Cavity preparation for the direct and indirect composite veneers
- Materials for temporary cavity closure
- Materials for lining and protection of the pulp – dentin complex
- Adhesive in restorative dentistry
- Glass ionomer cements
- Composite materials
- Amalgams

Practical education

- Introduction to the topics and methodology of exercises
- Histomorphological structure of dental tissues, enamel caries, dentin and cement
- Working place, dental chairs, handpieces, working instruments, drilling burs
- Position of the therapist during work, direct and indirect work
- Dry working field
- Black's principles and deviation from Black's principles
- Preparation of class I cavity on the occlusal surface of the premolars
- Preparation of class I cavity on the occlusal surface of the molars
- Preparation of class I cavity on the – foramen cecum, foramen molare
- Preparation of class II cavities – classic for amalgam, slot, tunnel
- Preparation of MOD cavities in teeth with vital pulp
- MOD cavity preparation in endodontically treated teeth
- Preparation of class III cavity
- Preparation of class IV cavity
- Preparation of class V cavity
- Cavity preparation for indirect restoration and facets
- Instrumentation for setting temporary and definitive restorations, matrices, polishers,
- Materials for temporary closure – theory and application
- Protective and medicamentous bases – theory and application
- Glass ionomer cements – theory and application

– Placing of single-surface composite restorations. Definitive finishing of fillings
– Placing of multi-surface composite restorations. Definitive finishing of fillings.
– Placing of composite restorations in anterior teeth
– Composite sandwich technique
– Placing of single-surface amalgam fillings
– Placing of two or multi-surface amalgam fillings Finishing and polishing of amalgam fillings
– Placing MOD amalgam fillings on endodontically treated tooth. Finishing and polishing of the fillings
– Practicing the acquired skills

Literature

Compulsory

1. Harold O Heymann, Edward J Swift, Andre V Ritter: Sturdevant s Art and Science of Operative Dentistry. 7th Edition, Elsevier 2016.
2. Richard van Noort, Michele Barbour: Introduction to Dental Materials.Mosby 2013.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 90

Teaching methods:
Theoretical, practical and Colloquium.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	20
Practices	10	Oral	40
Colloquium	20		
Essay			

Course title: Cariology

Course status: compulsory

ECTS Credits: 2

Condition: –

Course aim

The aim of the course for students is gaining the basic knowledge about etiology, development and diagnosis of caries.

Expected outcome of the course:

Cariology is a course which should introduce student to a basic knowledge about etiology, epidemiology, chemical interaction between oral fluids and tooth tissue (demineralization, remineralization, erosion), protective role of the saliva in caries development, composition and properties of dental plaque, properties of cariogenic bacteria, histopathological and clinical manifestations of caries lesions, caries diagnosis, caries risk tests, classification of the caries, oral hygiene, prevention and prognosis of the caries.

Course description

Theoretical education

1. Introduction and significance of the Cariology course. 2. Hereditary anomalies of the hard tooth tissues. 3. Developmental anomalies of the hard tooth tissues. 4. Reaction of pulp-dentin complex to different extrinsic stumuli. 5. Saliva-composition and function. 6. Influencing factors on the development of caries lesion. 7. Oral and dental plaque microflora. 8. Maturation of the dental plaque. 9. Chemical and physical processes in the caries lesion. 10. Clinical appearance of the caries. 11. Caries diagnosis. 12. Caries classification. 13. Caries risk tests. 14. Prevention of dental caries. 15. Epidemiology and prognosis of the caries lesion

Practical education

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Literature

Compulsory

1. Fejerskov O & Kidd E. Dental Caries. The Disease and its Clinical Management. I ed. Blackwell Munsgaard, Copenhagen, 2003.

Additional

1. Harold O Heymann, Edward J Swift, Andre V Ritter: Sturdevant s Art and Science of Operative Dentistry. 7th Edition, Elsevier 2016.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** –

Teaching methods:

Theoretical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 points for presence 15 points for activity	Written	50
Practices		Oral	
Colloquium			
Essay	30		

Course title: Dental Anatomy

Course status: compulsory

ECTS Credits: 4

Condition: Anatomy

Course aim

Getting acquainted with the morphology of orofacial complex

Expected outcome of the course:

Acquiring knowledge about morphology of skeleton orofacial complex, muscles of this region, teeth lines and morphology of permanent teeth. Drawing and paraffin molding of morphological models of permanent dentition teeth

Course description

Theoretical education

1. Introduction into morphology. Stomatognathic system. General knowledge about teeth. Definition, classification and function of teeth. Dental formula. Periods of dentition. Chronology of teeth growth. Marking of teeth. Dental nomenclature. Topographic-anatomic marks on teeth. General oral and dental anatomy. Anatomic parts and structure of teeth.
2. Nodule-ridge complex and complex of depressions on odculsal tooth surfaces.
3. Class of permanent incisors. Features of the class of incisors. Attributes of the class of upper incisors. Variations of upper incisors. Attributes of the class of lower incisors. Variations of lower incisors. Attributes of dental arch of incisors.
4. Class of permanent canines. Attributes of the class of canines. Attributes of upper canines. Variations of upper canines. Attributes of lower canines. Variations of lower canines. Attributes of dental arch of canines.
5. Class of premolars. Attributes of premolars. Attributes of lower premolars. Attributes of dental arch of premolars.
6. Class of permanent molars. Attributes of molars. Attributes of upper molars. Variations of upper molars. Attributes of lower molars. Variations of lower molars. Attributes of dental arch of molars.
7. Primary dentition. Attributes of humane dentition. Attributes of class, type and dental arch of milk incisors, canine and molars.
8. Anatomy of oral cavity. Supporting tissues of teeth. Odontogenesis. Growth and development of teeth. Occlusal adaptation phase. Characteristic of human dentition. Physiological involution of orofacial system.
9. Organization of teeth. Shape and position of teeth. Shapes of the surface of teeth, shape and number of root branches, position of teeth in dental arch. Organization of dental arches. Contact between teeth. Height of teeth.
10. Definition, classification and role of nodule of teeth. External and internal curve of nodules, line of central fossa. Occlusal and orientational occlusal plane. Occlusal curves. Bucolingual transverse. Relations between dental arches. Occlusion of teeth. Occlusial units. Position of maximal intercuspation. Occlusial contacts in intercuspal position.
11. Comparative dental anatomy. Lobuses. Philogenesis dentooseal connection. Changing teeth. Theories on teeth genesis and shapes.

Practical education

1. Class of permanent incisors. Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise: Modelling of tooth crown in wax.
2. Class of permanent incisors. Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise: Modelling of tooth crown in wax.
3. Class of permanent canine. Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise:: Modelling of tooth crown in wax.
4. Class of permanent canine. Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise: Modelling of crown of of teeth in wax.
5. Class of premolars. Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise: Modelling of tooth crown in wax.
6. Class of premolars Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise: Modelling of tooth crown in wax.
7. Class of premolars. Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise: Modelling of tooth crown in wax.
8. Class of permanent molars Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise: Modelling of tooth crown in wax.
9. Class of permanent molars. Introductory lesson: Demonstration of modelling of the teeth crown in wax. Students' exercise: Modelling of tooth crown in wax.
10. Class of permanent molars. Introductory lesson: Demonstration of modeling of the teeth crown in wax. Students' exercise: Modeling of tooth crown in wax.
11. Class of milk canines. Introductory lesson: Demonstration of modeling of the teeth crown in wax. Students' exercise: Modeling of tooth crown in wax.
12. Class of milk molars. Introductory lesson: Demonstration of modeling of the teeth crown in wax. Students' exercise: Modeling of tooth crown in wax.
13. Class of milk molars. Introductory lesson: Demonstration of modeling of the teeth crown in wax. Students' exercise Modeling of tooth crown in wax.
14. Introductory lesson: Anatomy of teeth cavity-demonstrative lesson.
15. Test.

Literature
Compulsory
1. Scheid RC. Woelfel's Dental Anatomy. Wolters Kluwer, 2006.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:
Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	10
Practices	10	Oral	60
Colloquium	10		
Essay			

Course title: Communication Skills

Course status: compulsory

ECTS Credits: 2

Condition: –

Course aim
– Introducing students to the nature and structure of communication (verbal and nonverbal communication);
– Introducing students to the characteristics of healthcare communication (diagnostic and therapeutic) in dental medicine;
– Introducing students to the principles of complex communication skills (empathy, assertiveness, active listening);
– Enabling students to establish quality contact with various medical service users;
– Mastering communication skills through simulation of situations in the healthcare context in dental medicine.

Subject outcomes:
It is expected that after attending this course students will know and understand the structure, role and importance of applying communication skills between healthcare practitioners in dental medicine and different groups of healthcare users.
It is expected that after attending this course the student will be able to:
– Assertively communicate with different partners in the healthcare context (medical and non-medical staff, patients, patient's family...);
– Apply active listening and empathy skills;
– Independently conduct an interview with patients and family members; participate in patient's psychological preparation for various medical interventions;
– Demonstrate skills in conveying bad news in different situations (communication with the mournful, with parents of sick children etc.)
– Show skill in establishing communication with users of medical services from different age groups (children, adults);
– Demonstrate skill in establishing communication with healthcare users with different types of limited communication capabilities;
– Demonstrate assertive communication skills in negotiating and solving conflict situations.

Course description
Theoretical education
Basic elements of communication. Verbal and nonverbal communication. Nature and goals of healthcare communication. What is good communication in healthcare in dental medicine? Preconditions for successful healthcare communication. Basics of diagnostic and therapeutic communication. Applying interviewing technique and taking anamnesis. Motivating patients to cooperate with medical staff. Basic communication skills. Complex communication skills: empathy, active listening, assertiveness. Relationship between assertive and aggressive behavior. Communication with „difficult" interlocutor. Communication with healthcare services users of different age groups. Communication with health care services users with different types of limited communication capabilities. Communication within a team. Conflict resolution.

Practical education
Practical exercises – Training elements of the communication process; Relationship between verbal and nonverbal communication; Conducting interviews and taking anamnesis; Exercises for assertive, empathetic behavior and active listening; Examples of resolving conflict situations within a team; Exercises aimed at communication with individuals of different ages and with individuals with limited communication capabilities; Ways of communicating bad news in a context of healthcare in dental medicine.

Literature
Compulsory
1. Lloyd M, Bor R, Noble L. Clinical Communication Skills for Medicine, 4th edition. Elsevier, 2018. (selected chapters)
2. McCorry LK, Mason J. Communication skills for the healthcare professional, 1st edition. Lippincot Williams & Wilkins, 2011. (selected chapters)
3. Kurtz S, Draper J, Silverman J. Teaching and Learning Communication Skills in Medicine, 2nd edition (selected chapters). London: CRC Press, 2004. (selected chapters)

Additional
1. Tate P, Frame F. The doctor's communication handbook, 8th edition. Boca Raton: CRC Press, 2019.

Number of active classes	**Theoretical classes:** 30		**Practical classes:** 15
Teaching methods: Lectures, interactive teaching, reviewing and analyzing case studies, seminar papers, consultations			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	60
Practices	10	Oral	
Colloquium	20		
Essay			

Course title: Microbiology with Parasitology and Immunology
Course status: compulsory
ECTS Credits: 6
Condition: Medical Biochemistry
Course aim To achieve a comprehensive understanding of the facts in the field of study in order to connect and apply the theory and practice
Expected outcome of the course: Theoretical preparation for the diagnosis and differential diagnosis Preparing for work in practice, the choice of appropriate methods and their interpretation
Course description *Theoretical education* 1. Background. Subject and objective study of microbiology. Classification and nomenclature of bacteria. The shape and size of bacteria. 2. Functional structure of the bacterial cell. Metabolism of bacteria 3. Multiplication of bacteria. Genetics of bacterial 4. Antimicrobial agents (antibiotics and chemotherapeutics). Mechanisms of bacterial resistance to antimicrobial drugs 5. Associations between microorganisms and higher living beings. Virulence factors 6. Mechanisms Defense integrity of the organism (and atypical). Infection. Mechanisms of defense against bacteria, viruses, parasites and fungi 7. Built and functional organization of the immune system. Regulation of immune responses. Specificity in immunology. Recognition of foreign (and own). Immunological memory. 8. Antigens and haptens. 9. Complement. Antibody against red blood cells anigena the 10th Cellular basis of immune reactivity. Cooperation cells in immune response. Antibody-dependent cellular cytotoxicity 11th Immunological Deficit (types and significance) 12. Antibody (immunoglobulins). Biological properties of antibodies and their significance. Methods of proving their 13. Sensitivity early types (mechanisms and manifestations) 14. Sensitivity late types (mechanisms and manifestations) 15. Transplant immunology 16. Hla complex man and the importance 17. Immunosuppression. Immune tolerance, immunodeficiency 18. Tumor immunity. The mechanism of immune surveillance 19. Mechanisms occurrence and types of autoimmune diseases. 20. Active and passive immunity (natural and artificial). Vaccines, Immunization (problems) 21 antibody-antigen reactions in diagnostic purposes. Immunological tests and their interpretation 22. Clinical bacteriology – the subject and objective of the study. Normal bacterial flora 23rd Staphylococcus. Streptococcus 24. Microorganisms in the mouth 25. Neisseria 26. Bacillus. Clostridiae 27. Corynebacterium, Listeria 28. Micobacterium, Actinomyces, Nocardia 29. Familia Enterobacteriaceae. Escherichia. Other Enterobacteriaceae 30th Salmonella. 31. Pseudomonas 32. Homophiles Shigella, Legionella bordetella. Brucella 33rd Anaerobic gram-negative cast. Vibrio. Aeromonas; plesiomonas 34. Campylobacter, Helicobacter, Yersinia 35. Treponema. Borrelia, Leptospira 36. Mycoplasma, Ureaplasma 37. Rickettsia 38. Differences virus compared to other microorganisms and their importance in medicine 39. Virus particles – virion. Determining the shape and size of the virus. Electron microscope. Preparative methods in virology. Ultracentrifuge. Ultrafilters 40. chemical composition of the virus (viral proteins, viral nucleic acid, viral antigens). Hemagglutinin and viral hemagglutination 41. Viral infections. Pathogenesis of viral diseases. Syndrome manifestations of viral diseases 42. Stadiums multiplication of the virus. Selectivity and tropism virus 43. Genetics of viruses. Defective viruses. Prion. Variability of the virus 44. Associations of viruses (associated infections, interference and exaltation). Interferon (significance and application). Viral vaccines 45. Effect of physical and chemical agents and chemotherapeutics' (antiviral drugs). Principles of rational antiviral therapy 46. multiplying of viruses in the laboratory (cell culture, embryonized eggs and laboratory animals) 47. Etiological diagnosis of viral diseases. Serological methods (for verification to prove the antigen and antibody). Rapid diagnostic methods 48. Classification of viruses, the most important family of DNA and RNA viruses 49. Picornaviridae. Orthomyxoviridae 50. Paramyxoviridae. Rhabdoviridae 51. Togaviridae. Arbo viruses 52. Adenoviridae. Papillomaviridae and polyomaviridae, parvoviridae 53. Herpesviridae. Poxviridae 54. People with hepatitis. HIV-55th Chlamydia 56. Introduction to Parasitology, classification. Protozoa and oral protozoan 57. Classis sarcomastigophora. Pneumocystis, Cryptosporidium 58. Plasmodium. Toxoplasma 59. Characteristics of helminthes. Trematoda. Cestoda. Nematoda 60. Medical mycology

Practical education

1. Rules of behavior in the microbiological laboratory. Sterilization and disinfection. 2. Mikroscope and work with a microscope. Microscopic examination of uncolored bacteria. Microscopic examination of colored bacteria 3. Culturel testing of bacteria. Variations of bacterial colonies. 4. Physiological-biochemical examination of bacteria. Serological and biological testing of bacteria. 5. Examining sensitivity of bacteria to antimicrobial drugs 6. basic terms of antigens, antibodies and the creation of complex antigen-antibody (in vitro) the application of antibody-antigen reactions in diagnostic purposes (qualitative, quantitative and polukvantitativne reaction). 7. Agglutination (various techniques) precipitation (various techniques in liquid medium in the gel) 8. Complement (bacteriolysis and hemoliza). Immunological interpretation of the results of diagnostic tests and serological reactions. Determination of quantity of immunoglobulin and complement. Determining the efficiency of immunoprophylaxis 9. Staphylococcus. Streptococcus 10. Neisseria, moraxella 11. Mycobacterium 12. C corynebacterium 13. Family of 14. Escherichia. Enterobacteriaceae, Klebsiella 15. Salmonella. Shigella 16. Proteus, Providencia, Morganella 17. Pseudomonas, 18. Bacillus Campylobacter, Clostridium 19. Serological diagnosis of bacterial infections 20. Choice, taking and sending material for virological examination. Interpretation of results 21. Isolation of virus in cell cultures and 22. Electronic and immunoelectronic microscopy 23. Isolation virus in embrionisanim pigeon eggs 24. Isolations of the virus in laboratory animals. Selectivity and tropizam virus. Inclusion 25. Preparative methods in virology. Viral etiological hemaglutinacija 26. Sereological reactions and random specificity 27. Protozoa 28. Plasmodium, Toxoplasma 29. Helminths 30. Medical mycology.

Literature

Compulsory

1. Jawetz, Melnick & Adelberg's E.Medical Microbiology, 26th edition, 2013.
2. Abbas AK, Lichtman AH, Pillai S. Basic immunology, 4th edition. Elsevier, 2014.
3. Murray PR, Rosenthal KS. Medical Microbiology, 7th edition. Elsevier, 2013.

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 30

Teaching methods:
Lectures, practice.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	60
Practices	5	Oral	
Colloquium	20 (2x10)		
Essay	10 (2x5)		

Course title: History of Medicine and Dental Medicine			
Course status: elective			
ECTS Credits: 3			
Condition: –			
Course aim Teach students to understand modern medicine not as a supreme scientific and practical achievement, but as a dynamic development of medical thinking.			
Expected outcome of the course: To give students the basic knowledge and critical look at the key periods of historical development of medicine and dentistry.			
Course description *Theoretical education* Historical overview of medicine and dentistry from the pre-history until 21st century. Splendors of medical science, the founders of theoretical perspectives, diagnostic and therapeutic procedures. *Practical education* Discussion of important dates in the history of medicine and dentistry.			
Literature *Compulsory* 1. Companion Encyclopedia of the History of Medicine, Volume 1&2 Edited by William F. Bynum, Roy Porter. Routledge Taylor & Francis group, London end New York, First published 1993. Reprinted 1994. First published in paperback 1997. 2. Dušica Rakić. The history of medicine and dentistry, lecture notes, Faculty of Medicine, 2016.			
Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15	
Teaching methods: Lectures, video presentation.			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	70
Practices		Oral	
Colloquium			
Essay	15		

Course title: Clinically Oriented Embryology

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

Explanation of purpose and application of embryology in clinical practice with a detailed understanding of gametogenesis, *in vivo* fertilization along with retrospection and correlation with *in vitro* fertilization, embryo formation and fetal development with histological analysis of embryonic and fetal structures.

Getting familiar with the application of clinically oriented embryology in gynecology, pediatrics, pathology and other areas of medicine. Parallel to the theoretical knowledge about proper development and training of practical knowledge of normal embryology, the purpose of the subject is to explain the development of congenital malformations (teratology), to give a detailed explanation of their origin and mechanism of their appearance, as well as the importance of their recognition and practical issues (consequences, the possibility of medical care).

Expected outcome of the course:

Upon completion of this course, students will be trained to know in detail the structure and needs of the conceptus. Their knowledge of the normal and abnormal development in humans will be expanded greatly, which will be an important basis for understanding other familiar branches of medicine (gynecology, pediatrics, pediatric surgery).

Course description

Theoretical education

1. Introduction and history of reproductive biology – embryology as a science and basics of teratology
2. Oogenesis
3. Spermatogenesis
4. Phases of fertilization *in vivo* and correlation with *in vitro* fertilization
5. Blastomerization, implantation, gastrulation, formation of germ layers and neuralation
6. Branchial system and development of the head and neck region of the embryo with possible malformations
7. Development of cardiovascular system with possible malformations
8. Development of digestive system with possible malformations
9. Development of respiratory system with possible malformations
10. Development of urinary system with possible malformations
11. Development of reproductive system with possible malformations
12. Development of endocrine system
13. Development of nervous system and senses with possible malformations
14. Development of musculoskeletal system and abdominal wall with possible malformations
15. Development of placenta and its functions

Practical education

Microscopic analysis of human and animal material. Analysis of histological specimens of embryonal and fetal structures. Macroscopic analysis. Essay. Pre-exam review classes. Student's scientific papers.

Literature

Compulsory

1. Sadler T. Langman's medical embryology, 14th ed. Baltimore: Lippincott, Williams & Wilkins; 2018. 456 p.
2. Moore KL, Persaud TVN. The Developing human. Clinically oriented embriology. 10th ed. Philadelphia: Saunders; 2015. 560 p.

Additional

1. Singh V. Textbook of clinical embriology. Elsevere India; 2013. 352 p.
2. Schoenwolf GC, Bleyl SB, Brauer PR, Francis-West PH. Larsen's human embriology, 5th ed. New York, Edinburgh: Churchil Linvingstone; 2014. 576 p.
3. Gilbert SF. Developmental biology. 8th ed. Sunderland: Sinauer Associates; 2006. 785 p.
4. Keeling JW, Khong TY. Fetal and neonatal pathologhy, 5th ed. London: Springer; 2015. 882 p.
5. Trounson A, Gosden R, Eichenlaub-Ritter U. Biology and pathology of the oocyte. Role in fertility, medicine and nuclear reprogramming, 2nd ed. Cambridge: University press; 2013. 466 p.
6. Ten Donkelaar HJ, Lammens M, Hori A. Clinical neuroembriology. Development and developmental disorders of human central nervous system. 2nd ed. Berlin Heidelberg: Springer; 2006. 659 p.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Oral presentations and interactive lectures using multi-medial didactic tools and virtual microscopy. Practical work (individual or in small groups) trough microscopic analysis of histologic specimens, and macroscopic analysis of relevant cases.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	30	Written	
Practices	10	Oral	60
Colloquium			
Essay			

Course title: General and Special Medical Cytology

Course status: elective

ECTS Credits: 3

Condition: Biology with Human Genetics

Course aim

Acquiring knowledge and skills necessary for a thorough understanding of cell biology and interpretation of clinical cytological analyses.

Expected outcome of the course:

Knowledge: The student should know the basic common cytological features as well as the characteristics of epithelial and connective tissue cells with special reference to their microscopic identification.

Skills: The student should be able to recognize the normal structure of blood cells at the level of light microscopy, to identify normal Pap smear, as well as the cellular composition of different types of cytological specimens.

Course description

Theoretical education

1. General cytology, history of cellular theory
2. Eukaryotic cell, principles of their structure, cell membrane
3. Membrane and non-membrane organelles, inclusions
4. Cellular signaling
5. Mitosis and meiosis, ultrastructure of nucleus and cell cycle, nuclear-cytoplasmic ratio
6. Cell movement and migration, cytoskeleton, flagella
7. Cell cultures and tissues
8. Epithelial cells, microscopic structure
9. Papanicolaou test and Practical Clinical Cytology
10. Connective tissue cells, cytology of blood and hematopoiesis
11. Cytopathology
12. Recapitulation and preparation for the exam

Practical education

Microscopic exercises, cell culture, swabs and smears, interpretation of stained slides.

Literature

Compulsory

1. Krstić VR. Ultrastructure of the mammalian cell: an atlas. London: Springer; 1979. 376 p.
2. Papanicolaou G. Atlas of exfoliative cytology. Cambridge: Harvard University Press; 1963.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Lectures and Practice

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	70
Practices		Oral	
Colloquium	20		
Essay			

Course title: Prevention and Infection Control in Dental Medicine

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

Acquiring basic knowledge of preventive measures in clinical work that prevents the spread of infection.

Expected outcome of the course:

Acquiring knowledge about the use of disinfectants and antiseptics that are used daily in dentistry. Preventive measures for blood-borne diseases. Prophylactic measures to be applied after exposure to blood-transmitting diseases. A modern approach to infection control. Sterilization in dental medicine – principles and application.

Course description

Theoretical education

1. Prerequisites for infection control in dental medicine. 2. Control of contact infection in daily work and in working with high-risk patient groups. 3. Blood-transmitting diseases. 4. Hepatitis B, C, D. 5. HIV. 6. Tuberculosis. 7. Vaccination of staff working in dental medicine. 8. Prophylaxis after exposure to blood-transmitting diseases. 9. Sterilization of instruments. 10. Modern methods of preparation of instruments for work with patients. 11. Disinfectants used in restorative dentistry and endodontics. 12. Disinfectants for use in oral and periodontal surgery. 13. Disposal of infectious waste. 14. Decontamination of surfaces in the dental office.

Practical education

1. Infection control in high-risk patients. 2. Sterilization and disinfection of instruments in clinical work. 3. Decontamination of surfaces in the dental office.

Literature

Compulsory

1. Molinari J. A. and Harte J.A. Cottone's Practical Infection Control in Dentistry, 3rd Edition. Lippincott
2. Armamentarium and sterilisation in Cohens Pathways of the pulp, Kenneth M. Hargreaves and Stephen Cohen, 10th edition, 2011.Williams & Wilkin, 2010.

Additional

1. Harold O Heymann, Edward J Swift, Andre V Ritter: Sturdevant s Art and Science of Operative Dentistry. 7th Edition, Elsevier 2016.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 points presence 15 points activity	Written	50
Practices		Oral	
Colloquium			
Essay	30		

Course title: Prophylaxis of Oral Diseases

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

The aims of the course are to improve students communication skills with patients, to prevent and treat dental fear and anxiety; able to diagnose oral disease and make preventive and treatment plan; to propose measures and methods for maintaining oral hygiene; to purpose prophylactic measures for prevention of oral diseases (caries, parodonthopaty, temporomandibular dysfunctions).

Expected outcome of the course:

After completing the course in the course of Prophylaxis of oral diseases, the student should: understand the biological mechanisms of oral cavity protection, understand the etiopathogenesis of the most common oral diseases (caries, periodontitis, oral cancer, orthodontic anomalies, trauma, temporomandibular joint dysfunctions); interactions between oral and general health as well as a number of common risk factors. To understand and properly use fluorides for the prevention of dental caries; to use methods of interceptive orthodontic treatment, as well as prophylactic procedures for periodontitis.

Course description

Theoretical education

1. Contemporary achievements and trends in preventive dentistry. Oral disease prophylaxis, definitions, significance.
2. Dental anxiety
3. Biological mechanisms of protection in the oral cavity. Characteristics of healthy oral cavity tissues (mucous membranes, gingival, periodontal tissues, enamel, pulpodentin complex, cement).
4. Importance of communication with the patient in the prevention of oral diseases. Patient motivation to maintain and improve oral health.
5. Diagnosis of risks factors for oral diseases and planning of oral disease prophylaxis (periodontal disease, caries, orthodontic abnormalities, dental trauma).
6. Diagnosis of oral hygiene habits. Primary and secondary means for maintaining oral hygiene. Methods of teeth brushing. Maintaining oral hygiene in patients with fixed orthodontic appliances, medically compromised patients
7. Fluorides and oral health. Biokinetics. Toxicology. Mechanism of caries prevention. Application of fluoride in caries prevention. Application of highly concentrated fluorides (varnishes, gels)
8. Chronology of teeth eruption. Etiology of malocclusions. Prevention of orthodontic anomalies in the prenatal and postnatal periods of life. Premature loss of primary teeth. Interceptive measures in the prevention of orthodontic irregularities. Myofunctional therapy.
9. Oral health in pregnancy. Prophylactic and preventative measures in pregnancy.
10. Prophylactic measures in the prevention of caries. Prophylactic fissure sealing. Minimally invasive caries therapy.
11. Teeth erosion. Etiology. External factors. Internal factors. Biological factors. Dental erosion prevention and prophylaxis.
12. Etiology and prevention of dental injuries.
13. Oral infections in immuno-compromised individuals. Preventive and prophylactic measures in immuno-compromised patients.
14. Primary, secondary and tertiary prevention of periodontopathies. Chemo-prophylaxis of oral diseases.
15. Physiology of the temporomandibular joint, physiology of chewing. Etiology, prevention and early diagnosis of temporomandibular dysfunction.

Practical education

1. Methods of preparing patients for dental interventions. The role of preventative measures in treatment of dental fear and anxiety.
2. Diagnosis of oral hygiene habits. History taking, patient observation while maintaining oral hygiene. Control of the patient's oral hygiene habits (observation of teeth brushing technique).
3. Primary oral hygiene products – toothbrush. Introduction to inter-dental brushes, types of electric brushes, fluid jet appliances, etc.
4. Teeth brushing methods. Practicing teeth brushing methods on models. Dental floss, technique for using dental floss, different types of dental floss. Practicing techniques using floss and inter-dental brushes on a model.
5. Diagnosis of dental plaque. Plaque indexes. Plaque staining, PI determination, talking to the patient about plaque and tooth cleanliness, mechanical plaque removal.
6. Caries prophylaxis by using fluorides. Topical application of fluorides (solutions, jells, varnishes).
7. Diagnosis of caries risk based on analysis of diet, oral hygiene, quantity and quality of saliva. Risk diagnosis based on the presence of micro-organisms in saliva.
8. Assessment of oral hygiene (PI), gingiva (GI, bleeding index on probing), presentation of risk assessment tests. Training and motivating patients to maintain oral hygiene.
9. Fissure sealling
10. Diagnosis of bad habits. Early diagnosis of orthodontic irregularities (premature extraction of primary teeth, crowding). Space maintainers. Selective preparation of the teeth.
11. Preventive restaurations
12. Mouth-guards for prevention of dental trauma
13. Chemio-prophylaxis of oral diseases
14. Mechanical removing of dental plaque and calculus
15. Prevention of temporomandibular dysfunctions

Literature Outlines			
Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30	
Teaching methods: Theory and practice			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	20
Practices	10	Oral	40
Colloquium	10		
Essay	10		

Course title: Gnathology

Course status: compulsory

ECTS Credits: 5

Condition: Dental Anatomy

Course aim
Introduction to basic gnathological terms, role of gnathology in dentistry and adoption of basic gnathological principles.

Expected outcome of the course:
Morphology of craniofacial, physiology and craniofacial systems, transmitting the basic parameters of the patients in the environment. Diagnosis and therapy of craniomandibular dysfunctions.
Working with the articulator and facial bow, modeling according to Peter Thomas

Course description
Theoretical education
– Introduction to gnathology
– Craniomandibular connection – anatomical specificities
– Craniomandibular connection – functional specificities
– Muscles of the OFS, functional specificity of masticatory muscle
– Physiological regulation of jaw movements
– Central regulation of jaw movements
– Anatomical determinants of jaw movements; back (hinged) guidance
– Low jaw movement
– Reference positions of the lower jaw
– Characteristic of physiologically optimal occlusion
– Characteristics of nonphysiological occlusion
– Articulators
– Simulation of eccentric motion of the lower jaw in adjustable articulators
– Functional analysis orofacial complex; importance, methods, scope of analysis
– Evaluation of occlusion complex status
– Analysis of inter jaw relationships
– Symptoms and signs nonphysiological occlusion
– Occlusal therapy
– Irreversible occlusal therapy
– Irreversible occlusal therapy – selective grinding
– Etiology, pathology and therapy of tooth abrasion.
– Irreversible occlusal therapy – restoration of occlusion using fillings, fixed and mobile replacement. Therapy of patients with malocclusion

Practical education
– Craniomandibular joint connection, movement of the lower jaw;
– Articulators types, parts, work with the mid-range articulator
– Portable facial bow, demonstrations
– The mid-point of the lower jaw, finding and registering
– Semi adjustable articulators-positional registry, registration of the position. Analysis of the occlusion on models and in the articulator
– Analysis of tooth contact relationships in the prepared patient models
– Modeling of the occlusal relief according to P. K. Thomas in the upper lateral teeth
– Modeling of the occlusal relief according to P. K. Thomas in the lower lateral teeth
– Functional analysis of the orofacial complex;
– Evaluation of occlusal state complex
– Occlusal trauma
– Irreversible occlusal therapy, creation of Michigan splint

Literature
Compulsory
1. Dawson PE. Functional Occlusion From TMJ to Smile Design, 2015.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 45

Teaching methods:
Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	
Practices	10	Oral	50
Colloquium	10		
Essay	15		

Course title: Dental Materials

Course status: compulsory

ECTS Credits: 3

Condition: –

Course aim

To introduce students with basic knowledge of characteristics of dental materials and basic principlesof their clinical application.

Expected outcome of the course:

Students will acquire basic knowledge about the characteristics and clinical aplication of dental materials. They will be trained to select the adequate dental material with special emphasis on the identification of biocompatible materials that will not be harmful to the patient.
Training of methods and techniques of application of dental materials with special emphasis on working-time, setting time, consistency, mixing procedure.

Course description

Theoretical education

1. Standards for dental materials. EU directive, CE Mark, ISO standards, GCP, GMP standard. Biocompatibility of dental materials. The terms: medical devices, dental materials, biomaterials, toxicity, biocompatibility. Tests for evaluation of biocompatibility of dental materials. 2. Physical properties of dental materials. Materials loading, Tensile, compressive and shear stresses, torsion loads. Fracture stress-strength, strain. Diagram of stress and strain. (modulus of elasticity, elastic limit, yield stress, ductility). 3. Fatigue stress. Fracture toughness and impact strength (Brinnel, Vickers, Knuph and Rockwell rest). Viscosity, viscoelasticity, flow and "relaxation" of the material by flow. 4. Thermal properties of the material. Thermal conductivity, thermal diffusivity, coefficient of thermal expansion. Adhesion. Intermolecular forces. Influence of intermolecular forces on the physical properties of the material. 5. Color, hue, chrome and brightness Color spectrum and human eye sensitivity. Coeficient of the reflexion, absorption, transmission, translucency, fluoresces, Refractory index. Structure of dental ceramics. Cristal structure, amorph structure. 6. Chemical reactions while setting of dental materials.Neutralization as a basic chemical reaction in the process of cement solidification. Chelation as the main reaction in the process of solidification of zinc-oxide-eugenol paste, EBA and polycarboxilate cements. Polymerization as a basic reaction in solidification of acrylic, composites and elastic impression materials or in combination with the neutralization and chelation of polycarboxylate and glass-ionomer cement. Corrosion of dental materials. Electrochemical aspects of corrosion, forming of microgalvanic current, galvanic corrosion, browning, decay and passivation of metals. Electrolysis compensation. 7. Nanostructured biomaterials in dentistry. Composition, characteristics and clinical application. 8. Materials for application in dental restoration manufacturing using modern technologies and computer – guided systems. Acquiring practical knowledge about types of material and their application. 9. Composition and seting reaction of dental cements, composites and compomers. Dental composites and compomers, classification, phisical and chemical properties. Adhesive systems. Bonding of dental composites to dental tissue. 10. Dental amalgam. Requirements, classification, amalgamation, clinical characteristics, the process of clinical work with amalgam, method of packaging, dosage and the factors that affect the quality of amalgam fillings. Materials for endodontic procedure. 11. Elastic impression materials. Thermoplastics, Zinc-oxide-eugenol paste. Characteristics, use, disadvantages. Disinfectants. Elastic impression materials. Reversible and irreversible hydrocolloids. Elastomers: Silicone (condensing, addition, polyethers and polysulfides. Cements. Classification, characteristics. Zinc phosphate cements, Zinc oxide eugenol cements, silicophosphate cements, polycarboxylate and glass ionomer cements.thermoplastic materials, ZOE pastes. 12. Material for making working models. White, hard and improved hard gypsum. Characteristics, composition, method of acquisition, properties. Other materials for making working model (resin cements). Materials for dental devices models. Waxes for modeling an synthetic resinsfor dental devices models. 13. Investment materials-refractory materials. Low temperature and high temperature refractory materials. Bonding, termal and hygroscopic expansion of refractory materials. Acrylic resins. Requirements, classification, composition, characteristics, dimensional change, porosity, materials for lining (conditioners and liners). 14. Dental alloys. Classification, distribution alloys: standards, the content of precious metal, the chemical composition. Requirements for dental alloys. Different types of alloys used in dental practice. Ceramic materials. Requirements, classification, composition. Properties of ceramic materials in metal – ceramic and ceramic systems. Machine-processable ceramics. Materials for processing and polishing. Cutting instruments, design, abrasive effect. Natural or artificial abrasive materials. Material for sandblasting and polishing (mechanical and electrolytic). 15. Materials in implantology. Types of material and their application. Tuissue response to different types of dental materials.

Practical education

1. Examination of physical properties of dental materials . Tensile, compressive and shear stresses, torsion loads. Fracture stress-strength, strain. Diagram of stress and strain. 2. Examination of physical properties of dental materials. Investigation of fatigue, fracture toughness and impact *strength*, viscosity and viscoelasticity. 3. Nonelastic impression materials. Practical work with nonelastic impression materials (thermoplastic materials, zinc oxide eugeniol pastes, disinfection of the impressions). 4. Elastomeric impression materials . Practical work with hydrocolloids, silicones and polyether. 5. Materials for working models (dental casts). Practical work with materials for dental casts. Materials for modeling of dental devices, wax and resin. Practical work. 6. Refractory mass – investment material. Practical work with low temperature and high temperature investment material. Dental alloys. Principles of work with dental alloys. 7. Acrylic materials for denture base. Practical work with acrylic material for denture base. 8. Acrylic materials for direct relining of the dentures (hard and soft acrylic reliners). Practical work with acrylic materials for direct and indirect relining of the denture. 9. Dental cements. Practical work with different types of dental cement. 10. Practical work with materials for application in dental restoration manufacturing using modern technology and computer –guided systems. Acquiring practical knowledge about the types of material and their application. 11. Materials in implantology. Acquiring practical knowledge about types of material and their application. 12. Dental amalgam. Practical work with dental amalgam. 13. Composite materials. Practical work with bonding systems, composite materials for dental fillings and sealants. 14. The materials in endodontics. Practical work with materials which are used in endodontics. Materials for temporary filling. Practical work with materials for temporary fillings. 15. Nanostructured biomaterials in dentistry. Introduction to clinical application.

Literature *Compulsory* 1. McCabe JF, Walls AWG. Applied dental materials. Blackwell Munksgaard, 2008.			
Number of active classes	**Theoretical classes:** 30		**Practical classes:** 15
Teaching methods: Theoretical and practical			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	60
Practices	15	Oral	
Colloquium	5		
Essay			

Course title: General and Oral Pathology

Course status: compulsory

ECTS Credits: 6

Condition: Anatomy; Dental Anatomy; Histology and Embryology

Course aim

The aim of teaching the subject General pathology is to give the student knowledge about the mechanisms of damage, the cell tissues and organs and acquaint him with the morphological changes that are surface diseases. The task of training is teaching students to recognize the morphological changes in cells, tissues and organs of the adoption of the Knowledge of theoretical lectures, and the acquisition of his experiences microscopy and analysis of microscopic preparations.

Expected outcome of the course:

Acquired Knowledge and Skills of General Pathology should provide easier learning oral pathology, a better understanding of the causes and mechanism of disease of mouth and facilitate learning the functional consequences of morphological changes.

Course description

Theoretical education

A student must learn the etiology and structural changes in the basic pathological processes such as metabolic disorders of water, fat, protein, inflammation, neoplasm, to overcome the pathology of the oral cavity is a very complex structure of the anatomical and physiological characteristics.

Pathological processes in the oral cavity are very diverse and very important – of basic importance for doctors dentists:

1. Changes in the oral cavity as a manifestation of general and dermatological diseases
2. Inflammation
3. Precancerous conditions and changes in the lining of mouth
4. Tumors
5. Disorders of teeth and jaws
6. Pathology of salivary glands.

Practical education

Conquering the interpretation pathohistological preparation by the student will be qualified to:

1. at the level of light microscopy register changes that do not correspond to preserved cell and tissue. different material normal tissues and organs of the process and pathological conditions in tissues and organs
2. material to describe the normal tissues and organs
3. to describe the morphological substrate of the disease
4. to set and write in Latin diagnosis
5. state the differential diagnosis.

Literature

Compulsory

1. Kumar V, Abbas AK, Aster JC. Robbins & Cotran Pathologic Basis of Disease, 9th Edition. Elsevier 2015.
2. Klem I, Ušaj-Knežević S. A practical handbook of pathological histology for dentistry students. Faculty of Medicine Novi Sad, 2012.
3. Klem I, Ušaj Knežević S. Histological exercises on CD. Faculty of Medicine Novi Sad, 2012.

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 30

Teaching methods:

Lectures; interactive lectures; microscopic and macroscopic examinations and autopsies

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	2	Written	
Practices	5	Oral	70
Colloquium	20		
Essay	3		

Course title: General Radiology

Course status: compulsory

ECTS Credits: 3

Condition: Anatomy; Dental Anatomy

Course aim

Introducing students to the diagnostic image modalities that are applied in modern medicine, introduction to X-ray methods and principles of working in the dento-maxillofacial region.

Expected outcome of the course:

The task is to define a set of diagnostic data based on the data necessary for understanding radiological information. Special attention should be paid to proper selection of indications and radiological methods. Students should master the art of X-ray and ultrasonographic examination, as well understand basic principles of computed tomography and magnetic resonance imaging.

Course description

Theoretical education

1. Fundamentals of medical application of ionizing radiation and the physics of image methods (X-ray, ultrasound, computerized tomography, magnetic resonance imaging), and intervention radiology; 2. Principles of radiological examination (intraoral, extraoral, standard X-ray methods and special techniques, endoradiographic methods); 3 Implementation and indications for X-ray examination methods, computerized tomography, ultrasound, magnetic resonance imaging; 4. Basic principles and indications for intraoral, standard extraoral radiographical methods, special techniques of radiography and interventional radiology; 5. Radiographic anatomy on different radiologic modalities 6. Radiological anatomy in dento-maxillofacial region.

Practical education

Demonstration of X-ray appearance of standard apparatus and X-ray device for radiography of dental and maxillofacial region with insight into their work and monitoring the protected area; 2. Rentgenography and images obtained with computed tomography; 3. Practical work on ultrasound and image analysis; 4. Work on magnetic resonance analysis of the obtained scans; 5. Observing certain interventional radiology techniques.

Literature

Compulsory

1. Nicholas Drage. Essentials of Dental Radiography and Radiology. Churchill Livingstone 2013

Additional

1. Richard B. Gunderman. Essential Radiology: Clinical Presentation, Pathophysiology, Imaging. Thieme 2014.
2. William Herring. Learning Radiology: Recognizing the Basics, 3e. Elsevier Science 2015.
3. Lothar Wicke. Atlas of Radiologic Anatomy. Saunders 2004

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Theoretical and practical classes

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	60
Practices	5	Oral	
Colloquium	30		
Essay			

Course title: Pathophysiology

Course status: compulsory

ECTS Credits: 6

Condition: Anatomy, Histology and Embryology (entrance); Chemistry in Medicine, Medical Biochemistry, Physiology (exam)

Course aim

The study of particular etiological factors, their interaction with particular structures of the organism and how they lead to the initiation of the pathological process. The study of the genesis of the pathological processes, the emergence of humoral and tissue functional disorders, and functional disorders of different organs and organ systems. Understanding the general principles of organ and organ system disorders. Introduction to the basic principles of functional testing used in the diagnostic procedure for determining changes in the function of the diseased organ or the whole organism.

Expected outcome of the course:

Knowledge: Training students to identify the causative agents of the disease, understanding the mechanisms of the onset of impaired function in the diseased organ and organ system, how to respond and adapt the diseased organism and pathophysiological disorders leading to appropriate clinical manifestations of the disease.

Skills: Training students to understand the basic principles of performing individual laboratory and different functional tests used in modern laboratory diagnostics, procedures for preparing patients in order to obtain different biological material. Training to use the most important laboratory parameters (results of different functional tests), as well as the changing of their values in various pathophysiological disorders, diseases and pathological conditions. Training to interpret the findings of individual functional testing.

Course description

Theoretical education

- Etiological factors in diseases. Etiology and pathogenesis of the disease. Inflammation. Fever. Barrier disorders and phagocyte functions.
- Immunity disorders as an etiological factor of disease.
- Chemical agents as an etiological factor of disease.
- Malignant neoplasia as an etiological factor in diseases.
- Eating disorders as an etiological factor of disease.
- Vitamin metabolism disorders. The role of enzymes in the etiopathogenesis of the disease and clinical diagnosis.
- Disorders of protein metabolism.
- Disorders of carbohydrate metabolism.
- Disorders of lipid metabolism and pathogenesis of atherosclerosis.
- Disorders of body fluid, electrolyte and acid-base balance.
- Physical etiological factors. The effect of heat on the body. The effect of changes in atmospheric pressure on the organism. The effect of cold on the body. The effect of mechanical factors, electric currents and electromagnetic radiation. The effect of radiation on the human body.
- Pathophysiology of the cardiovascular system.
- Pathophysiology of the respiratory system.
- Pathophysiology of the digestive tract.
- Pathophysiology of the liver.
- Pathophysiology of the kidney.
- Pituitary and gonadal disorders. General adaptation syndrome.
- Thyroid disorders.
- Calcium and phosphorus homeostasis, calcitropic mediators and bone metabolism.
- Disorders of adrenal glands.
- Red blood cell disorders.
- White blood cell disorders.
- Disorders of hemostasis and thrombosis.
- Pathophysiology of the nervous system.
- Pathophysiology of the locomotor system.
- Pathophysiology of dental diseases. Stomatitis. Gingivitis. Tooth decay. Paradontopathies.

Practical education

- Basic functional evaluation in inflammation.
- Basic functional testing of protein metabolism.
- Functional examination of basic disorders of carbohydrate metabolism.
- Functional evaluation of lipid metabolism.
- Functional examination of basic disorders of calcium, phosphorus and bone metabolism.
- Functional evaluation of the thyroid gland.
- Functional evaluation of the red blood cells.
- Basic white blood cell functional testing.
- Functional examination of hemorrhagic syndromes.

– Functional testing of the hemostatic system in thrombosis. – Functional testing of the cardiovascular system. – Basic functional liver testing. – Basic functional examination of the digestive tract (stomach and pancreas). – Basic functional testing of the respiratory system. – Basic kidney function testing.
Literature *Compulsory* 1. Norris TL, Lalchandani R. Porth's Pathophysiology: Concepts of Altered Health States. Tenth Edition. Philadelphia: Wolters Kluwer; 2019. *Additional* 1. Huether SE, Mc Cance KL. Understanding Pathophysiology. 6th edition. St. Louis, Missouri: Elsevier; 2016. 2. Hammer GH, Mc Phee JS. Pathophysiology of disease. An Introduction to Clinical Medicine, 7th ed. New York: McGraw-Hill Education; 2014. 3. Đerić M, ed. Practical Handbook of Pathophysiology [CD-ROM]. Novi Sad: faculty of Medicine; 2019.

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 30

Teaching methods:
Interactive theoretical and practical education, Consultation, Seminars.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	15
Practices	15	Oral	45
Colloquium	5		
Essay	10		

Course title: Dental Prosthetics – Preclinical

Course status: compulsory

ECTS Credits: 12

Condition: Dental Anatomy, Gnathology (exam)

Course aim
Acquiring knowledge about the types and manner of making dentures.

Expected outcome of the course:
Student needs to know type of prosthesis, their purpose and manner of placement.
Students should know how to take print, how to produce and make dentures.

Course description
Theoretical education
1. Anatomical imprint. 2. Functional imprint. 3. Obtaining of working model. 4. Making bite imprints. 5. Determining the position of teeth in patients with toothless jaw relationship. 6. Determining the position of lateral teeth in patients with toothless jaw relationship. 7. Preliminary positioning of artificial teeth. 8. Definitive tooth positioning. The final procedures in the preparation of complete dentures. 9. Restoring, corrections and relining of complete dentures. 10. Immediate total denture. 11. Supradental total dentures. 12. Total denture – bases reinforced with metal skeleton. 13. General terms about toothless jaw. 14. Forms of partial dentures. Parts of a partial plate denture. 15. Retention, stabilization, transfer of occlusal loads, and guidance of partial plate denture. 16. Construction of partial plate denture in the laboratory. Partial skeleton dentures. Parts of the partial skeleton denture. 17. Retention, stabilization, transfer of occlusal loads and guidance of partial skeleton denture. 18. Application of the parallelometer in the planning and construction of partial dentures. 19. Connecting elements of partial skeleton denture. 20. Construction of partial skeleton dentures in the laboratory. 21. Definition, goal and tasks of dental prosthetics. 22. Study models of individual molding spoons. 23. Conditions that define rational preparation. 24. Preparation of teeth for cast crowns (basic principles). Faceted tooth preparation for facet crowns (basic principles). Tooth preparation for ceramic replacement (basic principles). 25. Making working models for fixed compensation. 26. Making of full cast crowns. 27. Root canal preparation. 28. Preparation of fixed cast restorations. Preparation of fixed compensation model for inlay into heat resistant mass. 29. Preparation of ceramics restorations. Construction of metal-ceramic restorations. 30. Making the front and side bridges. 31. Application of parallelometer in making fixed restorations.

Practical education
1. Anatomical imprint. 2. Individual spoon. 3. Functional imprint. 4. Bite imprints. 5. Setting the facial bow on the mannequin. Transferring models into the articulator. 6. Lining the front teeth. Lining of lateral teeth. 7. Modeling external denture surface. Finishing wax models of dentures. 8. Cuvetting and polymerization and processing of finished dentures. 9. Film – stages in creating partial plate denture. 10. Making bite template. Making wire hooks. Teeth position. 11. Study model. Parallelometar. Analysis of study models in parallelometer and articulator. 12. Transferring the design of the skeleton denture from the study model to the basic model. 13. Preparation of the basic model, doubling and creation of heat resistant model. 14. Waxing of heat resistant model. Creating of wax models of partial skeleton denture (I Kennedy, Kennedy II). 15. Creating wax model of partial skeleton denture. Setting of casting channel. 16. Principles of preparation. Demonstrating student work: teeth preparation for cast crown. 17. Preparation of teeth for ceramic crown.(demarcation of the preparation of step form with rounded internal angle, marked half-channel and step). 18. Protection of ground teeth. 19. Root canal preparation. 20. Making wax model of cast replacement and creation of cast models in acrylate. 21. Taking imprints of ground teeth. Making models. Preparation of the working stump. 22. Modeling of cast crowns on molars. Modeling of faceted bridge. 23. Modeling caps for metal ceramic crown and metal ceramic crown with ceramic edge. 24. Modeling the skeleton of the front metal ceramic bridge in wax.

Literature
Compulsory
1. Herbert T. Shillingburg et al. Fundamentals of Fixed Prosthodontics, Forth Edition, Quintessence Pub Co
2. Reddy P.N. Preclinical Prosthodontics 2Ed (Pb 2018) Paperback – 2018
3. Outlines of lectures

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 90

Teaching methods:
Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	30
Practices	10	Oral	30
Colloquium	10		
Essay	10		

Course title: Operative Dentistry – Clinic I

Course status: compulsory

ECTS Credits: 12

Condition: Operative Dentistry – Preclinical

Course aim

Goal of the subject is to teach the student for the treatment of diseases of hard dental tissue and dental pulp in clinical conditions

Expected outcome of the course:

Theoretical knowledge and practical skills in performing all types of cavity preparations, retention and restoration of the cavity by applying modern dental materials, instruments and equipment for definitive fillings.
Skills are acquired during clinical practical teaching and independent work with the control of the working phases. The course continues with advanced practical teaching in the next semester.
At the end of the practical course the student should:
1. Be able to take the medical history of the patients
2. Be able to perform diagnostic procedures related to diseases of hard dental tissue and dental pulp
3. Be able to prepare the working area, equipment, instrumentation and apparatus in dental practice
4. Master the theoretical and practical knowledge of materials for temporary and definitive cavity closure
5. Be able to theoretically and practically demonstrate all methods of cavity preparation and restoration of hard dental tissues

Course description

Theoretical education

2. Introduction – preparing for clinical work
3. Biology of teeth.
4. Structure and function of the pulp-dentin complex
5. Structure and function of dentin, changes associated with aging. Diagnosis and diagnostic tools in dental pathology.
The mechanisms of emergence and perception of pulp-dentinal pain.
6. Local anesthesia in restorative dentistry
7. Histopathology of pulp-dentin complex. Defense and reparatory processes of the pulp-dentin complex.
8. Exposed dentin and protection procedures – etiology and pathogenesis of non-carious changes
9. Exposed dentin and protection procedures – diagnostic and therapy plan for non-carious changes
10. Reversible changes in dental pulp – pulp regeneration
11. Deep caries – histopathology and clinical picture
12. Deep caries – diagnosis and differential diagnosis, therapy plan
13. Treatment of deep caries and materials for indirect capping
14. Treatment of deep caries – one-step and multi-step therapy
15. Traumatic and artificial dental pulp injuries
16. Open pulp therapy, materials for direct pulp capping
17. Pulp wound healing, the course, prognosis and evolution and control
18. Minimum invasive procedures in restorative dentistry
19. Pulp reaction to restorative procedures
20. Postoperative teeth sensitivity – positive and negative characteristics of dental materials in relation to dental pulp
21. Symptomatology and diagnosis of dental pulp diseases – odontalgia. Classification of dental pulp diseases.
Clinical picture of inflammatory process in dental pulp, course and prognosis.
22. Treatment of teeth with reversible changes in the dental pulp. Techniques for preserving teeth vitality, indications and contraindications, the treatment plan.
23. Treatment of teeth with irreversible changes in the dental pulp. Techniques for preserving teeth vitality, indications and contraindications, the treatment plan.
24. Regressive and degenerative changes of pulp tissue.
25. Necrosis and gangrene of dental pulp.

Practical education

1. Introduction to clinical work, working place, organizing the working space and procedure itself
2. Basic procedures and phases in restorative dentistry, equipment and instrumentation
3. Anamnesis, Patient's consent, Rights and responsibilities of the patient
4. Clinical examination, entering data in dental records
5. Diagnosis of caries (anamnesis, inspection, sticking probe)
6. Diagnostic instruments and methods (teeth vitality tests)
7. Preparing for clinical work – fixing of instruments and hands in clinical settings
8. Temporary closure of the cavity
9. Cavity preparation for amalgam fillings of the 1st, 2nd class and MOD (placing of the basis, matrix and inerdental pins, placement of definitive fillings)
Cavity preparation for adhesive-bound fillings of frontal teeth – applying adhesive materials

10. Preparation and restoration of the 3rd class-cavity applying composite material and adhesive system with or without glass-ionomer cement base
11. Preparation and restoration of the 4th class-cavity applying composite fillings
12. Preparation and restoration of the 5th class-cavity applying composite fillings in frontal and posterior teeth
13. Application of composite fillings in posterior teeth – indications and contraindications
14. Application of composite fillings in posterior teeth – adhesive preparation
15. Cavity preparation for adhesive fillings and placement of dental adhesives
16. Therapeutic procedure in deep caries (diagnosis and treatment of deep carious lesions, placement of the materials for indirect capping of the pulp)
17. Final processing / finishing of definitive fillings

Literature

Compulsory

1. Harold O Heymann, Edward J Swift, Andre V Ritter: Sturdevant s Art and Science of Operative Dentistry. 7th Edition, Elsevier 2016.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 135

Teaching methods:
Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 attendance 5 activity	Written	60
Practices	10 attendance 20 activity	Oral	
Colloquium			
Essay			

Course title: Pharmacology

Course status: compulsory

ECTS Credits: 8

Condition: Microbiology with Parasitology and Immunology (Exam)

Course aim

To give students basic knowledge about the drug as a substance, its movement through the body, the ways, mechanisms and site of action, types of side effects, interactions and poisonings. Acquaint students with drug classes, representatives, indications and contraindications.

Expected outcome of the course:

At the end of the teaching process, students should know why, how and when can be applied to a drug, its characteristics, movement through the body, place and mechanism of action and danger of its application. Student:must know how to correctly fill a prescription (Main, officinal, almost medicinal) and to explain; must know that the registers used drugs; must know to fulfill the registration form unwanted effects of the drug. At the end of the teaching process, students should know why, how and when to apply the drug, to know the characteristics of drugs, its circulation through the body, sites and mechanism of action and potential hazards of its application. Student should be able to independently write the prescription.

Course description

Theoretical education:

History of Pharmacology. The division of the discipline. The drug and poison. Drug administration. The dosage of drugs. Doses. Therapeutic index and therapeutic range of the drug. Moving the drug through the body. The passage of drugs through the biomembrane. Reabsorption and distribution of drugs. Excretion of drugs. Metabolism of drugs. Induction and inhibition of enzymes. Factors altering the drug metabolism. Pharmacokinetic models. Pharmacokinetic parameters. Modes of action. Action sites. Mechanisms of action of drugs. Receptors. G-protein. Interactions of drugs. Synergism and antagonism. Administration of drugs in special circumstances (children, elderly, pathological condition, pregnant women, breastfeeding). Pharmakogenetics. Adverse effects of drugs. Addiction. Toxicology. Poisons. Poisoning drugs. Transmitters and receptors in the nervous system. Vegetative nerve system. Drugs that act through receptors in the VNS. Histamine and antihistaminics. Drugs in the treatment of GIT disorders and diseases. Drugs in the treatment of disorders and diseases of the respiratory system. Drugs in the treatment of CVS disorders and diseases. Thrombolytics, antiaggregation drugs, anticoagulants. Hypolypemics. Treatment of anemia. Antimicrobial agents. Antimycotics, Antivirals, Antiparasitic drugs. Antiseptics and disinfectants. Treatment of diabetes. Drugs in the treatment of disorders and diseases of the endocrine system. D-vitamin, calcium, fluoride. Treatment of osteoporosis. General and local anesthesia. Strong analgesics. Nonsteroidal anti-inflammatory drugs. Drugs in the therapy of CNS-disorders (antiepileptic drugs, psychopharmaka) of importance in dentistry. Drugs in the therapy of degenerative CNS-disorders (antiparkinson drugs) of importance in dentistry. Sedation in Dentistry.
Antiseptics and disinfectants – practical application, concentration calculation, precautions during handling and application. Fluoride preparations – dosage and calculation. Elaborating the topics addressed during theoretical lectures and writing prescription. Filling up the drug adverse reaction reporting forms

Practical education

Classification of drugs. Putting drugs on the market. Names of drugs. Pharmacopoeia. Prescription scheme. Magistral and generic formulas. Readymade drugs. Solid forms of drugs. Liquid forms of drugs. Semi-solid forms of drugs. Inhalation. Bandage material. Prescribing drugs according to pharmacotherapeutic group. Antiseptics and disinfectants – practical application, concentration calculation, precautions during handling and application. Fluoride preparations – dosage and calculation. Elaborating the topics addressed during theoretical lectures and writing prescription. Filling up the drug adverse reaction reporting forms

Literature

Compulsory

1. Rang HP, Dale MM, Ritter JM, Moore PK. Pharmacology. Churchill Livingstone, Edinburgh, New York, 2003.
2. Brenner GM, Stevens C. Pharmacology, 4th edition. Elsevier, 2012

Number of active classes	**Theoretical classes:** 75	**Practical classes:** 60

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	40
Practices	15	Oral	40
Colloquium	4x10		
Essay			

*if the student does not pass both colloquiums, he/she should take the exam in written form

Course title: Propedeutics to Pedodontics

Course status: compulsory

ECTS Credits: 2

Condition: –

Course aim

The objective of the course is to introduce students to pediatric and preventative dentistry and to adopt a basic clinical approach that involves the growth and development of teeth and orofacial structures, diagnostic techniques, planning and treatment techniques in childhood and adolescence.

Expected outcome of the course:

Knowledge: It enables the student to understand the importance, role and possibilities of preventive measures and therapy in childhood.

Skills: First clinical examination, child behavior and pain control, growth and development, interceptive interventions for space preservation, orofacial injuries, radiographic diagnostics, medical history and treatment planning of therapy in children, application of materials in pediatric dentistry, application of local anesthesia in children, prevention of caries in children and adolescents (fluorides, preventative procedures, minimally invasive caries therapy and OH measures), treatment planning for avital primary and young permanent teeth.

Course description

Theoretical education

1. Introduction to the subject of Propedeutics to Pediatric Dentistry; First visit to the dentist
2. Growth and development in childhood
3. Principles of diagnosis and treatment planning
4. Evaluation of child behaviour
5. The concept of primary care and prevention of early childhood caries
6. Caries risk assessment
7. Individual preventive therapy
8. Tooth extraction, preservation of the area and interception in children
9. Pain control in pediatric dentistry
10. Dental materials in pediatric dentistry
11. Evaluation and treatment plan for the management of dental trauma
12. Diagnosis and therapy plan for the treatment of pulp pathology
13. Diagnosis and treatment plan in the treatment of pathology of young permanent teeth
14. Teamwork in the approach and plan of therapy in the care of hospital and high-risk patients
15. A multi-disciplinary approach in the diagnosis and therapy of dentogenic and focal infections

Practical education

Practical classes that accompany the theoretical instruction program will be held at the appropriate Chair of the School of Medicine to familiarize the students with the importance of pediatric dentistry, as well as to discuss current knowledge of oral hygiene methods and materials.

1. Introduction to the basics of pediatric and dental medicine, the importance and purpose of the first check-up with the dentist, counselling regarding OH measures, and nutritional guidelines for nutrition in early childhood.
2. Expected (physiological) clinical finding in the orofacial region, complications in the emergence of the first milk teeth, postnatal anomalies in the number and structure of the teeth.
3. Clinical protocol when examining the patient and taking a history, RTG diagnostics and indications in the planning of therapeutic procedures.
4. Assessment of the child's level of cooperation and motivation, evaluation of behaviour.
5. Adoption of concept of early diagnostics and primary prevention, diagnosis, prevention and therapy of early caries of milk teeth, diagnosis of caries feeding on a bottle.
6. Method and possibilities of dental caries risk assessment (dental caries tests)
7. Use of fluoride in caries prevention, chemical and mechanical plaque control and OH measures.
8. Watering fissures and preventative fillings in children.
9. Early loss of milk teeth, consequences and prevention of space loss, basic guidelines in the application of placeholder, prevention of harmful habits.
10. Local anesthesia in pediatric dentistry, local anesthetics in pediatric dentistry, tooth extraction.
11. Dental materials for conservative dental care, steel crowns.
12. Dental injuries in milk and young permanent teeth, prevention, diagnosis and treatment plan.
13. Therapy plan for the care of avital baby teeth, vital pulpotomy of baby teeth.
14. Apexogenesis, indications for apexification, methods of preserving vital pulp in young permanent teeth, application of calcium hydroxide and mineral trioxide
15. Dental therapy plan for multidisciplinary treatment of hospital and high-risk patients.

Literature

Compulsory

1. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.
2. Koch G, Poulsen S: Paediatric Dentistry – a clinical approach. Copenhagen: Munksgaard, 2001.

Number of active classes	**Theoretical classes:** 15		**Practical classes:** 15
Teaching methods:			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	20
Practices	20	Oral	40
Colloquium			
Essay			

Course title: Dental Protection in the Community

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

Goals continue to ensure that the student after school in this election subjects improve their knowledge about the public health aspects of oral diseases, understand and accept the idea of the tasks of preventive dentistry and its role to significantly improve oral health in the community.

Expected outcome of the course:

- Know, understand and accept the ideas and tasks of preventive dentistry;
- Knows and understands the meaning of the most important diseases of the mouth and teeth (caries, periodontitis, oral cancer, orthodontic anomalies, trauma, etc.)
- Knows the impact of social cultural and environmental factors that contribute to health or illness;
- Epidemiological methods of monitoring and evaluation of movement of certain oral diseases and national pathology in general;
- Understands the principles for the prevention of oral disease and promote oral health;
- Knows the importance and possibility of application of preventive measures at the level of the whole community;
- Understands and can choose the best strategy for the promotion of oral health in the circumstances, and
- Understands, accepts the principles and priorities the promotion of (oral) health as a basic commitment of all segments of society in improving oral health.
- Organizes and conducts programs to prevent oral diseases in the local community.

Course description

Theoretical education

1. Socio-dental indicators of oral health. Determining the need for oral health. Trends in oral health. Sociomedical aspects of oral diseases. Social, economic and psychological significance of diseases of mouth and teeth. Methods for epidemiological research and monitoring of oral disease.
2. Strategies in the prevention of diseases of mouth and teeth (conventional, modern, specific). Software protection in dental services 3. Promotion of oral health, health education, motivation of individuals and society.
3. Organization and implementation of dental health care in the local community. Software protection. Evaluation of the protection program.
4. Practical education: exercises, other forms of education, research related activities
5. Topics of seminar papers for public defence in consultation with the candidates determined in the course of business seminars. Thread can be processed individually or groups up to 4 students.

Practical education (*relevant fields for seminar papers)*

1. Oral Pathology Research
2. Promotion of oral health at the local level.
3. Health education in dentistry
4. Strategy for the provision of oral health
5. Indicators of oral health
6. Fluoridation of drinking water
7. Dental care program
8. Motivation of individuals and society for the preservation of oral health
9. Financing dental care
10. Evaluation of dental care
11. Organization of dental health care
12. Free choice of topics – subject of agreement with the mentor.

Literature

Compulsory

1. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.
2. Outlines of lectures

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Theory and practice

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	20
Practices	20	Oral	40
Colloquium			
Essay			

Course title: Microscopic Laboratory Techniques in Medicine

Course status: elective

ECTS Credits: 3

Condition: –

Course aim
Students will get acquainted with techniques of making histological preparations for microscopic examination

Expected outcome of the course:
Knowledge: Main postulates of laboratory work, selection of microscopic fixative when working with biological materials, methods of processing biological materials intended for microscopic examination, including specific features of particular simple and complex staining methods, tissue cultures in laboratory medicine, pathology of laboratory animals, norms and disease prevention when working with laboratory animals
Skills: Laboratory work with biological materials with special emphasis on accident prevention, preparation of laboratory solutions, preparation of native and vital microscopic specimens, fixation and further processing of the different tissue samples (rinsing, dehydration, inclusion, molding), the use of microtome, staining of microscopic preparations, working with laboratory animals, preparation and maintenance of tissue cultures, techniques of post mortem examination on laboratory animals

Course description
Theoretical education
1. Microscopes, history, types
2. Classification of toxins according to WHO and prevention of poisoning and other accidents in the histology laboratory
3. Methods of tissue fixation, selection of fixative for light and electron microscopy
4. Blood and tissue smears and impressions, cytological features of particular samples, basophilia and eosinophilia as representatives of cytological structure
5. Microtomes and their application and usage (history since Purkinjea, manual, rotary, sliding, cryotome)
6. Classification of histological staining methods, simple staining
7. Complex staining
8. Selective staining, major cytochemical reactions
9. Methods of bacterial staining, simple and complex
10. Preparation of microscopic specimens: helminths and arthropods
11. Tissue cultures
12. Biology and working conditions with laboratory animals
13. Pathology of laboratory animals and prevention of anthropozoonoses
14. Consultation hours for preparation of exam

Practical education
1. Native and vital microscopic preparations
2. Measuring procedure using a scale; pipetting and solution preparation, first aid in poisoning
3. Preparation of fixative, obtaining tissue sections, rinsing after fixation, dehydration
4. Staining blood smear by the method of Giemsa
5. Paraffin embedding, cutting the sections using a microtome
6. Hematoxylin-eosin staining
7. Masson trichrome and PAS staining
8. Principles of immunohistochemistry
9. Explantation, primary and continuous culture
10. Experimental animal disease models
11. Methods of post-mortem diagnostics in laboratory animals
12. Writing an essay;
13. Pre-exam practical work

Literature
Compulsory
1. Suvarna SK, Layton C, Bancroft JD. Bancroft's theory and practice of histological techniques. 8th ed. Elsevier; 2018. 672 p.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:
Lecture and Practice

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	60
Practices	20	Oral	
Colloquium			
Essay			

Course title: Computer Use in Dental Medicine

Course status: elective

ECTS Credits: 3

Condition: Medical Statistics and Informatics

Course aim

To get students acquainted with the application of computing technologies in modern dentistry practice

Expected outcome of the course:

The students will get acquainted with the application of computers in determining the teeth color, position and movement of the lower jaws, analyzing the occlusion contacts and planning and performing fixed prosthetic procedures.

Course description

Theoretical education

- Introduction, application of computers in dentistry, computers and management, databases: expert systems, simulation procedures – diagnostic and therapeutic
- CAD-CAM systems, function and application
- CAD-CAM systems, computed inspection, designing and producing dental replacements, machine processable materials
- One step tooth replacement
- Specificities of particular CAD-CAM systems
- Application of computing technologies in determining the teeth color, specificities of digital imaging
- Application of computes in gnathology, analysis of occlusion contacts, comp. analysis of lower jaw movements
- Application of computers in implantology, computer-guided installation of dental implants and dental replacements on implants
- Application of computers in endodontics
- Patient processing and creation of relevant database
- Intraoral and extraoral photographing
- Diagnostics of the malocclusion – analysis of the model and the photograph
- Computer simulation of the treatment plan
- Computer simulation of the ortodonthic-surgical treatment
- Computer generated analysis of the growth

Practical education

Production of seminar papers

Literature

Compulsory

1. MASRI, Radi; DRISCOLL, Carl F. (ed.). Clinical Applications of Digital Dental Technology. John Wiley & Sons, 2015.
2. Outlines of lectures

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	70
Practices	10	Oral	
Colloquium			
Essay	10		

Course title: Rational Phytotherapy

Course status: elective

ECTS Credits: 3

Condition: Pharmacology

Course aim

The aim of this course is to provide to students of integrated studies of medicine basic information on modern phytotherapy as a way of complementary medicine and its importance in conventional medicine.

Expected outcome of the course:

Students will acquire knowledge on most important phytopreparations applied in Serbia and worldwide, their active components, therapeutical dosage, modes of action active components, as well as on potential interactions and adverse effects. Also, students will be able to make the difference between herbal remedies and dietary supplements, as well as the recommendations for their categorization.
Students should be skilled in rational selection of appropriate phytopreparations (registered as herbal medicine or dietary supplement) and their role in modern therapy approaches, to be trained in preparing and applying of different types of phytopreparations. The students will also learn about the methods for identification and determination of content of the active components in herbal remedies.

Course description

Theoretical education

1. Rational phytotherapy, definition and role in modern medicine
2. Standardization, registration; legislation and guidelines for use of phytopreparations
3. Biological, pharmacological and clinical testing of phytopreparations
4. Pharmacological characteristics of particular groups of phytopreparations
5. Phytopreparations in the therapy and prevention of diseases of major organ systems (CNS, gastrointestinal, respiratory, urogenital tract, metabolic and disorders of immune and reproductive system, liver and biliary tract disorders)
6. Specificities of dosage of phytopreparations
7. Advantages and precautions in usage of phytopreparations
8. Adverse effects and interactions of phytopreparations with particular drug categories
9. Phytonutrients
10. Adaptogens

Practical education (labs)

1. Pharmaceutical dosage forms of phytopreparations – preparation and application, storage and disposal
2. Registration of phytopreparations (herbal remedy or dietary supplement)
3. Analysis and control of the Guidelines for usage of phytopreparations
4. Data sources on phytopreparations
5. Identification and determination of the content of active component in phytopreparations
6. Compatibility with the Guidelines for usage of commercial herbal medicines
7. Selection of appropriate phytopreparation in the prevention and/or therapy of the disease

Literature

Compulsory

1. Capasso F, Gaginella TS, Grandolini G, Izzo AA. Phytotherapy A Quick Reference to Herbal Medicine. Springer, 2003.
2. Laboratory classes in Basics of Phytotherapy, script for internal use. Department of Pharmacy, Faculty of Medicine, Novi Sad.

Additional

1. Blumenthal R. The Complete German Commission E Monographs. American Botanical Council, Austin, 1999.
2. Schulz V, Haensel R, Tyler VE. Rational Phytotherapy. Springer-Verlag, Berlin, Heidelberg, 2001.
3. Heinrich M, Barnes J, Gibbons S, Williamson E. Fundamentals of Pharmacognosy and Phytotherapy. Churchill Livingstone, Edinburgh, London, 2004.
4. WHO Monographs, Vol. 1-4. World Health Organization, Geneva.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

1. Theoretical education (Lectures, Interactive Lectures)
2. Practical education (Practical Classes)

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	20
Practices	5	Oral	30
Colloquium	10		
Essay	30		

Course title: Dental Radiology

Course status: compulsory

ECTS Credits: 2

Condition: General Radiology

Course aim

Acquiring the knowledge for selecting and analysis of radiological images which is necessary for everyday dental procedures.

Expected outcome of the course:

Knowledge – Basic knowledge of radiological dental equipment. Mastering the knowledge in radiological methods in dental practice and indications for radiological diagnostics. Knowledge on normal X-ray anatomy. Recognizing the pathological changes on teeth, maxilla, mandible and temporomandibular joints. Choosing the method of radiological procedure according to the algorithm which is related to clinical picture of the patient. Learning about harmful effects and protection from ionizing radiation. The use of radiology in implantology. The use of radiology in clinical treatment of the patient. Allowed doses in radiological procedure.

Skills – Selecting the most appropriate radiological methods for analysis of pathological changes. Knowledge of algorithms in dental radiological methods Analysis and recognition of normal and pathological processes on the analogue and digital display associating it with the clinical status of the patient. 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.

Course description

Theoretical education

1. Radiographic techniques in dentistry, radiation dosages, protection, analogue and digital techniques
2. Intraoral imaging techniques
3. Extraoral imaging technique
4. Normal radiological anatomy
5. Developmental anomalies of teeth
6. Caries and caries complication
7. Periodontal diseases
8. Dental and jaw trauma
9. Inflammatory diseases of upper and lower jaw
10. Tumors of upper and lower jaw
11. CT and MRI of upper and lower jaw
12. Paranasal cavities
13. Radiology of the temporomandibular joint
14. Radiology of the salivary glands
15. Ultrasound of soft tissues of the head and neck

Practical education

1. Digital methods;
2. Pathological changes in teeth and periodontium
3. Pathology of the jaw, paranasal cavities, temporomandibular joint
4. Panoramic radiographs analysis,
5. Intraoral image analysis
6. CT and MRI analysis
7. Head radiology algorithms

Literature

Compulsory

1. Pasler FA. Radiology: Color Atlas of Dental Medicine. New York: Georg Thieme Verlag Sttuttgart; 2006.
2. Fuhrmann A. Dental radiology. Stuttgart: Georg Thieme Verlag; 2015

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 15

Teaching methods:

Lectures; practices

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	20
Practices	30	Oral	40
Colloquium			
Essay			

Course title: Dental Anesthesiology

Course status: compulsory

ECTS Credits: 2

Condition: –

Course aim

Mastering the theoretical knowledge and practical skills application of local anesthesia in dental practice. Prevention, identification and treatment of complications of local anesthesia. Selection of local anesthetics.

Expected outcome of the course:

Adoption of theoretical knowledge in the domain of dental anesthesia in preparation for practical work in dental practice.
Learning practical skills in the application of local, regional and general anesthesia in dental practice.

Course description

Theoretical education

1. The opening hour, the content and scope of the course, definition of local anesthesia and local analgesia
2. Anatomic Considerations
3. Innervation zones of the upper and lower jaw
4. The Armamentarium - syringe , -needle, cartridge
5. Classification of local anesthetic and the indications for operation, superficial anesthesia
6. Techniques of maxillary anesthesia
7. Techniques of mandibular anesthesia
8. Local complications during anesthesia
9. Local anesthetic solutions, definition, structure, development, classification, pharmacological marking
10. Pharmacology of local anesthetics
11. Systemic effects of local anesthetics, the absolute and relative contraindications for the application of a local anesthetic and a vasoconstrictor, the selection of anesthetic in patients at risk
12. Toxic reactions CNS and CVS to LAR protocol operation and treatment
13. Allergy to LAS, working protocol and treatment

Practical education:

1. Pre-clinical application of terminal anesthesia (video presentation)
2. Accessories for the application of local anesthesia (syringes, needles, ampoules and carpules)
3. The demonstration of the technique on patients - in both jaws
4. Mandatory knowledge test (innervation zones, plexus anesthesia, conductive mandibular anesthesia, indirect method
5. Applying anesthesia in patients under supervision (each student should give at least one plexus anesthesia and conductive mandibular anesthesia by indirect method)

Literature

Compulsory

1. Mallamed SF. Handbook of Local anesthesia, 6th ed. St Louis, Mosby, 2013.

Additional

1. Šarčev I. MCQ in Dental Anesthesiology. Faculty of Medicine Novi Sad, 2016.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	50
Practices	20	Oral	
Colloquium	15		
Essay			

Course title: Internal Medicine

Course status: compulsory

ECTS Credits: 4

Condition: General and Oral Pathology; Pathophysiology; Pharmacology; General Radiology (for taking the test and examination)

Course aim

The main objective of training in internal medicine in integrated studies of dentistry is the adoption of the current theoretical and practical expertise in internal medicine and training students to apply their knowledge in professional and scientific and research work. The development of critical thinking, independence in conducting diagnostic and therapeutic procedures and the development of skills for teamwork.

Expected outcome of the course:

Students will acquire basic knowledge in the field of internal medicine: pulmonology, cardiology, endocrinology, gastroenterology with hepatology, nephrology with clinical immunology, hematology, oncology diseases and the ability to recognize these organ systems diseases and basic of their treatment, as well as basic knowledge about taking care of critically ill patients. On the basis of this knowledge will be able to diagnose, plan and implement appropriate therapeutic procedures.

Students are enabled for both individual and team work to identify cardiac, pulmonary, nephrological, endocrine, gastrointestinal, hematologic and oncologic diseases, as well as the application of suitable diagnostic and therapeutic procedures.

Course description

Practical teaching: Exercise, Other modes of teaching, Study research work

1. History of diseases.
2. Physical examination: vital signs, general inspection, inspection of the head and neck.
3. Diseases of the cardiovascular system.
4. Diseases of the respiratory system.
5. Diseases of the endocrine system and metabolic disorders.
6. Disorders of the gastrointestinal tract, liver and pancreas.
7. Kidney and Clinical Immunology diseases.
8. Diseases of the hematopoietic organs

Literature

Compulsory

1. Harrison Manual of Medicine 19th Edition [PDF] | Free Medical Books
2. Lecture handouts and notes

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 45

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	10
Practices	20	Oral	60
Colloquium			
Essay			

Course title: Surgery

Course status: compulsory

ECTS Credits: 5

Condition: General and Oral Pathology; Microbiology with Parasitology and Immunology; Internal Medicine (exam)

Course aim

Mastering the basic theoretical knowledge and skills in managing patients in all surgical branches.

Expected outcome of the course:

Adoption of necessary knowledge in all surgical disciplines necessary for learning basic skills in the care of surgical patients.
Mastering the basic knowledge and practical skills necessary for the adoption of the care of surgical patients.

Course description

Theoretical education

1. Asepsis in surgery, surgical diagnosis and semiology
2. Closed and open injuries
3. Infections in surgery, thermal and electrical injury
4. Surgical terminology and types of surgical procedures;
5. Basics of abdominal surgery, abdominal trauma
6. Basics of urology; basis of vascular surgery
7. Basics of neurosurgery, neurotrauma
8. Basics of orthopedic surgery, bone-joints injuries
9. Basics of plastic and reconstructive surgery; replantation surgery
10. Surgical principles in oncology
11. Basics of thoracic surgery and neck surgery
12. Basic characteristics of surgery of developmental period
13. Organization of the management of injured patients
14. War surgical doctrine, war wounds and specific war injuries

Practical education

1. Principles, methods and means of sterilization, physical examination of surgical patients
2. Access and initial management of injuries, surgical treatment of wounds
3. Management of local surgical infection; initial management of patient with burns
4. Operation room at work; implants in surgery
5. Diagnostic and surgical treatment of patients with abdominal diseases and injuries
6. Aspects of surgical treatment of patients with diseases and injuries of the urogenital tract; aspects of surgical treatment of patients with acute diseases and injuries of blood vessels
7. Aspects of surgical treatment of injuries from the trauma of the central and peripheral nervous system
8. Measurement in orthopedics; the aspects of prehospital, the initial hospital and surgical treatment of patients with osteoarticular injury
9. Aspects of surgical treatment of injured or diseased patients in the field of plastic-reconstructive surgery and replantation surgery
10. Methods for early detection of cancer
11. Aspects of surgical treatment of patients with injuries and diseases of chest and neck
12. Aspects of surgical treatment of patients and injuries in developmental period
13. Management of the injured; categorization and priorities in the care of injured
14. Organization of management of wounded patients in conditions of war, specific surgical treatment of war wounds

Literature

Compulsory

1. Towsend C, Beauchamp RD, Evers BM. Sabiston Textbook of Surgery, 19th edition. Elsevier Saunders, 2012.
2. Brunicardi FC. Schwartz's Principles of Surgery, 10th edition. McGraw Hill Education, 2015.

Additional

Outlines of lectures

Number of active classes	**Theoretical classes:** 45	**Practical classes:** 45

Teaching methods:

Theoretical and practical.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	10
Practices	30	Oral	50
Colloquium			
Essay			

Course title: Pediatrics

Course status: compulsory

ECTS Credits: 2

Condition: General and Oral Pathology; Patophysiology; Pharmacology

Course aim

The aim of this course is to get students familiar with pediatric population (aged from 0 to 18 years) and to teach them the basic principles of growth, development and nutrition. The main goal is to teach students to recognize clinical manifestations of common diseases in childhood, to get acquainted with basic diagnostic procedures, differential diagnosis and therapy. The final goal is to educate dentist's correct attitude toward this vulnerable population in dental office.

Expected outcome of the course:

During lectures students get basic knowledge about pathogenesis, clinical manifestations and therapy of diseases in population aged 0 to 18 years, with emphasis on differential diagnosis to dental conditions. We strongly emphasize the importance of preventive measures and accurate, correct attitude and skillful communication with patients aged 0 to 18 years and their families. Specificities of history taking, physical examination and treatment.

Course description

Theoretical education

1. Opening lecture. 2. Growth and development: estimation of growth and development and pathology of growth and development. 3. Methodology of physical exam in pediatrics. Morbidity, mortality and healthcare in pediatrics. 4. Genetics: Chromosomes and genes; Patterns of inheritance and inherited disorders; Congenital malformations; Dysmorphology: Importance of inherited diseases in dental medicine. 5. Genetic diseases with repercussions on orofacial region; Inherited diseases in dental medicine; Genetic diagnostics in dental medicine; Genetic counseling in dental medicine 6. Nutrition disorders and nutrition deficiency illnesses; basic principles of diets 7. Endocrinology and metabolic diseases; Juvenile diabetes. 8. Pulmonology: Airways in children; Diseases of upper and lower respiratory tract (anomalies, acute diseases, bronchial asthma) 9. Cardiology: congenital heart diseases; Rheumatic fever; Bacterial endocarditis; Myocardial diseases; Rhythm and conduction disturbances. 10. Immunology: Orofacial manifestations of systemic diseases. 11. Allergology: Urticaria; Quincke edema; Allergic reactions to local anesthetics. 12. Hematology: Anemias; Disorders of hemostasis; Screening of hemostasis; Thrombocytopenia; Coagulopathy; Vasculopathy; Lymph node enlargement; Oncology: Acute leukemias; Lymphoma; Solid tumors. 13. Neuropediatrics: Paroxysmal non-epileptic disorder of childhood; Epilepsy and epileptic syndromes of childhood; Headache; Treatment of epilepsy and epileptic status. 14. Pharmacotherapy: Pharmacokinetics and pharmacodynamics in children; Doses of the most common drugs used in children; History of medication 15. Emergency and resuscitation in pediatrics: cardiopulmonary-cerebral resuscitation in pediatrics.

Practical education

1. Specificities of history taking and physical exam in pediatrics. Patient-doctor relationship, estimation of co operability and general condition of pediatric patient. 2. History taking including genetic history. 3. Dysmorphology exam 4. Cases of inherited diseases related to dental medicine. 5. Endocrinology and metabolic diseases in pediatrics. Juvenile diabetes. 7. Cardiology: congenital heart disease, rhythm and conductance disturbances, myocarditis, bacterial endocarditis. 8. Pulmonology: acute and chronic inflammation of respiratory tract, bronchial asthma. 9. Haematology: anemias, thrombocytopaenias, clotting disorders. 10. Oncology: leukemias, malignancy in childhood. 11. Immunology: orofacial manifestation of systemic diseases. 12. Allergology: anaphylaxis, Urticaria, allergic reactions to local anesthetics. 13. Neurological diseases in childhood, seizures, epilepsy 14. Pediatric healthcare. 15. Cardiopulmonary and cerebral resuscitation in pediatric patient.

Literature

Compulsory

1. Lissauer T, Clayden G. (Eds). Illustrated Textbook of Paediatrics. 5th Edition, Elsevier 2017.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 15

Teaching methods:

Lectures. Practical education: history, physical examination, differential diagnosis and therapy. Case reports, workshops.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	60
Practices	20	Oral	
Colloquium			
Essay			

Course title: Dermatovenereology			
Course status: compulsory			
ECTS Credits: 3			
Condition: General and Oral Pathology; Pathophysiology; Pharmacology			
Course aim Clinical presentation, diagnostic procedures, therapy, course and prognosis in dermatovenereological diseases relevant for dentistry students.			
Expected outcome of the course: Students are provided with skills and diagnostic and therapeutic methods in dermatovenereology.			
Course description *Theoretical education* Parasitic, fungal and bacterial skin diseases; viral skin diseases; Erythemosquamous dermatoses; Papulous dermatoses; Allergodermatoses; Blistering dermatoses; Autoimmune skin diseases; Circulatory skin diseases; Skin Tumors; Changes in the oral mucosa. Allergic changes in the oropharyngeal mucosa; Sexually transmitted diseases. *Practical education* Obtaining a medical history and interpretation of data; objective examination of the skin and visible mucous membranes; efflorescences – description of skin lesions; auxilliary diagnostic techniques important for dermatovenereology, and interpretation of findings (dermatoscopy, skin scraping, sampling material for native microscopic examination, skin biopsy, small dermatosurgical procedures, electrocauterizaton techniques; excochleation techniques); basic principles of local dermatological therapy.			
Literature *Compulsory* 1. Wolf K, Johnson RA, Fitzpatrick's Color Atlas and Synopsis of Clinical Dermatology 6th Edition PDF. Available at: https://am-medicine.com/fitzpatricks-color-atlas-and-synopsis-of-clinical-dermatology-6th-edition-pdf/			
Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15	
Teaching methods:			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	50
Practices	20	Oral	
Colloquium	10		
Essay			

Course title: Infectious Diseases

Course status: compulsory

ECTS Credits: 3

Condition: General and Oral pathology; Pathophysiology; Microbiology with Parasitology and Immunology

Course aim

The aim the Infectious diseases course is to enable students to identify, treat and manage infectious disease patients, as well as to make a differential diagnose of dental diseases.

Expected outcome of the course:

Through theoretical classes, students should acquire basic knowledge on etiology, epidemiology, pathogenesis, clinical manifestations, diagnostics and treatment of patients with acute and chronic infectious diseases. Practical classes should enable students to take medical histories and to perform examinations of infectious disease patients. Skills that should be acquired by students during the course are: correct history taking with special emphasis on diseases progression by dates and by systems and epidemiologal data; complete physical examination including meningeal signs and basics of neurological examination.

Course description

Theoretical education

Acute tonsillopharyngitis and diphtheria; General features of streptococcal diseases, erysipelas, scarlet fever; Influenza and flu like syndrome; Mumps; Chicken pox, smallpox, 5th and 6th disease; Measles, German measles; Herpes virus infections; Infectious mononucleosis and herpetic viral infections; HIV infection; Introduction to viral hepatitis; General features of meningitis and meningeal syndrome; Bacterial meningitis; Meningitis with clear cerebrospinal fluid; Encephalitis; Tetanus; Botulism.

Practical education

Introduction to infectious diseases; taking medical history in infectious diseases; respiratory infections – medical history; CNS infection – medical history; hepatology – medical history; medical history – conclusion; demonstration of complete physical examination; demonstration of meningeal signs and neurologic examination; forming an anamnestic conclusion; differential diagnosis of icterus ; differential diagnosis of CNS infections; lumbar puncture – demonstration; differential diagnosis of unclear febrile states; differential diagnosis of respiratory infections; differential diagnosis of respiratory tract infections.

Literature

Compulsory

1. Jong CE, Stevens DL: Netter's Infectious Diseases, 3rd ed. Elsevier, Philadelphia,US, 2012.

Additonal

1. Mandell GL, Douglas RG, Bennett JE: Principles and practice of Infectious Diseases, 7th ed, Churcill Livingostone, Philadelphia, New York, US, 2010.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures, practice

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	
Practices	20	Oral	70
Colloquium			
Essay			

Course title: Clinical Prosthetics 1

Course status: compulsory

ECTS Credits: 11

Condition: Dental Prosthetics – Preclinical; Dental Materials (exam)

Course aim

Acquiring knowledge on basic biomedical and technological skills in mobile prosthetic dentistry as well as skills essential for clinical work in a conventional or implant-prosthetic therapy or partially or totally toothless jaws

Expected outcome of the course:

The curriculum will provide student with knowledge on the importance of oral health and needs of mobile prosthetic therapy, non physiological and pathological conditions of stomatognathic system, functional anatomy and physiology of partially or totally toothless jaw, diagnostic procedures and laboratory tests relevant for the implementation of mobile prosthetic therapy, setting indication and designing a corresponding plan of mobile prosthetic therapy, the impact of selected mobile prosthetic therapy on patient's stomatognathic system and general health condition, interconnection between laboratory and clinical procedures relevant for mobile prosthetics therapy, materials and instruments as well as laboratory and clinical equipment and instrumentation, selecting the type of material to be used for the mobile prosthetic therapy, implementing mobile prosthetic therapy to the purpose of improving oral health for an acceptable and adequate time period, relevant literature data with an aim of improving professional knowledge and its application in everyday practice, materials and processing technologies and their application in laboratory and clinical mobile prosthetics, physiology of the stomatognathic system – normal function, diagnostics and mobile prosthetic treatment of temporomandibular disorders, biomechanics of the stomatognathic system and effects of mobile prosthetic procedures on it, conventional mobile prosthetic therapy and rehabilitation of the stomatognathic system, implant-prosthetic treatment of totally toothless jaw, clinical-epidemiological research on the possibilities of implementing mobile prosthetic therapy applying conventional procedures, knowledge and skills related to diagnostic, therapeutic and laboratory procedures are acquired through lectures, seminars and colloquia as well as through clinical practical work in small groups.

Course description

Theoretical education

TOTAL PROSTHESIS – anatomical structure of the upper and lower jaw. Anatomical structure and kinematics of temporomandibular joint. The position and movement of the lower jaw. Functions of stomatognathic system. Support of the upper and lower total prosthesis. Soft tissue and muscle activity. Preliminary (anatomical) and functional imprints of the upper and lower toothless jaw. Retention factors of total prosthesis. Stabilization factors in total prosthesis. Determining interjaw relationship. Transferring working models in the articulator and simulating movement capabilities of the lower jaw. Portable buccal arc. Positional registry. Adjusting junction and incisal guidance in semi adjustable articulators. Guidelines for determining the position of front teeth. Guidelines for determining the position of lateral teeth. Specificities of skeletal jaw relationship. Determining the position of the teeth in toothless patients of the skeletal class I, II and III. Clinical testing of teeth positioning in toothless patients. Concept (model) of bilateral balanced occlusion. Laboratory procedures for finalization of complete dentures. Temporary and immediate total prosthesis. Supradental prosthesis. Implant – prosthetic aspects of rehabilitation of toothless patients. Changes in the soft tissues of the holders of complete dentures. Complications during the wearing of complete dentures. Geriatric aspects of therapy in toothless patients. REMOVABLE PARTIAL DENTURES – Stomatognathic system. The teeth and dental series. Supporting tissues. Toothless or residual alveolar ridge. Interactions between the remaining teeth and denture. Implants as support elements for removable partial denture. Occlusion. Functions of the stomatognathic system. Teeth-loss and its consequences to the stomatognathic system. Classification of toothlessness. Classification of partial dentures. Forms of partial dentures. Goals of prosthetic treatment using partial dentures. Partial-panel denture. Temporary partial denture. Immediate partial dentures. Transitional or interim dentures. Bite plates. Bite plates and other occlusal splints. Conditional permanent partial plate denture. Permanent partial plate denture. Partial skeleton denture. Elements of partial skeleton dentures. Dental parallelometer. Basic issues in planning skeleton denture. Retention, biostatics, planning of partial skeleton denture. Complex partial dentures. Guidelines to constructing partial skeleton denture. Fixed composites for attaching of partial skeleton dentures. Grinding technique in prosthetic dentistry. Attachments of fixed composite and mobile replacement. Partial dentures with attachments. Classification of attachments. Construction of dentures with attachments. Double telescope crown. Double cone crown. Construction of partial telescope dentures. Specificities of clinical and laboratory construction of partial telescope dentures. Other types of partial dentures. Supradental, double dentures, swing-lock, reduced, unilateral partial denture. Flexible partial dentures. Implant supported partial dentures. Obturator and postressection partial dentures. ESTHETICS of partial dentures.

Practical education (labs)

TOTAL DENTURES: Anamnesis, status, clinical examination; Treatment plan; Preparing the patient for total denture treatment; Selection and evaluation of the molding spoon; Preparing imprint materials and taking the anatomical imprints. Testing and shaping individual molding spoons for toothless upper and lower jaws. Functional imprints of toothless jaw. Determining jaw relations in the treatment with total dentures. Transferring and fixing of working models using the face bow; Working with mid-range articulators. Analyzing models and jaw relations in the articulator; Determining the shape, size and color of teeth. Controlling the teeth position in complete dentures; Functional and ESTHETIC factors and individual adjustments of teeth position. Delivery of finished complete dentures; Control and correction of the therapy. Repairing the fractures of the denture base; Direct and indirect rebasing of total dentures.

PARTIAL DENTURES: Preparation of the patient and working place for mobile-prosthetic therapy; Filling out the Protocol/Records. Analysis of X-ray images; Deciding about the treatment plan; Preparing the supporting tissue for partial denture. Selecting molding spoons; Making anatomical imprint of the upper and / or lower jaw; Plotting margins of mobile and immobile mucosa. Analysis of study models; Classification of toothlessness. Testing and shaping of individual molding spoons for partly toothless upper and/or lower jaw. Functional imprints. Planning the size of the partial denture basis; planning the method for stabilization and retention of partial denture; Determining the shape and technique of grinding denture elements in the combined therapy with partial dentures. Determining jaw relations in the treatment with partial dentures. Transferring and fixing of working models using the face bow; Working with mid-range articulators. Testing the model of partial denture; Clinical check-up of teeth position in partial denture. Delivery of finished partial dentures; Control and maintenance of partial dentures.

Literature

Compulsory

1. Rahn AO. Textbook of complete dentures, 6th edition, 1993

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 180

Teaching methods:
Lectures; Practical classes

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	10
Practices	15	Oral	60
Colloquium			
Essay			

Course title: Operative Dentistry – Clinic II

Course status: compulsory

ECTS Credits: 3

Condition: Operative Dentistry – Clinic I; Pharmacology (exam)

Course aim

The aim of the course is to train the student in diagnosing and treating disorders of hard tissues and dental pulp under clinical conditions

Expected outcome of the course:

Diagnostics and therapy of hard dental tissues and dental pulp.

Skills are acquired through independent practical clinical work with permanent control of the working stages. Compulsory study program in the framework of clinical practical training in Operative dentistry – clinic I and II comprises total of 17 definitive fillings (composite and GJC fillings, therapy of deep caries) including multisurface amalgam filling. Some aspects of clinical skills are integrated in subjects Endodontics I and II. During practical work encompassed by Operative Dentistry I and II, and Endodontics I and II, the students have to perform 40 treatments of hard dental tissues with definitive fillings.

At the end of the practical course in Operative Dentistry II student should:

1. master diagnostic procedures related to diseases of hard dental tissue and dental pulp
2. acquire theoretical and practical knowledge on materials for temporary and definitive cavity closing
3. acquire theoretical and practical knowledge on all types of cavity preparation, retention and restoration by using modern materials and instrumentation for placing definitive fillings
4. demonstrate theoretical and practical knowledge about therapeutics and therapy approach and protocol in treatment of deep caries and dental pulp diseases

Course description

Theoretical education

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Practical education

- Preparation and restoration of I, II, III and V class cavities using composite material with or without applying glass-ionomer cement base, adhesive system
- Preparation and restoration of IV class complex cavities using composite fillings
- Application of composite material on posterior teeth – indications and contraindications
- Preparation and restoration of multisurface cavities on lateral teeth using adhesive systems, GIC base (open and closed "sandwich" technique) and composite fillings
- Restoration of III and V class cavities using GIC
- Therapy procedures in deep caries – diagnosis and processing of carious lesion, placing material for indirect pulp capping
- Restorative techniques for preserving pulp vitality
- Vital pulpotomy – technique
- One-step therapy of deep caries: indirect pulp capping and tooth restoration using definitive filling
- Multy-step therapy of deep caries: drug, protective base (GIC) with temporary cavity restoration
- Restoration of deep cavities depending on therapy modality and the type – cavity localization
- Control of therapy outcome in deep caries after one-step and multy-step treatment
- Preparation and amalgam restoration of class I, II and MOD cavities
- Restorative procedure in complex cavities with additional retention applying amalgam and composite material

Literature

Compulsory

1. Harold O Heymann, Edward J Swift, Andre V Ritter: Sturdevant s Art and Science of Operative Dentistry. 7th Edition, Elsevier 2016.

Number of active classes	**Theoretical classes:** –	**Practical classes:** 45

Teaching methods:

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures		Written	
Practices	10 attendance 20 activity 10 program accomplishment	Oral	30
Colloquium		Practical exam	30
Essay			

Course title: Dental Care of Elderly Patients

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

Knowledge of the aging process and their limits, timely dental care of the elderly, providing maximum care of the dental system through preventive and clinical methods. Protection of oral health and timely prosthetic rehabilitation of elderly and ill persons.

Expected outcome of the course:

Acquiring knowledge about all changes associated with aging. All changes that may occur in the oral cavity of elderly patients may arise as a consequence of the diseases affecting individual teeth and oral mucosa, or may be manifested as a consequence of systemic diseases, as well as undesirable effects of different drugs.

Practical skills in dentistry, identification of specific pathological conditions of dental structures in the elderly. Defining systemic diseases that affect elderly persons, as well as the irreversible changes that need dental prosthetic treatment. Skills in the field of repair of soft and hard tissues, teeth extraction, final prosthetic works (dentures). Showing the understanding towards elderly people, whether healthy or diseased.

Course description

Theoretical education

1. General anatomy, osteology of the head and neck.
2. Physiology of the dental system.
3. Masticator system
4. Systemic diseases affecting the elderly
5. Aging and changes in the oral lining
6. Aging and Periodontal tissue changes in the periodontal tissue
7. Care of the elderly or ill people and special procedures
8. Teamwork in dental care for the elderly cases

Practical education

1. The plan of treatment depending on the mental and physical condition of the elderly
2. Anamnesis and clinical examination of elderly patients
3. Restoration of remaining teeth, a conservative and prosthetic
4. Repair of the soft tissues of mouth
5. Extraction of teeth at risk elderly patients
6. Providing assistance to elderly persons or immovable

Literature

Compulsory

1. Chalmers JM. Geriatric oral health issues in Australia. Dent. J. 2001;51(3)188-199.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Lectures; practices

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	20
Practices	20	Oral	40
Colloquium			
Essay			

Course title: Dental Traumatology

Course status: elective

ECTS Credits: 3

Condition: Pediatric Dentistry 1

Course aim

Getting students acquainted with characteristics, etiology and epidemiology of teeth and mouth injuries in children and with diagnostics and treatment of teeth injuries in children.

Expected outcome of the course:

Knowledge of the characteristics, prevalence, importance of orofacial injuries, knowledge of classification, epidemiology, etiology of orofacial injuries. Knowledge of the Protocol for injury management and diagnostic methods and techniques as well as the treatment of soft and hard tissue and the treatment of supporting dental tissues and complications of traumatic dental injuries Admission and examination of children with teeth injuries. Diagnostics in children with teeth injuries; analysis and interpretation of X-ray scans; Therapy plan.

Course description

Theoretical education

1. Injuries of the orofacial area, the mouth and teeth in children; Characteristics; Importance 2. Classification of mouth and tooth injuries in children 3. Protocol for the treatment of wounds 4. Etiology of oral and dental injuries 5. Epidemiology of oral and dental injuries 6. Methods for diagnosing of oral and dental injuries in children 7. Soft tissue injuries and mouth treatment 8. Injuries of dental hard tissues 9. Treatment of hard dental tissue injuries 10. Injuries of periodontal tissues 11. Treatment of periodontal tissue injuries 12. Complications of tooth injury 13. Restoration of injured teeth in children 14. Emergency conditions in orofacial trauma 15. Current trends in the management of traumatic dental injuries

Practical education

1. Introductory exercise: the importance of studying traumatic dental injuries in children; a brief overview of the etiology and epidemiology Traumatic dental injuries in children 2. Introduction to medical records related to dental injuries 3. Classification of traumatic dental injuries in children 4. The procedure at first visit; examination; medical history 5. Materials and tools in the treatment of oral and dental injuries 6. Getting acquainted with the X-ray diagnostics in teeth and mouth injuries 7. Treatment of soft tissue injuries; training in working with surgical instruments 8. Treatment of hard tissue injuries: fractures of class 1 and 2 9. Treatment of hard tissue injuries: fractures of Class 3 and 4; build-up of endodontically treated teeth 10. Treatment of periodontal tissue injuries: contusions, subluxation; making splints on the model 11. Treatment of periodontal tissue injuries: lateral luxation, intrusion, extrusion, avulsion; making splints on the model Conditionally permanent solutions: adhesive bridges 12. Conditionally permanent solution: partial plate dentures 13. Treatment of complications of traumatic dental injuries in children 14. Presentation of IADT (International Association for Dental Traumatology) of the Internet guidelines for injuries management

Literature

Compulsory

1. Goran Koch. Paediatric Dentistry: A Clinical Approach, John Wiley & Sons, Jun 29, 2009
2. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.
3. IADR guidelines, AAPD, 2018

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:
Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 attendance 10 activity	Written	20
Practices	5 attendance 20 activity	Oral	40
Colloquium			
Essay			

Course title: Pharmacotherapy of Infections in Dentistry

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

To acquire skills in applying knowledge in general and special pharmacology in dentistry

Expected outcome of the course:

Students should be aware of the importance of antiseptics, disinfectants and antibiotics in everyday dentistry practice with an aim of preventing outbreak and spread of the infection, as well as the development of bacterial resistance to antimicrobial agents. Student should learn to select the appropriate antiseptic, disinfectant or antibiotic in his everyday practice, to be acquainted with the pharmacotherapeutical approach to infection treatment, the pain in dentistry, to know the importance of adequate administration of sedatives in everyday practice and to be in line with information sources pertaining to novel drugs applied in practice with particular emphasis on drugs that can manifest undesirable and adverse effects in the oral cavity. Student should be trained for appropriate application of disinfectants and antiseptics in everyday practice, adequate use of antibiotics in both prophylaxis and treatment, applying data sources on drugs commonly used in dental medical practice and identifying and recognizing adverse effects of the drugs in the micro-environment of the oral cavity.

Course description

Theoretical education

Importance of appropriate hygienic regimen related to working environment, instrumentation and personnel in dentistry practice. Knowing the spectrum of antimicrobials, efficacy and adverse effects of antiseptics and disinfectants in dentistry. Appropriate selection of dermoantiseptics, mucosal antiseptics, disinfectant for items and working premises, instrumentation and operation area. Appropriate selection of antibiotics in dentistry on the basis of knowledge of bacterial flora of oral cavity, spectrum of antimicrobials and their pharmacokinetics, adverse effects of antibiotics and their interactions with other drugs with an aim of preventing development of bacterial resistance to antibiotics and preserving the effectiveness of commonly applied antibiotics. Prophylactic application of antibiotics in dentistry. Therapy of dentogenic infections. Therapy of periodontal infections. Appropriate selection of analgesics in dentistry. Appropriate selection of sedatives in dentistry. Therapy of pain characteristic for patients in dental medicine. Data sources on drugs applied in dental medical practice. Importance of drugs and their effects on the micro-environment of the oral cavity.

Practical education

Practical application of disinfectants for working surfaces, instruments, principles of asepsis in personnel (hand hygiene) aimed at preventing infection outbreak and spread in dental medical practice. Practical application of antiseptics in patients. Proper selection of antibiotics for prophylaxis of most common procedures in dentistry. Practical application of antibiotics in most common infections in dentistry. Practical application of analgesics based on knowing the action mechanisms and pharmacokinetics of the analgesics, their adverse effects and interactions with other drugs in most prevalent painful conditions in dentistry. Practical application of sedatives based on knowing the action mechanisms and pharmacokinetics of these drugs, their adverse effects and interactions with other drugs. Using available data sources on drugs available in everyday practice. Knowing the drugs that can manifest adverse effects on teeth and the oral cavity.

Literature

Compulsory:

1. Rang HP, Dale MM, Ritter JM, Moore PK. Pharmacology. Churchill Livingstone, Edinburgh, New York, 2003.
2. Brenner GM, Stevens C. Pharmacology, 4th edition. Elsevier, 2012.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	
Practices	5	Oral	40
Colloquium			
Essay	50		

Course title: Bloodborne Diseases and Professional Prophylaxis

Course status: elective

ECTS Credits: 3

Condition: –

Course aim
Information about bloodborne viruses and ways of postexposure prophylaxis for health professionals.

Expected outcome of the course:
Getting additional knowledge about bloodborne diseases, treatment options and professional prophylaxis.

Course description
Theoretical education
1. Hepatitis B – acute, chronic, complications, treatment, prevention, treatment after an exposure
2. Hepatitis C – acute, chronic, complications, treatment, prevention
3. Other potential bloodborne viruses
4. HIV infection – etyology, epidemiology, pathogenesis, clinical presentation, treatment, prevention
5. Confronting stigma and discrimination
6. PEP
7. PrEP

Practical education
1. Morning visits
2. Ambulant care of exposed patients
3. Life style correction
4. Procedure in the case of professional and non-professional exposure
5. Profession – related prevention.

Literature
Compulsory
1. Mandell GL, Douglas RG, Bennett JE: Principles and practice of Infectious Diseases, 7th ed, Churcill Livingostone, Philadelphia, New York, US, 2016.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	30	Written	50
Practices	15	Oral	
Colloquium	5		
Essay			

Course title: Experimental Animals and Experimental Design in Medical Research

Course status: elective (compulsory prior to preparing experimental student/graduation paper that includes experimental animals)

ECTS Credits: 3

Condition: –

Course aim

To get students acquainted with the methods, possibilities and conditions of working with experimental animals in biomedical research

Expected outcome of the course:

The students will get acquainted with conditions and possibilities of working with experimental animals and particular experimental models of importance for in vivo biomedical research. The students will get informed on legal regulations pertaining to protection of welfare of experimental animals, animal models and species used in particular investigations, the housing and care of experimental animals, application of investigated substances, monitoring the effects of applied substances, euthanasia and safe disposal of residual/waist material. The students will be trained for experimental work with laboratory animals (handling, administration of substances, sampling of biomaterial, anesthesia, monitoring of stress and pain parameters...) as well as for creating relevant documentation aimed to obtain necessary approvals for experimental work with laboratory animals.

Course description

Theoretical education

Legislation and welfare of experimental animals in biomedical research. The principles of ethics of working with experimental animals. The rule of "3-R's" and "five freedoms" in working with experimental animals. Categories of invasiveness in animal experiments. Alternative methods for in vivo experiments. Laboratory (experimental) animals – classification and nomenclature, types. Maintenance of experimental animals – accommodation, food and drinking water, hygiene, monitoring health status (stress and pain). Animal models – the model definition, requirements, selection. Basic rules of handling experimental animals – keeping, labeling, application of experimental substances, sampling material for analysis. Experimental models in non-anesthetized animals. Experimental models in anesthetized animals. Euthanasia and risks when working with experimental animals.

Practical education

Preparing the Request for approval of the experiment on laboratory animals to the Ethics Committee, pursuant to relevant legislation**.** Getting acquainted with the maintenance of laboratory animals – practical work. Skills for handling laboratory animals – practical work (housing, labeling, administration of experimental substances, sampling of materials for analysis), Designing an experimental model in line with the Request to Ethical Committee (research plan that foresees the use of experimental animals), Practical handling of the material of animal origin (samples, carcasses of sacrificed animals), substances and equipment used in the experimental research.

Literature

Compulsory

1. Chow P, Ng R, Ogden B. Using animal models in biomedical research. World Scientific Publishing Co. Pte. Ltd., Singapore 2007.
2. Hau J, Van Hoosier GL. Handbook Of Laboratory Animal Science, Vol I &II. CRC Press, Boca Raton, Florida 33431, 2003.

Additional

1. Kaliste E. The Welfare of Laboratory Animals. Springer, Dordrecht, The Netherlands, 2007.
2. Wahlsten D. Mouse Behavioral Testing. Academic Press, Elsevier, London NW1 7BY, UK, 2011.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	50	Written	50
Practices		Oral	
Colloquium			
Essay	5*		

*if a student does an essay, he/she can get 5 points if he/she misses, up to a maximum of 100

Course title: Pediatric Dentistry I

Course status: compulsory

ECTS Credits: 7

Condition: –

Course aim

The aim of the course is to get students acquainted with the methods of diagnosis and suppressing fear from the dentist. Students would be trained to diagnose the status of the patient and propose measures and methods for maintaining oral hygiene, to set indications and to apply prophylactic measures aimed at preventing oral diseases

Expected outcome of the course:

Comprehend and understand biological mechanisms of the protection of oral cavity. Comprehend and understand the etiopathogenesis of the most common oral diseases (caries, periodontitis, oral cancer, orthodontic anomalies, trauma). Knowledge of complex interaction of oral and general health as well as numerous common risk factors (diet, bad habits – smoking, alcohol, drugs, using drugs, etc.). Comprehend, understand and use methods for diagnosis and exclusion of risk for the occurrence of oral diseases. Comprehend and understand the role of nutrition in general and oral health and is able to provide competent advice on food security to the general oral health. Grasp, understand and properly use fluoride in preventing caries knows and uses the methods of prevention and interceptive Orthopedics prophylaxis

Course description

Theoretical education

1. Introduction to preventive dentistry. The role and potentials of oral hygiene in maintaining oral health. 2. Socio-medical significance of oral diseases. 3. The importance of communication with the patient in the prevention of oral diseases. Fear and anxiety. 4. Psychological types of children. Motivation of the patient. 5. Diagnostic status and habits in oral hygiene. Maintenance of oral hygiene. 6. Methods of cleaning teeth, local application of fluoride prophylaxis of oral disease: definition, significance. 7. Biological protective mechanisms in the oral cavity. Characteristics of healthy tissue in oral cavity (mucosa, gingival, periodontal tissue, enamel, pulp-dentine complexes, cement). Clinical aspects of mouth and teeth development. Chronology of tooth eruption and replacement. 8. Protective role of saliva. Composition, physical and chemical protection, the role of remineralisation. Protective role. Clinical significance of stimulation of saliva secretion. 9. Oral flora. Dental plaque. Pathogenesis, microbiological composition, metabolic processes of plaques. 10. Diagnostics, need of planning prophylaxis of oral diseases (periodontitis, caries, orthodontic disorders, injuries of the mouth and teeth). 11. Prophylactic measures in the prevention of periodontitis. Prophylactic measures in prevention of caries. 12. Prophylactic measures in the prevention of orthodontic anomalies. Chemoprophylaxis of oral diseases. 13. Preventive Dentistry. Introduction, definition, significance and tasks. Levels of prevention. The relationship between preventive dentistry and other medical/dentistry disciplines. 14. Etiology of caries. Background research. Theory. Modern understanding. Primary and secondary factors in the etiology of caries. 15. Pathogenesis of "early" carious lesions in enamel. Macroscopic and microscopic features. Microbiology of caries lesions. 16. Dentine caries. Root caries. 17. Erosion of teeth. Etiology. External factors. Internal factors. Biological factors. Prevention of erosion. 18. Etiopathogenesis of periodontitis. Etiology. General and local factors. Development of gingival lesions. Pathogenesis of periodontitis. Prevention of periodontitis. 19. Etiology of soft tissue diseases. Oral cancer, precancerous lesions. Oral infection in immunocompetent and immunocompromised patients. 20. Nutrition and oral health. Influence of nutrition on teeth in the development and function. Sugar. Replacing sugar. 21. Fluorides and oral health. Biokinetics. Toxicology. The mechanism of cariostatic effects. Application of fluoride in preventing caries. 22. Diagnostics of potential risk of caries. Nutrition. Oral hygiene. Volume, acidity, Buffer capacity of saliva, saliva microflora. 23. Diagnostics of potential risk of diseases of soft and supporting tissue. Risks for the emergence of periodontitis. Risks for the occurrence of oral cancer. 24. Preventive and interceptive orthopedics. Etiology of malocclusion. Prevention of orthodontic anomalies in prenatal and postnatal period of life. Premature loss of milk teeth. Interceptive measures in preschool and school children. 25. Contemporary developments and trends of preventive dentistry. 26. Oral health during pregnancy – prevention. 27. Application of chemoprophylactic measures Etiology and prevention of teeth injuries. 28. Minimum invasive caries therapies. 29. Promotion of oral health and prevention of oral diseases.

Practical education

1. The importance, role and possibilities of oral hygiene in maintaining oral health. The problem of fear and anxiety. Admission of patients. 2. Diagnostics of patients' behavior, fear and anxiety. 3. Psychological types of children. Methods of preparing children for dental procedure. The role of preventive services in overcoming fear and anxiety. 4. Diagnostic habits in oral hygiene. Medical history, observing the patient during oral hygiene. Taking anamnestic data on oral hygiene, diagnosing habits, habits of control patients in oral hygiene (brushing teeth). 5. The main means of oral hygiene – teeth brush. Introduction to interdental stimulators, toothpicks, devices with liquid jet etc. 6. Methods of cleaning teeth. Exercising methods for teeth cleaning on models. 7. The main instruments of oral hygiene – dental floss, usage of dental floss. Different types of dental teeth. Training the techniques of dental floss use on the model, training patients to use dental floss. 8. Diagnosing dental plaque. Plaque index. Plaque staining, determination of PLI, discussion with the patient on the plaque and teeth hygiene, plaque removal using special instruments – plaque removers. 9. Prophylaxis of caries by using fluoride. 10. Taking the history of nutrition, survey questionnaires, data evaluation and diagnosis of behavior related to oral health, motivation for proper nutrition and correction of errors in the diet. 11. Prescribing fluoride prescription. Local application of fluoride (solution, gel, glaze). 12. Diagnosing the risk of caries based on the analysis of diet, oral hygiene, quantity, quality and properties of saliva. Diagnosing risk based on the presence of microorganisms in the saliva. 13. Evaluation of oral hygiene (PI), gingiva (GI, bleeding index), tests for risk assessment. 14. Professional removal of soft and solid deposits from teeth. Training and motivating patients to maintain oral hygiene. Fissure sealing. 15. Taking anamnesis (newborns, childbirth). Diagnosing bad habits. Early diagnosis of orthodontic irregularities (early milk tooth extraction, primary anxiety, forced bite). Placeholder. Selective grinding of teeth. 16. Health educational. Diagnosing oral health status, indication and planning of prophylactic measures. 17. Professional removal of soft plaque from the teeth. Removal of solid deposits from the teeth. Sealing of fissures. Preventive teeth filling. Chemoprophylaxis of mouth and teeth diseases. Making intraoral flaps.

Literature *Compulsory* 1. Goran Koch. Paediatric Dentistry: A Clinical Approach, John Wiley & Sons, Jun 29, 2009 2. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.			
Number of active classes	**Theoretical classes:** 30		**Practical classes:** 75
Teaching methods: Theoretical and practical			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 attendance 10 activity	Written	20
Practices	5 attendance 20 activity	Oral	40
Colloquium			
Essay			

Course title: Oral Surgery with Implantology I

Course status: compulsory

ECTS Credits: 7

Condition: –

Course aim

Mastering the theoretical knowledge and practical skills application of local anesthesia in dental practice. Prevention, identification and treatment of complications of local anesthesia. Selection of local anesthetics.

Expected outcome of the course:

Adoption of theoretical knowledge in the domain of dental anesthesia in preparation for practical work in dental practice.
Learning practical skills in the application of local, regional and general anesthesia in dental practice.

Course description

Theoretical education

1. Introduction. The concept and objectives of oral surgery. Role of oral surgery in dental care system and education of students. 2. Applied surgical anatomy. Osteology of the upper and lower jaw. Morphology of tooth root. Chewing and mimical musculature. Innervation zones and vascularization of the upper and lower jaws. 3. Tooth extraction. Indications and contraindications for tooth extraction. Principles of tooth extraction. The stages of uncomplicated tooth extraction. 4. Tooth extraction. Instruments for tooth extraction (pliers, levers). Extraction of individual teeth. 5. Complications of tooth extraction. Fractures of teeth – roots. Separation of the roots. Root extraction levers. Soft tissue injuries. Foreign bodies. 6. Wound healing after tooth extraction. Stages of normal wound healing. Delayed healing of wounds. Post-extraction pain, swelling. Alveolitis. 7. Injuries of teeth, alveolar ridge and jaws during tooth extraction. Tooth injuries. Alveolar ridge and tuberosity fractures. Jaw fractures. Luxation of the mandible. 8. Bleeding after tooth extraction. Working protocol, procedures and methods for stopping bleeding. 9. Hemostasis and haemostatic disorders. Patients on anticoagulation therapy. Hemophilia. Thrombocytopenia. Liver diseases. 10. Oroantral communication. Procedures and measures for the diagnosis and management of oroantral communications. 11. Dentogenic infections. Concept and types of dentogenic infections. Microflora. Asepsis and antisepsis. 12. Dentogenic infection. Clinical features and diagnosis. Spreading pathways and anatomical spaces. 13. Dentogenic infection. Basic therapeutic principles (drugs and surgical treatment). 14. X-ray diagnosis. X-ray techniques in dentistry. Indications for X-ray. X-ray anatomy and pathology. Potential errors. 15. Emergency conditions in oral surgery. Loss of consciousness. Allergy. Emergency cardiovascular conditions. Hypovolemic shock. Resuscitation procedures. 16. Basic principles of oral surgery. Specificities of surgical procedure in the oral cavity. Forensic aspects of oral surgery. 17. Designing of incisions in dentoalveolar surgery. Indications and contraindications for the selection of the incision. 18. Impacted supernumerary teeth. The concept and definition. Etiological factors. Incidence. Clinical features and diagnosis 19. Impacted supernumerary teeth. Classification. Indications and contraindications for extraction. 20. Impacted supernumerary teeth, Residual roots and foreign bodies. The course of surgical removal. Wound management and early postoperative course. 21. Surgical orthodontic cooperation. The scope of cooperation in oral surgery. Chronological order and types of interventions. Orthodontic preparation and indication for operation. Failures of cooperation. 22. Chronic periapical lesions. The concept and definition. Microflora. Clinical features and diagnosis. Differential diagnosis. 23. Tooth root resection. Indications for operation. Preoperative preparation of the tooth. Techniques. Types of channel closure teeth. 24. Jaw cysts. The concept and definition. Classification. Clinical picture, diagnosis and surgical treatment. Postoperative monitoring. 25. Prosthetic-surgical cooperation. The scope of cooperation in oral surgery. Classification of deformities. Bone structure disorders. Soft structure disorders. Combined disorders. 26. Prosthetic surgical cooperation. Types of oral surgical procedures. Specificities of operative procedures and postoperative treatment. 27. Fundamentals of oral implantology. Indications for surgery. Types of implants. Complications and definition of periimplantitis. 28. Benign tumors of bone and soft tissue. Definition. Classification. Incidence. Clinical picture. Specific surgical treatment. 29. Oral-surgical aspects of facial pain. Acute and chronic pain. Painful syndromes. Idiopathic trigeminal neuralgia. Temporomandibular joint and the importance of supporting zones loss. 30. Oral surgical aspects of patient risk. Specificities of individual diseases indicated for oral surgery. Patients with bacterial endocarditis, cardiac rhythm disorders, endocrine disorders and liver diseases.

Practical education

1. Introductory Practice. The demonstration. Working place. Admission and triage of patients. Medical History. Clinical examination. Sterilization and sterility protection. Protective equipment. Instruments for tooth extraction. Tooth extraction techniques and anesthesia.
2. Test – innervation zone. Techniques giving plexus anesthesia and mandibular anesthesia indirect method.
3. Test – history, examination instruments, dental extraction, tooth extraction.
4. Practical work with patients – An overview. Diagnostics. X-ray analysis. Anesthesia. Tooth extraction. Complications management. Treatment of acute dentogenic infections.
5. Demonstration Practice – Demonstration and assisting when performing oral surgical procedures in the operating room

Literature

Compulsory

1. Miloro M, Ghali GE, Larsen PE, Waite PD. Peterson's Principles of Oral and Maxillofacial Surgery. Third ed. USA, People s Medical Publishing House 2012.
2. Fragikos D. Oral Surgery. Springer 2007.

Additional

1. Hupp JR, Ellis E III, Tucker MR. Contemporary Oral and Maxillofacial Surgery, Sixth ed. Mosby, St Louis 2013

Number of active classes	**Theoretical classes:** 45	**Practical classes:** 105
Teaching methods: Lectures and practical.		

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	60
Practices	10	Oral	
Colloquium	20		
Essay			

Course title: Anesthesia with Perioperative Medicine

Course status: compulsory

ECTS Credits: 2

Condition: Passed exams of internal medicine, general and special pharmacology

Course aim

Training future dentist in the field of preoperative preparation and evaluation of surgical patients. Inform students on the techniques of general and regional anesthesia. Therapy of acute and chronic pain. Complications and allergic reactions. Cardiopulmonary resuscitation.

Expected outcome of the course:

Preoperative evaluation and preparation of surgical patients. Specificities of general and regional anesthesia. Assessment and therapy of acute and chronic pain.
Cardiopulmonary resuscitation in all age categories and specific clinical conditions. Securing of airways and venous pathways. Other methods of drug administration.

Course description

Theoretical education

1. Preoperative preparation of the patient.
2. Modalities of general anesthesia; anesthetics and drugs used during general anesthesia; complications of general anesthesia and postoperative monitoring
3. Sedation and analgosedation
4. Acute and chronic pain and appropriate therapy
5. Allergic reactions and therapy
6. Shock (definition, classification, stages, treatment); Sepsis (definition, classification, stages, treatment);
7. Intravenous pathways (types, techniques, equipment, complications)
8. Basic and advanced resuscitation measures (2 hrs)
9. Airways (methods and instrumentation for securing airways, complications) (2 hrs)

Practical education

1. Algorithm of preoperative preparation
2. Intravenous pathways (types, techniques, equipment, complications)
3. Intramuscular and other types of drug administration
4. Airways – practicing using simulation mannequins
5. Monitoring of patients in general anesthesia and analgosedated patients
6. Assessment and therapy of acute and chronic pain
7. CPCR in adults
8. CPCR in children

Literature

Compulsory

1. Drašković B. Anaesthesia and perioperative medicine 2019.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 15
Teaching methods:		

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	
Practices	25	Oral	40
Colloquium		Practical	20
Essay			

Course title: Periodontology I

Course status: compulsory

ECTS Credits: 3

Condition: –

Course aim

Getting acquainted with the conception of tooth supporting structures, its function and importance, causes and mechanism of periodontal disorders and learning about basic diagnostic and therapy procedures.

Expected outcome of the course:

Acquiring basic knowledge of etiology, pathogenesis, and classification of periodontal diseases, as well as basic methods used in establishing diagnosis and treatment.
Getting acquainted with periodontal instruments, their names, application, and appropriate techniques of usage. Mastering manual skills by working with patient models.

Course description

Theoretical education

1. Anatomy, histology and function of periodontium.
2. Etiology of periodontal diseases. Local and systemic etiological factors.
3. Pathogenesis of periodontal diseases. Mechanisms of action of dental plaque. Defence factors in oral cavity.
4. Classification of periodontal diseases.
5. Clinical feature of gingivitis.
6. Clinical feature of periodontitis.
7. Diagnosis and differential diagnosis.
8. Epidemiology of periodontal diseases.

Practical education

1. Clinical features of healthy periodontium.
2. Clinical features of healthy periodontium.
3. Etiology of periodontal diseases (local and systemic factors).
4. Patient motivation and education to maintain oral hygiene.
5. Clinical feature of periodontal diseases: gingivitis, periodontitis.
6. Periodontal indices.
7. Probing pocket depth, clinical attachment level, gingival margine level, working on models.
8. Dental plaque: identification, removal. Working on models.
9. Supragingival calculus; Instruments and removal techniques. Working on models.
10. Subgingival calculus; Instruments and removal techniques. Working on models.
11. Subgingival scaling and root planing: Instruments and techniques. Working on models.
12. Medical history and clinical examination of the patient.

Literature

Compulsory

1. Newman MG, Takei HH, Klokkevold PR, Caranza FA. Carranza's clinical periodontology. Elsevier, 2014.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures, practices

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	60
Practices	5	Oral	
Colloquium	20		
Essay	10		

Course title: Endodontics I

Course status: compulsory

ECTS Credits: 4

Condition: Operative Dentistry – Clinic II (Exam)

Course aim

The objective of the course: Student should master the therapy of the endodontium and periradicular region.

Expected outcome of the course:

The student should get acquainted basic and contemporary accomplishments in the field of endodontics, to get an insight in current and future developments in this field, diagnostic of relevant diseases, instruments and procedures in the treatment of endodontium and periradicular region.
The skills are accomplished during practical classes, by working independently under permanent control of working phases.
After completing the practical course in Endodontics I student should be capable of:
1. performing diagnostic procedures related to the diseases of endodontium and periradicular region
2. appropriately preparing the working area
3. demonstrating theoretical and practical knowledge on instruments and materials applied in endodontics
4. demonstrating theoretical and practical knowledge on instrumentation of endodontic region by working on models

Course description

Theoretical education

1. Apex and apical paradontitis, diagnostic procedures, classification, clinical picture. 2. Introduction to endodontic therapy. 3. Morphology of cavum dentis. 4. Endodontic instruments (ISO-standard). 5. Aseptic work in endodontics. 6. Endodontic preparation – working protocols. 7. Definitive obturation of endodontic space.

Practical education

1. Diagnosis and analysis of X-ray scan. 2. Therapy plan. 3. Trepanation. 4. Creation of access cavity. 4. Testing of initial negotiability. 5. Odontometry. 6. Instrumentation of root canal (techniques). 7. Irrigation of root canal. 8. Medication. 9. Obturation of root canal.

Literature

Compulsory

1. Mahmoud Torabinejad, Endodontics-principles and practice. 5th edittion, Elsevier, St.Luis, Missouri, 2015.
2. T. R. Pitt Ford. Endodontics in Clinical Practice, Elsevier Science London 2004.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 45

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 attendance 10 activity	Written	60
Practices	5 attendance 20 activity	Oral	
Colloquium			
Essay			

Course title: Neurology

Course status: compulsory

ECTS Credits: 2

Condition: Pathophysiology (for exam)

Course aim

The aim of this course is to provide medical students with knowledge on pathogenetic basis and clinical symptoms of common neurological disorders and their current neurological diagnostic procedures, treatment, and prognosis.

Expected outcome of the course:

The course provides students with a general understanding of symptoms and signs of disorders of different structures of the central nervous system, evaluation of the patient with neurological symptoms, how and when to suspect a neurological entity, perform an adequate diagnostic procedure and if necessary initiate a treatment.

After completing the course the student should:

- be able to carry out history-taking and a complete neurological examination of the patient and based on it
- formulate a working (probable) diagnosis and indicate basic laboratory investigations;
- be familiar with basic principles of the management of urgent neurological conditions;
- have an understanding of conditions that require referral to a neurology specialist (i.e. whether a condition requires in-patient investigation and treatment)

Course description

Theoretical education

1. Episodic disturbance of consciousness, coma, delirium. Sleep disorders
2. Epilepsy and epileptic syndromes
3. Headache, neuralgia, vertigo
4. Ischemic cerebrovascular disease
5. Hemorrhagic cerebrovascular disease and brain edema
6. Infectious disease of the CNS and neurological complications of systemic disorders
7. Dementias
8. Leucodystrophies and metabolic disorders
9. Neurological aspects of CNS trauma and CNS tumors
10. Demyelinating diseases
11. Movement disorders and cerebellar disorders
12. Developmental neurology
13. Motor neuron disorders and polyneuropathies
14. Brainstem and spinal cord disorders
15. Neuromuscular junction disorders and muscular disease

Practical education

1. Neurological history taking
2. Examination of cranial nerves I-VI
3. Examination of cranial nerves VII-XII
4. Examination of the neck, upper and lower limbs (nutrition, tonus, movement, muscular reflexes, strength, stretching tests)
5. Examination of sensibility
6. Extrapyramidal symptoms and signs
7. Examination of cerebellar functions
8. Examination of higher cerebral functions
9. Diagnostic procedures in neurology (EEG, video EEG, EMNG, EP, LP, CSF isoelectric focusing, ultrasonography, CT, MRI, PET, SPECT)
10. Examination of a comatose patient
11. Examination of a patient with myasthenia gravis
12. Neurological examination of a pediatric patient
13. Gait disorders (differential diagnosis)
14. Headaches
15. Complete neurological examination of different neurological diseases, differential diagnosis

Literature

Compulsory:

1. Mumenthaler M, Mattle H. Fundamentals of neurology. Thieme, 2006.
2. Gilman S. at al. Oxford American handbook of neurology. Oxford University Press, Inc. 2010.
3. Westover MB. Pocket neurology. Lippincott Williams and Wilkins, 2016

Additional:

1. Adams RD, Victor M, Ropper AH. Principles of neurology. Mc Graw-Hill New York 1997 (2005, 2009, 2014)

Number of active classes	**Theoretical classes:** 15		**Practical classes:** 15
Teaching methods: Lectures, practice			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	70
Practices	10	Oral	
Colloquium	10		
Essay			

Course title: Psychiatry and Psychological Medicine

Course status: compulsory

ECTS Credits: 2

Condition: –

Course aim

Introducing students to the unique bio-being of man, different reactions to the ill person's disease, as well as the different interactions of doctors / health workers and patients.

Expected outcome of the course:

Students gain knowledge about bio-unity of man; development and structure of personality, different mental mechanisms and defense mechanisms, reaction to the ill person's disease, the psychological aspects of the treatment / treatment of various diseases, the roles of doctors / health workers, mental health desirable than doctors / health workers with the patient and his nearest surroundings.

Student masters the art of communication with different groups of patients (as compared to the age of patients and in relation to the disease / condition for which it provides care) acquires the ability to meet a variety of psychological situations in which will be located during a career and build models of adequate coping. Working with the acquisition of skills is done through workshops where necessary active participation of students.

Course description

Theoretical education

1. Introduction to the concept of psychological medicine. 2. Psychological functions. 3. Biological basis of mental functions. 4. Stress and psychological trauma. 5. The impact of psychological factors on the occurrence of diseases. 6. Psychosomatic Medicine. 7. The doctor patient relationship. 8. Reaction of patients to disease. 9. Reaction of the child to illness. 10. Aging and reaction to illness. 11. The process of grieving. 12. Stigma, prejudice and discrimination. 13. Personality and defense mechanisms. 14. Definition of mental health and mental disorders. 15. Mental health and legislation. 16. Position and role of a psychiatrist. 17. Work with psychiatric patients. 18. Psychiatric interview and medical history. 19. Psychopathology. 20. Mood disorders. 21. Anxiety disorders. 22. Schizophrenia and other psychotic disorders. 23. Mental disorders due to use of psychoactive substances. 24. Eating disorders. 25. Organic mental disorders and old age psychiatry. 26. Mental disorders in childhood and adolescence. 27. Personality as a predisposing factor for the development of mental disorders. 28. Personality disorders. 16. Emergency psychiatry. 17. Treatment of mental disorders. 18. Psychopharmacotherapy. 19. Suicidology. 20. Forensic psychiatry.

Practical education

1. Talk (communication) doctor / health worker with a sick person – Workshop. 2. Health and disease – a workshop. 3. Communication, empathy, professional attitude – shop. 4. Giving information to patient and family about the disease. 5. Communication of family doctors / health workers in the family. 6. Relationships and communication in teamwork – Workshop. 7. Mental disorders, psychiatric patients, specific patient-physician relationship; rights of psychiatric patients. 8. Psychiatric interview: psychiatric interview techniques. 9. Psychic status: evaluation of psychological functions (consciousness, orientation, thinking, perception, emotion, memory, intelligence, volitive and instinctive dynamism, attention) and behaviour evaluation. 10. Organic mental disorders – history, mental status, diagnosis, care. 11. Diseases induced by misuse of psychoactive substances – drugs and alcohol: medical history, mental status, diagnosis, care. 12. Schizophrenia – medical history, mental status, diagnosis, care. 13. Psychotic Disorders – medical history, mental status, diagnosis, care. 14. Mood disorders – medical history, mental status, diagnosis, care. 15. Neurotic and stress-induced disorders – medical history, mental status, diagnosis, care. 16. Emergency states in psychiatry. 17. Mental disorders in children – medical history, mental status, diagnosis, care. 18. Mental disorders in adolescents – medical history, mental status, diagnosis, care. 19. Consultation psychiatry and psychosomatic medicine. Psychiatrist in a team. Physically ill patients, medical history, mental status, diagnosis and care in a view of consultation psychiatry and psychosomatic medicine.

Literature

Compulsory

1. Friedman H.S. The Oxford Handbook of Health Psychology. Oxford, UK: Oxford University Press; 2011.
2. Semple D, Smyth R (eds.). Oxford Handbook of Psychiatry. Oxford, UK: Oxford University Press; 2013.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 15

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	70
Practices	20	Oral	
Colloquium			
Essay			

Course title: Aesthetics in Dental Medicine

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

Mastering of knowledge and skills necessary for the implementation of diagnostic and therapeutic procedures in the areas of restorative dentistry and dental prosthetics that meet the high ESTHETIC requirements.

Expected outcome of the course:

Acquiring of knowledge about: ESTHETIC parameters of face and jaws, teeth whitening techniques, possibilities of therapy of lost dental hard tissue by direct and indirect ESTHETIC restoration as well as conservative and ESTHETIC prosthetic reconstruction of endodontic treated teeth that meet the highest ESTHETIC criteria.

Adoption of skills related to diagnostic and therapeutic procedures that enable making of highly ESTHETIC conservative and prosthetic reconstruction of the dental crown.

Course description

Theoretical education

I ESTHETIC requirements in dentistry: 1. ESTHETIC parameters. Face; shape and height. Lips, lip mobility, length of upper lip. Symmetry. Occlusal plane and incisive edge. Buccal corridor. The size of teeth and their relationship. 2. Color and color perception. Natural color of teeth. Color and ESTHETIC characteristics of the material used for the direct and indirect restorations, as well as for prosthetic reconstruction (porcelain flakes (veneers) and ceramic non-metallic crowns). II Direct ESTHETIC restorations of front teeth. III Direct ESTHETIC restorations of the lateral teeth. IV Indirect esthetic restorations: 1. Composite indirect fillings (inlays and onlays). Indications and contraindications. Teeth preparation. Prints and laboratory stages in making of composite inlays and onlays. Setting of composite inlays and onlays. 2. Ceramic inlays and onlays. Indications and contraindications. Teeth preparation. Prints and laboratory stages in making of ceramic inlays and onlays. Setting of ceramic inlays and onlays. 3. Temporary restoration of teeth prepared for indirect fillings. 4. CAD-CAM technology in making of indirect fillings. V Porcelain flakes: 1. Porcelain flakes – indications and contraindications. 2. The plan of therapy. Making of diagnostic models and temporary restorations. 3. Preparation of teeth (anterior teeth, premolars). 4. Prints for flakes. 5. Laboratory stages in flakes making. 6. Trial and setting of flakes. VI Non-metallic ceramic crowns: Non-metallic ceramic crowns – indications and contraindications. 2. Types of non-metallic ceramic crowns. 3. Preparation of teeth for non-metallic ceramic crowns. 4. Prints. 5. Laboratory stages making of nonmetallic ceramic crowns. 6. Trial of ceramic crowns and their setting. VII Esthetic reconstruction of teeth treated for endodontic: 1. Characteristics of endodontic treated teeth. 2. Direct ESTHETIC restorations of endodontic treated teeth. 3. Indications for placing pulp cleats. 4. Types of ESTHETIC pulp cleats; the manner of their setting. 5. Reconstruction of endodontic treated teeth with ESTHETIC crowns. VIII Teeth whitening: 1. Types of pigmentation and discoloration of teeth. 2. Indications and contraindications for teeth whitening. 3. Whitening of vital teeth. Techniques in surgery. Techniques applicable in home conditions. 4. Whitening of non vital teeth. Techniques in surgery. Techniques applicable in home conditions.

Practical education

1. Cavity preparation and performing of direct ESTHETIC restoration of the front teeth. 2. Cavity preparation and performing of direct ESTHETIC restoration of the lateral teeth. 3. Cavity preparation and performing of indirect ESTHETIC restoration. 4. Teeth preparation and performing of porcelain flakes- front teeth. 5. Teeth preparation and performing of porcelain teeth flakes – premolars. 6. Teeth preparation and performing of direct ESTHETIC restoration of endodontically treated teeth. 7. Root canal preparation and placing of ESTHETIC pulp pins. 8. Making of ESTHETIC crowns on endodontically treated teeth. 9. Teeth preparation and making of non-metallic ceramic crowns. 10. Application of teeth-whitening techniques.

Literature

Compulsory

1. Geissberger M. Esthetic Dentistry in Clinical Practice. Wiley-Blackwell, 2009

Additional

1. Internet, Kobson databases

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	40
Practices	20	Oral	
Colloquium			
Essay	20		

Course title: Clinical Genetics in Dental Medicine

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

The basic aims of the elective course *Clinical Genetics in Dental Medicine* are to familiarize dentistry students with the possibilities of applying clinical genetics in dental medicine. Acquiring knowledge about the possibilities of applying new genetics technologies in dental medicine and clinical practice. Acquiring knowledge about the importance of team and multidisciplinary approach in everyday work. Acquiring knowledge about the importance of clinical recognition, diagnosis and treatment of hereditary diseases, including rare hereditary diseases as well as hereditary diseases that have clinical manifestations in dental medicine. Introduction to the novelty and teamwork in a multidisciplinary approach Clinical Genetics – Dental Medicine.

Expected outcome of the course:

While attending classes, students should acquire all the necessary knowledge in the field of etiology, pathogenesis, clinical imaging and therapies for inherited diseases that have repercussions on the oral region and teeth. Acquiring knowledge about the specificities of the population with hereditary diseases. Special attention was paid to the importance of preventive medical measures and procedures, as well as to the proper differential diagnosis and additional diagnosis of the most common hereditary diseases and conditions that are of importance for dental medicine. Acquiring knowledge of modern genetics technologies with potential applications in dental medicine, including prevention measures. Acquiring knowledge of the correct approach and communication with the patient with hereditary disease as well as with members of patient's family. Specificity of anamnesis, physical examination and specificity of therapy. Particularities of physicians' work in outpatients with patients with hereditary disease.

Course description

Theoretical education

- The importance of recognizing hereditary diseases in dental medicine.
- Classical genetics and new genetic concepts in dental medicine. Molecular genetics methods relevant for dental medicine. Importance and possibilities of implementation of "OMICs" in dental medicine – genomics, proteomics, transcriptomics, interactomics, metabolomics.
- The place and role of dental medicine in the concept of personalized medicine.
- Importance of knowledge of dysmorphology in dental medicine.
- Genetic diagnostics in dental medicine.
- The influence of genetic factors on behaviour that is relevant to dental medicine.
- The link between genetics and dental medicine in access to people with special needs.
- Diseases with low incidence (rare diseases) in dental medicine
- Phenotype and behaviour affecting dentist work
- Genetic information in dental medicine.
- Craniofacial and dental genetics.
- Genes that affect craniofacial and dental development.
- Etiology of a complex phenotype that increases the risk of craniofacial and dental disorders. Craniofacial and dental genetics.
- Genetic diseases that have repressions to the diseases of the teeth, upper and lower jaws, muscles of the orofacial system.
- Inherited diseases in dental medicine and expected complications including complications of anesthesia.
- Inherited coagulation disorders and their importance in dental medicine.
- Genetic aspect of pathology of enamel, dentin, cement and dental pulp. Genetic aspect of tooth decay.
- Genetic aspect of tooth damage: abrasion, erosion, bruxism, tooth fracture.
- Genetic aspect of upper and lower jaw position pathology. Genetic aspect of defect of tooth enamel.
- Genetic aspect of malignant diseases of the orofacial region.
- Therapy and prevention of hereditary diseases. Genetic aspect of upper and lower jaw position pathology. Genetic aspect of defect of tooth enamel.
- Craniofacial and dental genetics.
- Genetic aspect of malignant diseases of the orofacial region.
- Therapy and prevention of hereditary diseases.

Practical education

- Medical history (taking anamnesis with reference to the importance of taking a genetic history). Getting to know the basic symbols of genealogy (each student takes his or her own genealogy)
- Dysmorphological examination
- Case reports of hereditary diseases.
- Diseases due to chromosomal anomalies and association with dental medicine: chromosome trisomies.
- Chromosomal anomaly diseases and association with dental medicine: Chromosome monosomies.
- Diseases due to sub-microscopic structural chromosomal disorders
- Introduction to the possibilities of classical cytogenetics in dentistry

– Acquaintance with the possibilities of molecular genetics in dentistry
– Family Planning and Genetic Information Cabinet – work overview
– Familiarity with prenatal diagnostics
– Preimplantation genetic testing
– Genomics in dental medicine – presentation of the work.
– Syndromes in which there is a repercussion on articulation, maxilla and mandible, occlusion, interciliary relationship, muscles of mastics, craniomandibular joint, muscles of the orofacial system, on the position of the upper and lower jaws – case reports
– Genetic aspect of dental disease – case reports
– Coagulation disorders – case reports.
– Cleft lip, jaw and palate – case approaches; the connection between clinical genetics and dental medicine.
– Familiarity with the concept that the dental practitioner has the need to monitor genetic achievement and be part of the medical team in personalized medicine.
– Genetic aspect of gingival hyperplasia. Contribution of genetic factors to altered tooth shape and oligodontics.
– Genetic aspect of cleft lip, jaw and palate – case reports.
– Genetic aspect of disorders with repercussion on the orofacial region – importance for dental medicine
– Informed patient consent – familiarization with protocol
– The importance of teamwork and multidisciplinary work in genetics and dental medicine – presentation of the work.
– Emergency conditions related to hereditary diseases and dental medical.
– Therapeutic approach to hereditary diseases
– Prevention of hereditary diseases

Literature

Compulsory

1. Turnpenny P, Ellard S. Emery's Elements of Medical Genetics, 15th Edition. Elsevier, 2017.
2. Slavkin HC. From phenotype to genotype: enter genomics and transformation of primary health care around the world. J Dent Res 2014;93(7 Suppl):3S–6S.
3. Hart PS, Hart TC. Invited commentary: The need for human genetics and genomics in dental school curricula. Mol Genet Genomic Med 2016;4(2):123–125. doi:10.1002/mgg3.216.
4. Talwar D, Tseng TS, Foster M, Xu L, Chen LS. Genetics/genomics education for nongenetic health professionals: a systematic lliterature review. Genet Med 2017;19(7):725-32. doi: 10.1038/gim.2016.156.
5. Crellin E, McClaren B, Niselle A, Best S, Gaff C, Metcalfe S. Preparing Medical Specialist to Practice Genomic Medicine: Education an Essential Part of Broader Strategy. Front Genet 2019;10:789. doi: 10.3389/fgene.2019.00789.

Additional

1. Firth H, Hurst J. Oxford Desk Reference Clinical Genetic and Genomics, 2nd Ed. Oxford University Press 2017.
2. Nussbaum RL, McInnes RR, Willard HF. Thompson and Thompson Genetics in Medicine, 8th Ed. Elsevier Science Health Science 2015.
3. Gupta M, Jyoti B, Srivastava R, Pachauri A. Human genetics in oral medicine: A review, DOI: 10.4103/0972-1363.141860
4. Divaris K. The Era of the Genome and Dental Medicine. J Dent Res 2019;98(9):949-55. doi: 10.1177/0022034519845674.
5. Jonsson L, Magnusson TE, Thordarson A, Jonsson T, Geller F, Feenstra B, Melbye M, Nohr EA, Vucic S, Dhamo B, Rivadeneira F. Rare and common variants conferring risk of tooth agenesis. Journal of dental research. 2018 May;97(5):515-22.
6. MacArthur J, Bowler E, Cerezo M, Gil L, Hall P, Hastings E, Junkins H, McMahon A, Milano A, Morales J, Pendlington ZM. The new NHGRI-EBI Catalog of published genome-wide association studies (GWAS Catalog). Nucleic acids research. 2016 Nov 28;45(D1):D896-901.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures. Practical classes: history, genealogy, dysmorphological examination of patients with hereditary diseases, differential diagnostic and therapeutic considerations in clinical genetics and dental medicine, with case reports of hereditary diseases. Presentation of work of cytogenetic laboratory Overview of the work of the Molecular Genetics Cabinet. View the work of the Family Planning Cabinet. Review of the work of the Medical Genetics Service.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	20
Practices	30	Oral	30
Colloquium			
Essay			

Course title: Nanostructured Biomaterials in Dentistry

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

The aim of this course is to acquaint students with modern nanotechnologies, new diagnostic and therapeutic possibilities enabled by novel accomplishments of nano-science and nanotechnology in the field of dentistry, as well as providing insight into the specificities of nanostructured biomaterials and nano-devices.

Expected outcome of the course:

The course will provide students with basic knowledge of modern nanotechnology accomplishments, nano-structured biomaterials and nano-devices in the field of dentistry.

The subject provides students the basic knowledge and skills in the field of modern nanotechnology, nanostructured biomaterials and nano-devices in the field of dentistry, directs students towards scientific thinking and research, and provides basic level of knowledge in the field of nanoscience. The course will offer students the possibility to extend their knowledge in this field throughout advanced study levels and to keep in line with the novel accomplishments of technological revolution.

Course description

Theoretical education

1. Nanoscience and nanotechnologies – definition, history, technological revolution, multidisciplinary approach, importance
2. Nanotechnology-from basic to applied science-nanomaterials, nanometrology, electronics, optoelectronics, information and communication technology, bionanotechnology and nanomedicine.
3. Nanoparticles – production process (methods of synthesis of nanoparticles), direct molecular synthesis and connectivity, the unique physical and chemical properties, the problems of controlling the properties of nanoparticles
4. Nanomedicine definitions, scope of application, accomplishments in various branches of medicine
5. Nanomedicine-targeted delivery of drugs, pharmacokinetics and pharmacodynamics of nanoparticles, the potential side effects
6. Nanomedicine-tech, manipulation at the atomic and molecular level, molecular medicine
7. Nanomedicine-targeted delivery of genetic material, anti-cancer potential
8. Nanomaterials – physico-chemical, mechanical, optical, electrical, thermal properties of nanomaterials
9. Nanostructured biomaterials in dentistry – unique features, biomimetic approach – matching the natural structure and properties of biological materials, nano-coatings, current research
10. Nanostructured biomaterials in dentistry – applications in different industries, nanocomposites, surface nano modification of dental implants, and nano scaffolds and nanomembranes for guided tissue regeneration, ceramics reinforced with nanoparticles, remineralization with nanoparticles, the potential applications of nanorobots
11. Methods for characterization of nanomaterials in dentistry – microscopic techniques (scanning tunnel microscopy, atomic force microscopy, transmission microscopy), nanoindentation and related techniques of characterization
12. Environment protection – aspects of the impact of nanoparticles on ecosystems
13. Guidelines on the protective measures when working with nanomaterials, measurement of pollution and toxic potential, the need for systemic regulation
14. Social and ethical considerations
15. The potential impact on science and practice in the future

Practical education

Practical instruction is closely linked with the lectures encompassing visits to relevant departments, clinics and laboratories of the Faculty of Medicine to learn about characterization and application of nanotechnology in biomedicine and dentistry, as well as discussions on current accomplishments in the field of application of nanotechnology in dentistry.

Literature

Compulsory

1. Subramani K, Ahmed W. Emerging Nanotechnologies in Dentistry: Processes, Materials and Applications. Waltham, MA:Elsevier Inc; 2012.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures and practical.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	60
Practices	20	Oral	
Colloquium			
Essay			

Course title: Patients at Risk in Dental Medicine

Course status: optional

ECTS Credits: 3

Condition: –

Course aim

Acquiring knowledge necessary for planning and conducting dental therapy in medically complex patients. The importance of collaborating with specialists in other fields of medicine.

Expected outcome of the course:

Taking a detailed dental and general medical history and analysis of relevant laboratory and radiographic findings. Bringing together oral and general health. Recognition of oral manifestations of diseases that are not primarily related to the oral cavity. Knowledge of the effects of drugs on oral health. Dental treatment in medically complex patients. Recognition and management of emergencies in these patients

Course description

Theoretical education

1. Assessment of the risk of dental treatment depending on the intended intervention and general health of the patient. Medicals history. Clinical examination of the head and neck and monitoring of vital function parameters. Analysis of laboratory and radiographic findings.
2. Blood-borne diseases and dental practice. HIV, hepatitis B and C. Oral manifestations of blood-borne diseases and specificities of dental treatment. Protecting healthcare professionals and patients.
3. Dental treatment of persons with cardiovascular diseases. Hypertension. Ischemic heart disease. Infectious endocarditis. Cardiac arrhythmia. Cardiomyopathy.
4. Dental treatment of individuals with respiratory diseases. Chronic obstructive pulmonary disease. Asthma. Tuberculosis.
5. Dental treatment of individuals with endocrine diseases. Diabetes. Thyroid disease. Adrenal insufficiency.
6. Dental treatment of individuals with liver failure.
7. Dental treatment of individuals with renal insufficiency.
8. Dental treatment of individuals with immune diseases and drug allergies. Oral manifestations of immunological diseases and allergic manifestations. Specific features of dental treatment for people with allergies to local anesthetics.
9. Dental treatment of individuals with organ transplants.
10. Dental treatment of individuals with hemostatic function disorder. Vasculopathies. Thrombocytopathies and thrombocytopenia. Hemophilia and von Willebrand disease.
11. Dental treatment of individuals taking anticoagulant and antiaggregation therapy.
12. Dental treatment of individuals with malignancies. Osteoradionecrosis. Osteonecrosis of the jawbone associated with the administration of certain drugs.
13. Dental treatment of individuals with neurological and psychiatric diseases.
14. Dental treatment for pregnant women.
15. Drug interactions of importance for dental practice.

Practical education

1. Dental treatment of individuals with impaired health – presentation of clinical cases
2. Dental treatment of individuals with impaired health based on the analysis of paper patients

Literature

Compulsory

1. Little JW, Falace D, Miller C, Rhodus NL. Dental Menagement of the Medically Compromised Patient. Elsevier, St Louis, 2012.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	60
Practices	20	Oral	
Colloquium			
Essay			

Course title: Professionally Orientated Education of Health Workers in Pharmaceutical Industry

Course status: elective

ECTS Credits: 3

Condition: –

Subject goal

Students will be introduced to different aspects of work in pharmaceutical industry. They will gain the knowledge required for understanding of basics of new pharmaceutical formulations development, as well as for their placement on the market. Also, they will be trained for individual implementation of quality control in pharmaceutical industry (regulatory framework, validation of analytical methods, the assessment of results, certification of processes), as well as for performing pharmacoeconomic analysis. They will gain the knowledge related to communication skills required for successful marketing and sales of pharmaceutical products.

Outcome of the subject

By enrollment in this course the students will gain the fundamental knowledge required for understanding business processes in pharmaceutical industry. Furthermore, the proposed mode of education will enable them to apply for large spectra of job positions available in pharmaceutical industry.

Subject content

Theoretical education

1. Development of new pharmaceutical formulations – from initial formulation and registration to placement on market
2. Quality control in production of drugs, medical devices, dietary supplements and cosmetics
3. Pharmaceutical legislative
4. Pharmacoeconomics
5. BSCI Code of Conduct
6. Quality assurance of production process (ISO, HCCP, GMP, GLP)
7. Health industry and environmental protection
8. Business communication – the approach to health workers, the approach to patient
9. Basic terms in pharmaceutical marketing

Practical education

1. Development and validation of analytical method for determination analyte of interest
2. Pharmacoeconomic analysis of data
3. Steps in career development (from job offer to skilled professional)
4. Practical in-company training

Literature

1. Amfori BSCI Code of Conduct v.2021
2. Vogenberg F.R. Introduction to Applied Pharmacoeconomics. New York: Mc. Grow-Hill; 2001.
3. Current regulations of Republic of Serbia related to the health sector and pharmacy
4. European Commission. Directive 2004/10/EC of the European Parliament and of the Council on the harmonization of laws, regulations and administrative provisions relating to the application of the principles of good laboratory practice and the verification of their applications for tests on chemical substances
5. European Commission. Commission Directive 2003/94/EC laying down the principles and guidelines of good manufacturing practice in respect of medicinal products for human use and investigational medicinal products for human use.
6. Mark Gibson, Pharmaceutical Pre-formulation and Formulation, 2nd Ed., Informa Healthcare, 2009.
7. ICH guidances www.ich.org
8. Scripts for internal use

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Method of carrying out the teaching

1. Theoretical lectures
2. Practical trainings (laboratory training, seminars, in-company training)

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Activity during lectures	5	Written	30
Practical teaching	15	Oral	
Colloquium			
Seminar(s)	50		

Course title: Special Care Dentistry

Course status: compulsory

ECTS Credits: 3

Condition: –

Course aim

The objective of the course is to provide the student with competence in access and first dental care for persons with disabilities, reduction of stigmatization of these patients, training in providing adequate preventive, prophylactic and therapeutic dental treatment and triage ability for behavioral or sedation or general anesthesia treatment

Expected outcome of the course:

Knowledge: Allows the student to understand the importance, role and capabilities of oral hygiene in maintaining oral and general health in patients with special needs.

Skills: To know the epidemiological and socio-economic characteristics of this category of patients in our population, to know the most common types of disabilities; to get acquainted with the most common techniques and skills for establishing communication with people with disabilities and to know the medical aspects of dental care of persons with special needs; to know the specificities of oral pathology of the most common conditions and diseases of persons with special needs. To know the prophylactic measures that can be applied to these patients (by category) and to become familiar with the specifics of outpatient work and the possibilities of working in i.v. and inhalation anesthesia; To get acquainted with the specifics of work in general anesthesia; To know the legal regulations in the field of dental care of handicapped persons and the obligations of health workers (dentists) towards them and to be able to carry out an examination and make a treatment plan**.**

Course description

Theoretical education

1. Objective and importance of the subject, characteristics of oral pathology of persons with special needs
2. Psychosocial aspects of dental care for persons with special needs, types of disabilities, possibilities of dental treatment
3. Communication methods and techniques before and during dental treatment with handicapped patients
4. A behavioral approach in the treatment of oral and dental disorders in persons with special needs
5. Prevention of oral diseases of persons with special needs – oral hygiene
6. YOU. Prevention of Oral Diseases of Persons with Special Needs – Oral Disease Prophylaxis
7. Individual Oral Disease Prevention Program
8. People with high medical risks in the dental clinic
9. Orthodontic treatment of persons with cleft jaws and palate as part of various types of handicaps
10. Orthodontic treatment of persons with severe craniofacial deformities
11. Premedication and sedation of persons with special needs
12. General anesthesia in dental rehabilitation of persons with special needs
13. Dental care for children under general anesthesia
14. Dental care for persons under general anesthesia
15. The social medical significance of oral pathology. Legislation

Practical education

Practical education: exercises, other forms of education, research related activities

Practical classes that accompany the theoretical instruction program will be held at the appropriate Chair of the School of Medicine to familiarize the students with the importance of pediatric dentistry, as well as to discuss current knowledge of oral hygiene methods and materials.

Literature

Compulsory

1. Dental Care of the Medically Complex Patient, By Peter B. Lockhart, June H. Nunn, John G. Meechan. Published 2004 Elsevier Health Sciences.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Lectures, Practices

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	20
Practices	20	Oral	40
Colloquium			
Essay			

Course title: Interprofessional Education

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

Interprofessional education involves educators and learners from two or more health professions and their foundational disciplines who jointly create and foster a collaborative learning environment. The aim of these efforts is to develop knowledge, skills and attitudes that result in interprofessional team behaviors and competence.

Expected outcome of the course:

Student needs to be able:

- To state the goals of interprofessional and collaborative practice
- To learn how to function in an interprofessional team and carry this knowledge, skill, and value into their future practice,
- To provide professional patient care as part of a collaborative team and focused on improving patient outcomes.
- To provide patient-centered care in a collaborative manner.
- To make joint team decision about patient treatment
- To communicate effectively with other team members, relatives and community members.
- To define priorities in patient treatment
- To manage conflict situations
- To demonstrate respect to other team members and patients
- To demonstrate insight in personal role and responsibilities in patient treatment

Course description

Theoretical education

General*:*

1. Definition and significance of interprofessional education.
2. Worldwide experiences in teaching interprofessional education
3. Collaborative practice
4. Team – work
5. Team – work competencies
6. Interprofessional and collaborative practice competencies

Special*:*

1. Acute coronary syndrome
2. Intitial treatment of the trauma patient
3. Initial treatment of the poisoning
4. Diabetes mellitus
5. Primary prevention in somatology
6. Gariatry-characteristics in the primary healthcare and pharmacotherapy.
7. Geriatric functional changes in the old people
8. Small child in primary health care; pharmacotherapy in small child

Practical education

General

1. uniprofessional workshops
2. special interprofessional workshops

Interprofessional simulated education – IPSE

Literature

Compulsory

1. World Health Organisation: Framework for Action on Interprofessional Education and Collaborative Practice. Allied Health 2010; 39(3 pt 2): 196–197.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	60
Practices	30	Oral	
Colloquium			
Essay			

Course title: Ethics in Pediatrics

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

Introduction to the importance of basic ethical and deontological principles in pediatrics, from newborn to adolescent, ethical principles in the treatment of chronic diseases in children.

Expected outcome of the course:

Acceptance and implementation of modern ethical norms that in the day-to-day work of the team can contribute to better outcomes of treatment of patients, with better quality of life for children and their families.

Course description

Theoretical education

Contemporary ethical attitudes in perinatology (extracellular disease, embryo freezing, surrogate mother, sperm donors), data protection. Fetal medicine ("damaged fetus", fetal surgery, consent and informing parents about the risks, outcomes, declarations. Neonatology: preterm birth, where is the limit? Procedures that have not yet been tested, safety. Ethical attitudes in research in children: placebo, benefit and risks, ethical aspects. Inaccessibility of diagnostic and treatment methods as a violation of basic human rights.

Practical education

Parents 'and children' informed consent. Ethical dilemmas of neonatal screening, treatment of chronic diseases in children: in rare and severe chronic diseases, how to communicate to children and parents, while actively treating chronic patients with poor prognosis, palliative care, end of life. Ethical aspects of organ transplantation: data protection, donors; determination of death, "separation from intensive care", informing parents, end of life, euthanasia and palliative medicine. Examples of Informed Consent in Pediatrics. The role of the team, doctors and nurses in the implementation of ethical principles – exercise and group work. Seminars – selected topics.

Literature

Compulsory

1. Bjelica A. An outline of medical ethics. Novi Sad: Faculty of Medicine; 2015.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	60
Practices		Oral	
Colloquium			
Essay	30		

Course title: Health of School-Age Children and Adolescents

Course status: elective

ECTS Credits: 3

Condition: Pediatrics

Course aim

Introducing students to the specifics of the work of doctors and nurses in the implementation of preventive health – promotion activities in school children and adolescents in terms of promoting healthy lifestyles and preventing risky.

Training students for permanent mastering of theoretical knowledge and training for health promotion activities in terms of promoting healthy lifestyles and prevention of risky behavior of children and adolescents.

Expected outcome of the course:

The student should acquire knowledge about health promotion activities in terms of promoting healthy lifestyles and preventing risky behavior of young people.

The student should be able to independently perform health promotion activities in the sense of promoting healthy lifestyles and prevention of risky behavior among young people.

Course description

Theoretical education

- Healthy lifestyles: proper nutrition, stimulating physical activity, proper dental hygiene and caries prevention, prevention of exposure to sunlight.
- Active sporting and prevention of health risks in adolescents and athletes
- Prevention of risky behavior of young people such as: smoking, alcohol consumption, steroids consumption, consumption of illegal psycho-active substances, and addiction of internet, mobile phones and gambling.
- Prevention of sexually transmitted diseases (STD / HIV) and unwanted pregnancies
- Prevention of violence against children and protection against all forms of domestic violence, institutions and the social environment.

Practical education

Practical work within the framework of promotional activities in the preventive center of the Health center „Novi Sad"

Literature

Compulsory

1. Mary Rudolf, Malcolm Levene. Paediatrics and Child Health, 2nd Edition, Wiley-Blackwell, 2010.

Additional

1. Kliegman, Robert; Nelson, Waldo E (Waldo Emerson). 1898-1997 Textbook of paediatrics.19th ed. /Philadelphia, PA: Elsevier/Saunders, c2011.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Theoretical lectures, video presentations, practical lessons and workshops. Independent, practical work in the presence of mentors in teaching basics.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	70
Practices		Oral	
Colloquium			
Essay	15		

Course title: Gynecology with Obstetrics

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

During the theoretical classes medical students will be familiar with the course of normal pregnancy and childbirth, delivery and modern management of obstetric operations. Special attention will be paid to pathological conditions that complicate pregnancy and childbirth. Introduction to etiopathogenesis, clinical presentation, diagnostic procedures, the basic principles of therapeutic and prevention of diseases of female genital organs (inflammatory disease, benign and malignant tumors), as well as modern methods of family planning, contraception, diagnosis and treatment of marital sterility. During the practical part of teaching (i.e. student exercises) medical students acquire and obtain basic practical knowledge in the field of obstetrics and gynecology, obstetrics and gynecology ultrasound examination as well as the most frequently performed interventions.

Expected outcome of the course:

After completion of the two-semester program, students should know how to diagnose a normal pregnancy, recognize pathological pregnancy, perform basic gynecological examination under a speculum, take cytological smear and perform bimanual gynecological examination. Also, after completion of the two-semester program, students should past exam in obstetrics and gynecology. Exam is consists of a written test, a practical and oral part of the exam.

Course description

Theoretical education

Obstetrics

– Prenatal and antenatal care of pregnant women
– Physiology of pregnancy and normal placentation
– Management of normal labor and delivery
– Mechanisms of labor in the vertex presentation and breech presentations and delivery
– Cesarean section and operative vaginal deliveries
– High risk pregnancies (Rh isoimmunization and ABO incompatibility, diabetes in pregnancy, intrauterine growth restriction, hypertensive syndrome in pregnancy, preterm delivery)
– Anemia in pregnancy
– Multiple gestations
– Post-term pregnancy and induction of labor
– Prenatal diagnostics and ultrasound in obstetrics

Gynecology

– Anomalies of female reproductive system
– Pelvic inflammatory diseases in gynecology
– Gynecological urology (stress and urge urinary incontinence, low urinary tract symptoms)
– Benign and malignant tumors of female genital organs
– Pathology of genital organs in juvenile and adolescent age
– Marital infertility
– Assist. reproductive techniques
– Family planning

Practical education

– Obstetric and gynecologic history
– Examination of pregnant women (external and internal)
– Gynecologic physical examination (general, speculum and bimanual examination)

Literature

Compulsory

1. Hacker NF, Moore JG. Essentials of obstetrics and gynecology 5th edition. W.B. Saunders company, 2009.
2. Evans AT, DeFranko E. Manual of obstetrics 8th edition. Wolters Kluwer, 2015.
3. Bienstock JL, Fox HE, Wallach EE. Johns Hopkins Manual of gynecology and obstetrics, 5th edition. Wolters Kluwer, 2015.

Additional

1. Cundiff GW, Azziz R, Bristow RE. Te Linde's atlas of gynecologic surgery. Wolters Kluwer, Lippincott Williams &Wilkins, 2015.
2. Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, Casey BM, Sheffield JS. Williams Obstetrics 24th edition. McGraw-Hill Education, 2014.

Number of active classes	**Theoretical classes:** 30		**Practical classes:** 15
Teaching methods: Other types of teaching: one working day 07-15 pm. at delivery room			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	15
Practices	20	Oral	35
Colloquium	10		
Essay	10		

Course title: Rational Drug Use in Pregnancy and Lactation
Course status: elective
ECTS Credits: 3
Condition: –
Course aim To get students acquainted with basic principles of pharmacotherapy during pregnancy and lactation
Expected outcome of the course: The students will get acquainted with basic principles of drug application during pregnancy and lactation, with particular emphasis on the safety of pharmacotherapy; students will acquire knowledge on administration of drugs during pregnancy and lactation, which have proved safe and reasonable for application in this specific population according to the principles of evidence based medicine. The students are expected to be acquainted with basic principles of rational pharmacotherapy in the population of gravid women and women in lactation period
Course description *Theoretical education*: Selection of the drug according to the sex of the patient. Physiological characteristics of pregnant woman and the fetus affecting the pharmacokinetic and pharmacodynamic features of drugs. Physiological characteristics of pregnant woman and the fetus affecting the characteristics of drugs during lactation period. Criteria for risk assessment and safety of drugs intended for application during pregnancy and lactation period. Classification of drugs into safety-categories related to their application during pregnancy and lactation period. Effects of drugs on organogenesis, fetus and pregnancy course. Effects of gestation age on drug features. Biomarkers indicating exposure to drugs during pregnancy. Clinical trials on pregnant women. Safety of the application of antihypertensive drugs during pregnancy and lactation. Safety of the application of antiemetics during pregnancy and lactation. Safety of the application of antimicrobials during pregnancy and lactation. Safety of the application of drugs for the treatment of neuropsychiatric disorders (anxiolytics, antidepressants, antipsychotics and antiepileptics) during pregnancy and lactation. Prophylactic application of drugs during pregnancy. Rational pain therapy during pregnancy. Rational application of tocolytics and uterotonics. Effects of cigarette smoke, alcohol and drug misuse on the fetus and pregnancy. *Practical education* Information sources on safety of drugs applied during pregnancy and lactation periods. Analysis of the results of preclinical studies of importance for assessment of safety of drugs to be applied during pregnancy and lactation. Analysis of the results of clinical trials of importance for assessment of safety of drugs to be applied during pregnancy and lactation. Case reports – paper patients addressing the application of drugs during pregnancy and lactation. Seminar papers prepared by the students.
Literature *Compulsory* 1. Rang HP, Dale MM, Ritter JM, Moore PK. Pharmacology. Churchill Livingstone, Edinburgh, New York, 2003. 2. Brenner GM, Stevens C. Pharmacology, 4th edition. Elsevier, 2012

Number of active classes	**Theoretical classes:** 30		**Practical classes:** 15
Teaching methods: Theoretical and practical			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	40
Practices	5	Oral	
Colloquium			
Essay	50		

Course title: Oral Medicine

Course status: compulsory

ECTS Credits: 6

Condition: –

Course aim

Educating students for independent practical work on patients with the diseases of oral mucosa, diagnosis, treatment and prevention.

Expected outcome of the course:

Knowledge: Etiological factors, clinical picture and treatment of oral diseases. Oral clinical manifestations of systemic disease. The characteristics of healthy oral mucosa. Types of pathological changes in oral mucosa. Differential diagnosis of red, white, erosive and ulcerous lesions and pigmentation of oral mucosa. Collect recording and analyzing anamnestic data, clinical examination, and diagnostic tests. Selecting appropriate laboratory diagnostic tests and interpreting findings. Making a diagnosis. Designing the treatment plan, prescribing appropriate medication. Treatment of potentially malignant oral diseases, Screening of particular populations.

Skills: Taking anamnesis, performing oral clinical examination, completing the relevant records. Identifying congenital anomalies of the tongue. Identifying pathological changes of oral mucosa. Identifying saliva secretion disorders. Identifying local etiological factors. Palpation of regional lymph and salivary glands. Performing Diagnostic tests on the patient. Taking material for bacteriological and mycological analysis. Referring the patient to laboratory testing. Performing therapeutic interventions. Performing dental examination in the detection of oral foci, x-ray analysis.

Course description

Theoretical education

The characteristics of healthy oral mucosa. Pathological changes in the oral mucosa. Criteria for the classification of oral diseases. Defense factors of the oral cavity. Diseases of the lips and tongue. Recurrent oral ulceration. Infections of oral mucosa: viral, bacterial, fungal. Allergic reactions in oral mucous membrane. Changes in oral mucosa caused by physical, chemical, thermal and radiation agents. Pigmentation of oral mucosa. Xerostomia. Gingival enlargement, Inflammatory hyperplasia. Benign tumors. Potentially malignant oral disorders. Oral manifestations of skin diseases, gastrointestinal diseases and metabolic disorders, endocrine diseases, blood diseases, kidney, respiratory and neuromuscular diseases, immunological diseases, cardiovascular diseases, psychosomatic disorders and psychiatric diseases. Orofacial pain. Oral dysesthesia and taste disturbance. Halitosis. Oral focal infection. Emergency conditions in oral medicine.

Practical education

Anamnesis and clinical examination of oral mucosa. Clinical tests in the diagnosis of oral diseases. Methods of laboratory diagnosis. Application of protective measures to prevent the spread of infection.

Characteristics of healthy oral mucosa. Making a diagnosis of oral diseases. Therapeutic methods and procedures. Drugs. Diagnostic and therapeutic procedure in focal infections.

Literature

Compulsory:

1. Scully C. Oral and Maxillofacial Medicine. Wright, Edinburgh, London, New York, 2004; *Additional:*
2. Scully C, Porter S. Orofacial disease. Update for the dental clinical team. Churchill Livingstone, Edinburgh, London, 2003.

Number of active classes	**Theoretical classes:** 45	**Practical classes:** 75

Teaching methods:

Theoretical and practical education

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	30
Practices	10	Oral	40
Colloquium	10		
Essay			

Course title: Clinical Prosthetics II

Course status: compulsory

ECTS Credits: 9

Condition: Clinical Prosthetics I

Course aim

Introduction to basic concepts and clinical procedures in the field of fixed dental prosthetics, the overview of the role of prosthetics in dentistry and adoption of basic principles in planning and oral rehabilitation of toothless patients.

Expected outcome of the course:

Changes in morphology and physiology of the craniofacial system, transmitting the basic parameters of the patients in the external environment, methods of making fixed dentures

Diagnosis and treatment plan, root canal preparation, grinding of teeth, taking imprints in fixed prosthetics, cementing of fixed prosthetic work.

Course description

Theoretical education

1. Introduction to fixed dental prosthetics. 2. History and development of fixed dental prosthetics. 3. Medical history in fixed prosthetics and its importance. 4. Clinical examination of patients with toothless jaws. 5. Craniomandibular joint connection – anatomical and functional specificities Characteristics of nonphysiological occlusion. 6. Radiological diagnosis orofacial system. 7. Study models for the processing techniques and procedures for their analysis. 8. The role of periodontal tissue in the acceptance of occlusal force and planning in fixed prosthetics. 9. Pre-prosthetic preparation of the mouth and teeth in fixed prosthetics. 10. Principles of preparation of carrier-tooth. 11. Preparation of teeth for full cast crown. 12. Preparation of teeth for metal-ceramic crown. 13. Preparation of teeth for inlays and onlays. 14. Preparation of teeth for facets 15. Tooth reparation for non-metal crown. 16. Types of non-metal ceramic systems. 17. Restoration of endodontically treated teeth. 18. Indications for various types of ready-made pins. 19. Cast upgrade. 20. Bridge types, the rules for planning and preparation. 21. Imprinting in fixed prosthetics, individual mould-spoon. 22. Syringe method for imprinting in fixed prosthetics. 23. Colors in fixed prosthetics. 24. Temporary Crown. 25. Cementing of fixed dentures Irreversible occlusal restoration and occlusion therapy using fixed replacements. 26. Occlusal therapy of patients with malocclusion

Practical education

1. Occlusal trauma, functional analysis of the orofacial complex. 2. Taking anatomical imprints for study models. 3. Analysis of study models. 4. Preparation of teeth for full cast crown. 5. Preparation of teeth for metal-ceramic crown. 6. Preparation of teeth for Inlay. 7. Preparation of teeth for facets. 8. Tooth preparation for non-metal crown. 9. Preparation and application of different types of ready-made pins. 10. Cast build-up on single-root and multi-rooted teeth. 11. Grinding teeth for lateral bridge. 12. Taking imprints. 13. Adaptation of individual molding spoons. 14. Syringe method for imprinting in fixed prosthetics. 15. Setting colors in fixed prosthetics. 16. Creation of temporary crowns. 17. Cementing of fixed dentures, constructing Michigan splint

Literature

Compulsory

1. Rosensteil S, Land M, Fujimoto J Contemporary fixed prosthodontics, Mosby 2006.

Additional

1. Internet, Kobson databases

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 135

Teaching methods:
Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	
Practices	15	Oral	60
Colloquium			
Essay	10		

Course title: Endodontics II

Course status: compulsory

ECTS Credits: 10

Condition: Endodontics I, Pharmacology (for taking an exam)

Course aim

A goal of the course is to teach and train students for independent clinical work in diagnostic and therapeutic procedures with regard to diseases of endodontium and periradicular region.

Expected outcome of the course:

Knowledge: Comprehensive diagnosis, treatment planning and management of pulpal and periapical disease.

Competencies: Diagnostic procedure in endodontics – recent advances and various aids used for diagnosis. Case selection and treatment planning. Orofacial dental pain and emergencies: endodontic diagnosis and management. Pulp, periapical, endo-perio lesion pathology and management. Endodontic procedure: access cavity preparation, working length determination, cleaning and shaping of root canal system (instrumentation), canal irrigation and medication, obturating materials, obturation techniques. Restoration of endodontically treated teeth – recent advances. Endodontic retreatment. Traumatic injuries and management – endodontic treatment for permanent teeth. Endodontic and risk management of medically/clinically compromised patients.

Course description

Theoretical education

1. Endodontic Emergencies – diagnosis and management. 2. Endodontic interrelationship; Endo-rerio lesion and treatment planning. 3. Apical periodontitis. 4. Management of necrotic pulp and periapical lesion. 5. Endodontic failures and procedural accidents. 6. Healing after endodontic treatment. 7. Endodontic retreatment. 8. Traumatic injuries and endodontic management. 9. Tooth discoloration – non-vital bleaching. 10. Conservative restoration of endodontically treated teeth. 11. Endodontic posts. 12. Rationale of surgical endodontics. 13. Endodontic management of medically/clinically compromised patients. 14. Endodontic evaluation.

Practical education

1. Examination, diagnosis and treatment plan in endodontics. 2. Rationale of endodontics. 3. Procedure of pulp amputation and extirpation. 4. Non-infected and infected root canal – treatment modalities. 5. Periapical disease treatment. 6. Procedural errors in endodontics and their management. 7. Endodontic retreatment protocol. 8. Management of endodontic emergencies. 9. Management of endo-perio lesion. 10. Traumatic injuries – endodontic treatment for permanent teeth. 11. Conservative restoration of endodontically treated teeth – Treatment modalities. 12. Non-vital bleaching procedure.

Literature

Compulsory

1. Textbook of Endodontology, 3rd Edition, edited by: Lars Bjørndal, Lise-Lotte Kirkevang, John Whithworth, Wiley- Blackwell, 2018

Additional

1. Harty's Endodontics in Clinical Practice, 7th Edition, editor: Bun San Chong, Churchill Livingstone, 2016
2. Endodontics, Principles and Practice, 5th Edition, by: Mahmoud Torabinejad, Ashraf Fouad, Richard E. Walton, Elsevier, 2014

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 180

Teaching methods:

Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 attendance 10 activity	Written	
Practices	5 attendance 20 activity	Oral	40
Colloquium		Practical exam	20
Essay			

Course title: Oral Surgery with Implantology II

Course status: mandatory

ECTS Credits: 4

Condition: Oral Surgery with Implantology 1

Course aim

The main aim of the subject is getting familiar with the most recent technologies used in dentistry. Students will be acquainted with basic terms in dental implantology, classification, macrodesign and microdesign of dental implants, materials used for production of dental implants; indications and contraindications for implantation, planning and conducting of implant therapy; complications in implant therapy.

Expected outcome of the course:

Knowledge

- Taking medical and dental history, perform clinical extra oral and intraoral exam and diagnostic procedures necessary in order to indicate implant therapy
- Basic principles of treatment planning
- Pre-implantation procedures
- Basic surgical procedures
- Postoperative protocols and drug administration
- Intraoperative and postoperative complications
- Taking impressions and stages of fabrication of overdentures and fixed prosthodontics on implants
- Prosthodontic complications
- Training and motivation of the patient in performing oral hygiene

Skills

Implantology is the multidisciplinary branch of dentistry. Students should get acquainted with its principles since implantology and related dentistry branches represent the most contemporary trend in dentistry.

Through the practice on mannequins and simulation models students will get basic knowledge of surgical placement of dental implants. Students will also learn procedures of prosthetic rehabilitation of patients with dental implants

Course description

Theoretical education

1. Introduction to the course
2. Materials used in implantology
3. Anatomy and histology of jaw bone; Design and classification of implants; Osseointegration
4. Indications and contraindications for dental implants
5. Patient selection and preimplantation procedures
6. Surgical techniques of implant placement
7. Special surgical procedures (GBR, sinus/lift)
8. Surgical complications (intraoperative and postoperative); diagnosis and treatment
9. Prosthodontic rehabilitation on dental implants
10. Types of suprastructures
11. Taking impressions in implantology
12. Temporarisation in implantology
13. Fixing of prosthodontics and occlusal balance, importance of articulator use
14. Prosthodontic complications
15. The importance of patient recall in implantology

Practical education

1. Taking medical and dental history, clinical examination and the x-ray scan analysis
2. Implant therapy planning
3. Surgical procedures performed
4. Impression techniques
5. Fixing of cement retained prostodontics
6. Fixing of screw retained prosthodontics

Literature

Compulsory

1. Lindhe J, Lang NP, Karring T. Clinical Periodontology and Implant Dentistry. Blackwell Publishing Co, 2008.
2. Misch CE. Dental Implant Prosthetics, Mosby, St Louis 2005.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures and practical.

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	60
Practices	10	Oral	
Colloquium			
Essay	20		

Course title: Pediatric Dentistry II

Course status: compulsory

ECTS Credits: 5

Condition: Pediatric Dentistry 1

Course aim

Students should gain basic knowledge in pediatric dentistry

Expected outcome of the course:

– Student should be able to perceive basic dental problems of children and establish diagnosis and treatment.
– Students should gain knowledge of the medical procedures in pediatric dentistry.

Course description

Theoretical education

1. Child dentistry: definition, aims, importance and objectives. 2. The development of oral cavity and teeth, development of jaw and odontogenesis. 3. The teeth eruption: mechanism, theories, chronology, marking, histological and anatomic features of milk and permanent teeth. 4. Irregularities in teeth growth: classification and etiology. Irregularities in teeth growth, position, shape, size, number and color. Irregular teeth structure caused by common, local factors and intoxications. Hereditary and idiopathic structure irregularities. 5. Dentistry and children: diagnosis, anamnesis, regular check-ups. Planning of work with children, difference in psychological types of children. Dentistry registers. 6. X-ray in child dentistry, types of scanning, indications and protection. 7. Caries of milk teeth: properties, localization, diagnosis and therapy. Circulatory caries. 8. Treatment of caries of milk and permanent teeth: treatment of initial carious lesions. Preventive fillings. Treatment of advanced stages of caries. 9. Filling materials in child dentistry: materials for temporary and permanent filling (amalgam, composite, gas-ionomere). 10. Pain control and anesthesia in pediatric dentistry: application of local and esthetics in the preparation of oral cavity for tooth extraction. 11. Treatment of dental pulp and preapical tissue: pulp diseases, diagnosis and treatment of dental pulp of milk and permanent teeth. Periodontitis of milk teeth and permanent teeth, diagnosis, complications, therapy. Treatment of the teeth with partially developed roots. 12. Soft tissue diseases: types, classification, diagnosis and therapy. 13. Periodontal diseases of children: types, classification, diagnosis and therapy. Juvenile periodontal diseases. 14. Influence of common diseases on the oral cavity and teeth of children. 15. Oral surgery treatment of children: tooth extraction, indications and contra-indications. Emergency conditions in dentistry. Tumors and cysts. 16. Tooth injuries of milk and permanent teeth: types, diagnosis, complications and therapy. 17. Management of high-risk pediatric patients: children with heart and circulatory diseases, children with limited abilities- the use of local anesthetics. 18. Prosthetic treatment of children: specificities, principles, indications, fix and mobile compensations.

Practical education

1. Child dentistry: definition, importance, aims and objectives. Specificities of working with pediatric patients, pain control, first visit to the dentists. 2. Psychological types of children: establishing and special approach. 3. Diagnosing diseases of oral cavity and teeth diseases in children: medical history, exanimation, diagnosis and continuous check up. 4. X-ray diagnosis in child dentistry: methods, analysis of scans, indications, child protection during X-ray procedure. 5. Therapy plan in child dentistry: variations according to teeth types (milk, mixed, permanent). 6. Milk teeth caries: features and localization. 7. Specific preparation of milk tooth cavity: basic rules and principles. 8. Treatment of milk teeth caries: cavity preparation, deep caries of the milk teeth. 9. Complication of milk teeth caries: diagnosis, differential diagnosis of pulp diseases of milk teeth. 10. Treatment of pulp diseases of milk teeth: vital and mortal methods of curing. 11. Circulatory caries: clinical report, diagnosis, treatment. 12. Specific preparation of permanent tooth cavity. 13. Treatment of permanent teeth caries: initial carious lesion of the enamel, preventive filling, treatment of deep caries. 14. Treatment of caries complications in permanent teeth: vital and mortal methods of curing. Treatment of periodontitis. 15. Treatment of the teeth with partially developed roots: indications, techniques. 16. Emergency conditions in pediatric dentistry: first aid, acute dentogenic infections. 17. Medications and substrates in child dentistry: requirements to be met by substrates and drugs used in oral cavity. 18. Fillings in pediatric dentistry: materials for temporary and permanent filling. (amalgam, composite, glass-ionomere cements). 19. Anesthesia in pediatric dentistry: specificity, types, complications. 20. Specificities of oral surgery in children: preparation of the child for surgery, instruments. 21. Extraction of milk and permanent teeth in children: specificity, indications, contra-indications, complications. 22. Injuries of milk and permanent teeth: classification, first visit procedure. 23. Injuries of supporting tissue: classification, diagnosis, treatment. 24. Injuries of hard tissues: classification, diagnosis, treatment. 25. Oral diseases in children: classification, viral diseases, herpes stomatitis. 26. Periodontal diseases: etiology and classification of gingivitis and parodontopathy and juvenile parodontopathy. 27. Treatment of periodontal diseases: oral hygiene, plaque control. Early detection and treatment. 28. Specificities of treatment of children with disabilities: special visits and treatments.

Literature

Compulsory

1. Goran Koch. Paediatric Dentistry: A Clinical Approach, John Wiley & Sons, Jun 29, 2009
2. Welbury R, Duggal M, Hosey MT. Paediatric dentistry. Oxford: Oxford University Press, 2005.

Number of active classes	**Theoretical classes:** 30		**Practical classes:** 75
Teaching methods: Theoretical and practical			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5 attendance 10 activity	Written	20
Practices	5 attendance 20 activity	Oral	40
Colloquium			
Essay			

Course title: Periodontology II

Course status: compulsory

ECTS Credits: 6

Condition: Periodontology I (for taking an exam)

Course aim

The aim of the course is to acquaint students with the principles of treating of periodontal diseases, acquiring knowledge on the importance of periodontal therapy and novel accomplishments of modern periodontology, as well as to train student to independently perform conservative treatment in clinical conditions.

Expected outcome of the course:

The course relies on the previous course in Periodontology I and previously acquired knowledge and skills. This course will offer advanced knowledge related to the prognosis of periodontitis, treatment plan, phases of treatment and procedures that are currently available.
The student should be trained to perform the clinical examination of periodontium, to estimate the periodontal condition and to establish the diagnosis. He should be acquainted with the instrumentation for dental plaque removal, scaling and root planning working technique and course of the procedure. The student should be trained to independently apply and perform the cause- related therapy of periodontitis.

Course description

Theoretical education

1. Prognosis of periodontitis
2. Therapy plan
3. Preliminary phase of the therapy
4. Cause-related phase of the therapy
5. Application of medications in the therapy of periodontal diseases
6. Selecting method for elimination of periodontal pockets
7. Subgingival scaling and root planning
8. Resective surgical methods for eliminating periodontal pockets
9. Regenerative surgical methods
10. Surgical methods for elimination of mucogingival deformities
11. Pre-prosthetic preparation of the periodontium
12. Treatment of disturbed occlusion
13. Complications of periodontitis and therapy
14. Maintenance of treatment outcome
15. Prevention of periodontal diseases
16. Periodontal diseases and systemic health
17. Focal infection

Practical education

1. Medical history, clinical examination, analysis of X-ray scans. Working with patients.
2. Prognosis and treatment plan for periodontitis
3. Methods of decreasing symptoms of periodontal inflammation. Working with patients.
4. Manual and power-driven instruments for dental plaque removal; working technique. Working with patients.
5. Cause-related therapy phase. Working with patients.
6. Removal of supra and subgingival plaque. Working with patients.
7. Subgingival scaling and root planning. Indications and contraindications. Working with patients.
8. Iatrogenic factors. Diagnosis and elimination. Working with patients.
9. Selecting method for surgical elimination of periodontal pockets. Indications and contraindications.
10. Surgical instrumentation. Basic principles of periodontal surgery.

11. Gingivectomy. Indications and contraindications – course of the procedure.
12. Flap surgery. Indications and contraindications – course of the procedure.
13. Regenerative surgery. Indications and contraindications.
14. Mucogingival deformities. Importance of selecting the proper surgical method for their elimination.
15. Maintaining the outcomes of the periodontal treatment.
16. Focal infection. Identification the infection foci in oral cavity. Therapy plan and preparation of the patient for the elimination of oral foci.

Literature

Compulsory

1. Newman MG, Takei HH, Klokkevold PR, Caranza FA. Carranza's clinical periodontology. Elsevier, 2014

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 90

Teaching methods:
Lectures and practices

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	
Practices	30	Oral	60
Colloquium			
Essay			

Course title: Orthodontics

Course status: compulsory

ECTS Credits: 10

Condition: General Radiology; Gnathology

Course aim

The objective of the course in Orthodontics is to acquaint students with jaw growth and development and to enable him to understand and identify the age-related general and local factors, as well as the diverse interventions and procedures (extraction of milk teeth and permanent teeth, tooth fillings, etc.) that can induce a range of orthodontic disorders. Learning mutual connections between diverse general and local disorders and conditions and development of chewing organs and face, the students will develop ability of critical thinking and conclusion making. The objective is also to acquaint students with procedures and measures for establishing complete diagnosis of orthodontic anomalies, treatment stage planning according to the established diagnosis, general principles of orthodontic treatment and application of diverse orthodontic equipment depending on patient's age and psychical maturity. Mastering abilities of critical thinking and linking different basic and advanced diagnostic methods with an aim of training future dentists to establish reliable and timely diagnosis in view of orthodontic patient triage.

Defining the most appropriate development stage and methods of preventive action against dysgnathia or appropriately indicate the orthodontic treatment to provide better functionality of the orofacial system and facial appearance, thus contributing to improvement of general physical and psychical health.

Expected outcome of the course:

Learning on normal growth and development of jaws and teeth; development of normal occlusion. Etiological factors associated with the occurrence of malocclusions. Morphological diagnostic procedure as a baseline for orthodontic treatment planning (analysis of teeth position, shape and size of the jaws and occlusion findings on dental study models in sagittal, vertical and transverse plane of space). Knowing basic principles of orthodontic abnormalities in sagittal, vertical and transverse plane of space. Taking anatomical imprints, molding and creating of working and study models. Analysis of study models using instrumentation for gnathometric analysis (differentiating between milk teeth and permanent teeth, determining the middle point of the jaw, analysis of teeth position and dental arch development, analysis of occlusal relationships). Creation of retention and active wire elements for mobile orthodontic apparatus. Possibilities of prevention and application of interceptive measures aimed at preventing the development and aggravation of orthodontic impairments. Basic principles in the therapy of orthodontic impairments. Therapeutic capacities of particular orthodontic apparatuses. Taking anatomical imprints. Establishing morphological and functional diagnosis on the basis of clinical examination. Establishing of final diagnosis after completing diagnostic procedures and analyzing the findings. Planning of orthodontic therapy. Conducting orthodontic therapy using various orthodontic apparatuses. Application of preventive and interceptive measures. Interdisciplinary approach in treating severe orthodontic impairments.

Course description

Theoretical education

Definition, tasks and objectives of the course; Psychological and social-economical importance of orthodontics. History of orthodontics; first records on orthodontic disorders; records on orthodontic therapy before Engel and towards modern orthodontic therapy approach. Prenatal development of head and face, Prenatal development of teeth. Postnatal development of the head, face, jaws and teeth from birth to first milk teeth eruption. Development of masticatory organs from first milk teeth eruption to completion of milk teeth series (to 2. 5 years). Development of masticatory organs in the period of first milk teeth series and early mixed teeth series (early mixed dentition). Development of masticatory organs in the period of late mixed teeth series (late mixed dentition). Development of masticatory organs in the period of permanent teeth series (permanent dentition). Normal occlusion – ideal occlusion and articulation. Motor functions – general characteristics of muscles and their overall function, normal breathing function and its influence on the development of orofacial system. Normal function of feeding – breast-feeding and swallowing and their effect on orofacial region development. Function of feeding – chewing and its effect on normal development of orofacial system. Function of speech focusing on articulation of sounds in oral cavity and its importance in masticatory organ development. Features and importance of the imprint in orthodontics. Importance and creation of study models. Instruments used for analysis of study models. Schwartz analysis of study models, measuring points for width and height of dental arch, median values. Analysis of teeth position in transversal plane in the upper and lower jaw, determining the mid-point of upper and lower jaw. Analysis of teeth position in sagittal plane in the upper and lower jaw. Analysis of teeth position in vertical plane of space, shape and height of the palate. Analysis according to Moyers and Bolton. Assessment of sagittal relationship of jaws, terminology of the occlusal finding. Importance and analysis of intraoral and extraoral X-ray scans. RTG craniometry and RTG cephalometry. Analysis of profile Ro scan according to Schwartz and Steiner. Etiology of malocclusion, classification of malocclusions, biochemical basis of inheritance, inheritance pathways. Effects/role of inheritance on orofacial region. General diseases and disorders of endocrine function and their effects on the occurrence of malocclusions. Nutrition deficiency, congenital anomalies and their impact on the occurrence of malocclusions. Local diseases and trauma and their impact on the occurrence of malocclusions functional disorders and bad habits and their impact on the occurrence of malocclusions. Hyperdontia and hypodontia, macro- and microdontia, persistence of milk teeth and their impact on the occurrence of malocclusions. Impairments in the view of teeth position. Impairments in the view of the number and size of teeth. Impairments of dental arch – crooket teeth, irregular shape or size. Impairments of I class. Impairments of II class. Impairments of III class. Transversal and vertical impairments. Congenital anomalies – Cheilognathopalatoshisis. Congenital anomalies – syndromes. Introduction to orthodontic records, medical documentation. Medical history (importance in orthodontics) since birth to the moment of examination; family history. Present status – general: height, body weight, potential bone deformities, etc. Present status – local: extraoral, morphological analysis of the face while still and in occlusion. Functional examination. Present status – local: intraoral, general features of milk and permanent teeth and tooth lines, shape, position, size of the tongue, incisor relationship in sagittal and vertical plane in

space, mid-point of tooth line. Prevention, interceptive orthodontics. General causal therapy. Biological principles of teeth displacement – response of soft tissues to relevant stimuli. Extraction therapy – systematic, compensatory, compromising. Active mobile apparatuses – parts, role of labial arch. Elastic wire elements – springs, screws, bow (ridge). Basic elements of functional apparatus – monoblock, reduced activators, vestibular plane. Basic elements of functional apparatus – bionator acc. to Balters, function regulator acc. to Frankel, propulsor. Fixed apparatuses – combination of mobile and fixed treatment. Impairment therapy in the period of mixed and permanent dentition in transversal direction. Therapy of impairments of teeth and jaws in sagittal direction. Therapy of impairments of teeth and jaws in vertical direction. Retention of the obtained therapy outcome, mouth hygiene and hygiene of the apparatus during therapy. Interdisciplinary cooperation – therapy.

Practical education
Taking anatomical imprints, individual bite was moulds; working models and creating the base plate. Instruments for performing gnathometric analysis. Toothless jaw (milk teeth, permanent) and its characteristics; deviation from normal occlusion at all three planes – displaying characteristic cases. Differentiation between milk teeth and permanent dentition. Determining dental age. Analysis of study models – teeth status, labeling, numbering, type and shape of teeth. Determining the mid-point of the upper jaw. Transferring the median to the lower jaw. RTG spine mentalis. Analysis of the symmetry/asymmetry of teeth; reconstruction. Schwartz analysis: measuring of the upper and lower jaw/width and height of the dental arch/median value. Comparation of the teeth series in the upper and lower jaw at all three planes in space (sagittal, vertical and transversal). Bite classification according to Engel. Tooth ratio and dentition analysis (Moyers, Bolton). Diagnostics of occlusal finding (terminology), therapy plan, description. Morphological diagnosis and therapy plan. Mechanical features of the wire and types of orthodontic forceps. Practicing the techniques of dental wire twisting. Components and basic characteristics of particular orthodontic apparatus. Twisting of retention and active wire elements of the orthodontic apparatus. Medical history. General and local extraoral clinical examination (body constitution, shape of the head and face, assessment of vertical and sagittal face esthetics, biometric field). Intraoral clinical examination, assessment of occlusal relationships, determining dental status and age. Functional analysis (breathing, mastication, swallowing, speech, movements, lip position, determining the position of physiological inactivity and interocclusal distance). Analysis of X-ray scans in orthodontics (orthopantomogram, teleroentgen profile of the head, RTG of the hand, parallax system, bite scans). Reading and interpretation of diagnostic findings, establishing final diagnosis and therapy planning. Performing complete diagnostic procedure in patients with diverse orthodontic impairments. Taking imprints and individual bite in wax mould, medical history, determining the extraoral and intraoral findings. Functional examination. Analysis of study models, RTG scans. Establishing of final diagnosis and therapy planning delivery of active mobile apparatus. Control examinations and monitoring of the patient. Admission and examination of new patients. Clinical-functional examination and analysis of study models and RTG scans of patients-candidates for functional therapy and establishing the diagnosis. Therapy plan and obtaining construction bite mould. Delivery of functional apparatus (monoblock) to new patients and control of former patients. Processing of patients – candidates for therapy with fixed orthodontic apparatus. Mounting fixed apparatus and monitoring of the therapy. Practicing identification of diverse orthodontic impairments in sagittal, transversal and vertical plane; treatment possibilities. Introduction to preventive and interceptive measures at different age (serial extraction, application of spatula, myofunctional exercises, confection and individual vestibular plates, myofunctional appliances). Indications for interdisciplinary cooperation in the diagnostics and treatment of severe deformities of the face and jaws (cleft lip, cleft palate, progeny, skeletal open bite, gothic palate, speech disorders)
Consultations related to particular topics. Knowledge test.

Literature
Compulsory
1. Gardiner J.H. Orthodontics for dental students. Oxford University Press, 1998.
2. Rakosi Thomas. Color Atlas of Dental Medicine, Orthodontic Diagnosis. Thieme, 1993.

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 120

Teaching methods:
Lectures and practices

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	15	Written	20
Practices	15	Skills	20
Colloquium		Oral	30
Essay			

Course title: Management in Dental Medicine			
Course status: compulsory			
ECTS Credits: 2			
Condition: –			
Course aim To 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.			
Expected outcome of the course: Student should learn its perspective and possibilities of practice in Republic of Serbia, also outcome 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.			
Course description 1. Course overview 2. Management basics, definition of management 3. Management in health service, management in dentistry 4. Management of dental office 5. Organization of health care institutions 6. Customer Relationship Management 7. Dental practice management software programs 8. Laws rules and regulations 9. Quality management in dental care 10. Dental patient satisfaction management 11. Patient management 12. Accounting basics 13. Marketing basics in dental medicine 14. Career options after dental school 15. Legal Aspects of Dental Medicine			
Literature *Compulsory* 1. Young M: Managing a dental practice. Radcliffe Medical PR; 1 edition (2010)			
Number of active classes	**Theoretical classes:** 30		**Practical classes:** 15
Teaching methods: Lectures, Practice			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	20
Practices	20	Oral	40
Colloquium			
Essay			

Course title: Maxillofacial Surgery

Course status: compulsory

ECTS Credits: 6

Condition: Oral Surgery with Implantology 1 and 2

Course aim

Mastering knowledge and skills of clinical examination and establishing preliminary diagnosis of the disease of the oral cavity, head and neck.

Expected outcome of the course:

– Students must learn the examination of the oral cavity organs, head and neck
– Providing first aid to the patients with head and neck trauma, methods of immobilizations of fractures and hemostasis
– Postoperative treatment of the patients

Course description

Theoretical education

– Injuries of the maxillofacial region (soft tissues, fronto-ethmoidal bone, mandible, maxilla, zygomatic bone) – diagnostics, clinical features and therapy.
– Cysts of the soft and bone tissues of the oral cavity, head and neck and expansive processes of the jaws – diagnostics, clinical features and therapy.
– Infections of the soft and bone tissues of the jaws, head and neck – odontogenic and nonodontogenic – diagnostics, clinical features and therapy.
– Diseases of the temporomandibular joint.
– Neuralgia of trigeminal nerve and other painful conditions in maxillofacial area.
– Tumors (benign tumors of the mouth, head and neck, premalignant lesions and cancers of the face skin, melanoma, malignant tumors in the oral region and lips, malignant tumors of maxillary sinus, metastasis in the region and staging of the malignant tumors) – diagnostics, clinical features and therapy.
– Diseases of salivary glands (acute and chronic inflammations, syalolithiasis, fistula of the salivary glands, benign proliferative processes, benign and malignant tumors) – diagnostics, clinical features and therapy.
– Clefts (definitions, classification, embryology and etiopathogenesis, clinical features, therapy, rehabilitation).
– Deformities of the face and jaws (diagnostics, classification, mandibular deformities (progeny, microgeny, laterogeny), maxillary deformities (prognathism, micrognathism), apertognathia, other deformities) – diagnostics, clinical features and therapy.
– Preprosthetic surgery
– Basics of the reconstructive, restorative and esthetic surgery.

Practical education

– Examination of the mouth and dental apparatus.
– Basics of the exam of the trauma, first aid in patients with trauma of maxillofacial area. Methods of immobilization. Soft tissue processing.
– Diagnostics of the benign and malignant tumors.
– Diagnostics and therapy of the patients with head and neck infection.
– Diagnostics and therapy of the patients with the disease of the salivary glands.
– Diagnostics and therapy of the painful conditions in dentistry and maxillofacial surgery.
– Postoperative treatment of the patient in ambulance conditions.

Literature

Compulsory

1. Carrie Newlands, Cyrus Kerawala: Oral and Maxillofacial Surgery. Published by OUP Oxford 2014. ISBN 10: 0199688400 ISBN 13: 9780199688401
2. Peterson's principles of oral and maxillofacial surgery. 2nd edition, 2004, BC Decker Inc

Number of active classes	**Theoretical classes:** 60	**Practical classes:** 60

Teaching methods:

Lectures and practical lectures with patients

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	10
Practices	10	Oral	55
Colloquium	10		
Essay	10		

Course title: Public Health

Course status: compulsory

ECTS Credits: 3

Condition: –

Course aim

Education of dentists in the area of promoting dental and oral apparatus health, health care of dental service customers and employees in dental health institutions. Introduction to the organization of health services.

Course description

Theoretical education

1. Public health. Health and quality of life. Concept and strategy "Health for all in XXI century". 2. Health promotion. Health education. Planning and programming of healthcare. 3. Communication in healthcare. Health protection and factors influencing the health protection achievement. Organization of health service. Criteria for evaluation of socio-medical importance of oral diseases. Methodologies for prevention and control of massive non infectious diseases. Financing of health protection. 4. Reforms of the healthcare system. 5. Definition, objectives and tasks of epidemiology. Epidemiology models. Infection chain. Epidemiology of malignant tumors. 6. Prevention and control of infectious diseases. Immunization. National pathology. 7. Epidemiology of infectious diseases of importance for dentistry practice. Epidemiology of nosocomial infections. 8. Viruses in the environment. Micriobial safety of water. Microbiological safety of food and alimentary toxicoinfections (causative agents). Sterilization and disinfection in microbiology – practice. 9. Public health and hygiene. Health 2020. Hygiene and health. 10. Health safety of drinking water. Disposal of hazardous waste in accordance with principles of hygiene. 11. Energy needs of different population groups. Nutrients. Vitamins. Minerals. 12. Health safety of food. Dietary supplements. Items for common use and cosmetics. Hand and working surface swabs. 13. Hand hygiene. Hygienic requirements in a dental practice. Medical nutrition prevention of teeth diseases and diseases of oral apparatus. 14. Occupational health disorders. 15. Occupational hazards and risks. 16. Protection and health promotion at the workplace.

Practical education

1. Methods and instruments of health-educational work; demonstration of a creative workshop as a teaching method. 2. Preparation and presentation of a health-education instruments and / or a method of health-education work. 3. Designing of the action plan of health-education campaign and social marketing approach in the community. 4. Presentation of national pathology. 5. Prevention and control of infectious diseases in dental practice. 6. Research models in nosocomial infections and demonstration of nosocomial epidemics research. 7. Microbiological safety of herbal products used as auxiliary treatment in prevention and therapy of oral infections – seminar. 8. Public health and hygiene. 9. Diet and oral health. Diet and oral health – seminar. 10. Hygienic requirements in dental practice – seminar. 11. Microbiological safety of the air – seminar. 12. Expertise of working ability aimed at confirming occupational infectious disease. 13. Expertise of working ability aimed at confirming occupational skin disease. 14. Expertise of working ability aimed at confirming occupational injury caused by ionizing radiation.

Literature

Compulsory

1. WHO. Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks. World Health Organization, Switzerland 2016
2. WHO. MONITORING AMBIENT AIR QUALITY FOR HEALTH IMPACT ASSESSMENT, WHO Regional Publications, European Series, No. 85, Copenhagen, 2003.
3. WHO. GUIDELINES FOR DRINKING – WATER QUALITY, World Health Organization, 3rd Edition, Geneva, 2011.
4. WHO. HEALTH-CARE WASTE. World Health Organization
5. WHO. FOOD SAFETY. WHO. Basic Food Safety for Health Workers. Geneva, World Health Organization
6. ILSI. DIET, PHYSICAL ACTIVITY AND HEALTH, ILSI, Europe
7. WHO. DIET, NUTRITION AND THE PREVENTION OF CHRONIC DISEASE**,** WHO Technical Report Series 916, Geneva, 2003.
8. WHO. Hand Hygiene. WHO guidelines on hand hygiene in health care, WHO, Geneva, 2009
9. WHO. PROMOTING MENTAL HEALTH. CONCEPTS, EMERGING EVIDENCE, PRACTICE. World Health Organization 2005.
10. Gordis L. EPIDEMIOLOGY. 5th Edition. Saunders. Elsevier. 2013.
11. Ladou J, Harrison R. Occupational and Environmental Medicine. USA: McGraw-Hill Education, 2014.
12. Murray PR, Rosenthal KS, Pfaller MA. Medical microbiology. 7th edition, Elsevier, 2013.
13. Goldsteen RL, Dwelle T, Goldsteen K. Introduction to PublicHealth: Promises and Practice. 2nd ed. New York : Springer Publishing Company. 2014

Additional

1. http:/www.efsa.europa.eu
2. http:/www.codexalimentarius.net
3. http:/ec.europa.eu/food
4. http:/www.who.int
5. http:/www.eufic.gov
6. http:/www.cdc.gov

Number of active classes	**Theoretical classes:** 45	**Practical classes:** 15
Teaching methods: Lectures, practice, essay		

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	70
Practices	5	Oral	
Colloquium			
Essay	20		

Course title: Basics of Physical Medicine

Course status: compulsory

ECTS Credits: 2

Condition: –

Course aim
Adopting principles of theory and practice of modern rehabilitation.

Expected outcome of the course:
Providing medical rehabilitation with the aim of preventing disability. Identification of anomalies – hereditary or consequences of diseases or injuries, in the form of temporary or permanent anatomical, functional or psychological loss, disorder, or reduced structure or function in children and adults. Adopting skills to provide help to different categories of disabled persons.

Course description
Theoretical education
Medical rehabilitation – role and importance in modern medicine and health care (with special reference to the disability and its prevention). Basic principles of kinesitherapy and work therapy. Basic principles of physical therapy procedures. Specific process of habitation and rehabilitation of children with disabilities. Therapeutic procedures in children with cerebral paralysis syndrome and thorax deformities. Basic principles of medical rehabilitation of patients after locomotor apparatus injuries, and peripheral nerve lesions. Basic principles of medical rehabilitation of patients with vertebral syndrome. Basic principles principles of medical rehabilitation of patients with inflammatory and degenerative rheumatism. Basic principles of medical rehabilitation of patients after amputation (orthotic and prosthetic aid in medical rehabilitation).Basics of medical rehabilitation of patients with hemiplegia, paraplegia and quadriplegia.

Practical education
Introduction to specialized institutions for medical rehabilitation. Evaluation of patients in medical rehabilitation program. Basic principles of practical application of physical therapy procedures in medical rehabilitation. Medical rehabilitation of patients after trauma and polytrauma and patients after limb amputation. Medical rehabilitation of patients with peripheral nerve lesions. Habilitation of children with cerebral paralysis. The most common habilitation and rehabilitation conditions in children and adolescents. Medical rehabilitation of patients with chronic lumbal and cervical syndrome. Medical rehabilitation of patients with hemiplegia, paraplegia and quadriplegia. Medical rehabilitation of patients with inflammatory and degenerative rheumatic diseases.

Literature
Compulsory:
1. DeLisa JA, Gans BM, Walsh NE, Bockenek WL, Frontera WR, Geiringer SR et al. Physical Medicine & Rehabilitation: Principles and Practise. 4th ed. New Jersey: Lippincott Williams & Wilkins, 2005.
Additional:
1. Frontera WR, Silver JK, Rizzo TD. Essentials of Physical Medicine and Rehabilitation. 2nd ed. Philadelphia: Elsevier, 2008:1232.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 15
Teaching methods: Lectures, practical work, consultation hours		

Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	30	Written	40
Practices	30	Oral	
Colloquium			
Essay			

Course title: Ophthalmology

Course status: compulsory

ECTS Credits: 2

Condition: Pharmacology; Neurology; Internal medicine; Pediatrics

Course aim

The aim of this course is to provide medical knowledge of anatomy, vision function and eye diseases; identify most important ophthalmology problems important for vision protection and blindness prevention.

Expected outcome of the course:

Theoretical knowledge on the function of vision, optics and eye refraction, oculomotor balance and its disorders, diseases and injuries of the outer eye (eyelids, lacrimal apparatus, cornea), the inner eye (anterior eye chamber, uvea, retina, papilla, visual nerve), orbital and intracranial pupilomotor fibers and centres, diagnostics, prognosis and medication and surgical treatment of eye diseases and anomalies. Ability to identify the most important eye defects, diseases and injuries that endanger the eye function and vision; to be able to provide appropriate treatment and to refer the patient to the ophthalmologist or surgeon.

Course description

Theoretical education

1. Epidemiology of blindness and visual impairment and the importance and role of vision. Association between eye and general diseases. 2. Eyelids: structure, physiology, skin disorders, vascular disorders, bacterial and viral infections, inflammations and gland disorders, shape, position, mobility, and tumors of the eyelids. Treatment principles. 3. Lacrimal apparatus – anatomy, physiology of tear secretion. Dry and wet eye, inflammation, tumors, diagnosis and treatment. 4. Conjunctiva – anatomy, physiology, types hyperemia, eye inflammations (bacterial, viral, allergic). The differential diagnosis of the red eye. Degenerative diseases and tumors of the conjunctiva. Treatment. 5. Cornea – anatomy and physiology, disorders of the size and curvature. Defects of the cornea, inflammations – bacterial, viral, fungal. Disorders of transparency, edema, scars and degeneration. Corneal surgery. 6. Sclera – function and disorders, inflammations – bacterial, immunologic, degenerative and their prevention and treatment. 7. Front uvea and ciliary body, anatomy, physiology. Anterior and posterior ocular chambers. Front diffuse uveitis. Purulent inflammation of uvea – endophthalmitis and panophthalmitis – diagnosis and treatment. 8. Physiology of intraocular pressure. Aqueous humor secretion and swelling. Primary, secondary, and congenital glaucoma. Closed-angle glaucoma- acute glaucoma. Primary open-angle glaucoma. Diagnosis and treatment. 9. Crystalline lens – embryology, physiology and pathology. Congenital and acquired cataract. Diagnostic surgical treatment and rehabilitation of vision, intraocular artificial lens. 10. Ocular fundus – chorioretinal complex, physiology and function of the retina and choroid. Semiology of changes of the ocular fundus. Diseases of the uvea and rear-choroiditis, chorioretinitis, uvea and retinal tumors, diagnosis and treatment. 11. Retinal diseases – vascular, inflammatory, degenerative. 12. The vitreous body and its disorders. Hemophthalmos. 13. Orbit, vascular, endocrine diseases, purulent inflammations and tumors. Diagnosis and treatment. 14. Optic nerve, visual pathway, diseases of the optic nerve and visual field disorders. Iris and pupilomotor reaction. 15. Refraction of the eye – refractive errors, nearsightedness, farsightedness, astigmatism. Eyeglasses, contact lenses, refractive surgery. 16. Eye motility, oculomotor functions, binocular vision. Disorders of the ocular balance, strabismus, amblyopia, paralytic strabismus. 17. Mechanical, physical and chemical eye and orbital injuries, emergency conditions and principles of diagnosis and treatment. 18. Current therapeutic modalities and surgery in ophthalmology – video presentation.

Practical education

1. Eyeball – anatomy.
2. History taking in ophthalomologic patients. Principal problems, external examination, inspection.
3. Vision acuity measurement, near and distance measurement in each eye.
4. Eyelids – anatomy, fissures, inspection, palpation (upper eyelid ectropion).
5. Lacrimal apparatus – lacrimal glands, drainage pathways (fluorescein test, Schirmer test, palpation – massage).
6. Examination of the conjunctiva, anatomy, types of hyperemia, conjunctival, ciliary.
7. Local therapy – drops, ointment, removal of foreign body from the conjunctiva, eye washing.
8. Examination of the cornea and sclera, focal illumination, fluorescein test sensitivity.
9. Anterior eye chamber (depth and content) . Iris – color, structure. Iridocyclitis, ciliary hyperemia. Pupil dilating, reactions to light, direct – indirect.
10. Biomicroscopy of the anterior eye chamber – demonstration and analysis of physiological properties of tissues, pathological changes, erosion, edema, corneal scars.
11. Digital measurement of the intraocular pressure (IOP), aplanatic tonometry, gonioscopy, visual field. Acute angle-closure glaucoma – a case report.
12. Orbit, cranial nerve palpation. Protrusion – exophtalmos – exophtalmometriy MR, CT.
13. White pupils – leukocoria, cataract – iris shadow, pupil illumination and parallax, aphakia, pseudophakia.
14. Ocular fundus – anatomy, semiology of the retina. Direct ophthalmoscopy, indirect ophthalmoscopy, biomicroscopy of the ocular fundus.
15. Iris dilation, direct ophthalmoscopy, red reflex, parallaxis.
16. Fluorescein angiography. Eye diseases – ultrasound diagnotics.
17. Functional and diagnostic tests: color vision, vision field – computerized perimetry, adaptation to darkness. Electrophysiological methods (ERG, EMG, EOG).
18. Subjective and objective determination of refraction, vision, various glasses.
19. Eye mobility, the primary position, the visual axis. Detection of strabismus and amblyopia, Hirsberg test, cover test, test for diplopia methods of penalizing (amblyopia).
20. Eye injuries (chemical, mechanical, physical): first aid.
21. Watching eye surgeries on the monitor.

Literature

Compulsory

1. Kanski JJ. Clinical Ophthalmology. Oxford. Butterworth-Heinemann Ltd, 1994.
2. Khaw PT, Shah P, Elkington AR. ABC of Eyes, Fourth Edition. London. BMJ books, 2004.
3. American Academy of Ophthalmology: Set of books of Ophthalmology:2017.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 15

Teaching methods:
Lecture, practical work, multimedial presentations.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	20
Practices	20	Oral	30
Colloquium	10		
Essay			

Course title: Clinical Practice

Course status: compulsory

ECTS Credits: 12

Condition: completed courses of Endodontology 2, Prosthodontics – Clinic 2, Oral Surgery and Implantology 2, Periodontology 2, Maxillary Orthopedics, Pediatric Dentistry

Course aim

Students are expected to improve their clinical competencies in all areas of dental medicine, under constant supervision.

Expected outcome of the course:

Knowledge:

- Students should be competent in communication with patients and their families, their associates and colleagues in accordance with their age, as well as their social and cultural background.
- Students should be able to perform routinely all the activities and measures within primary dental health care
- They posses a wide range of basic and supplementary clinical competences to achieve and maintain oral health of their patients
- Studenst are expected to make decisions, clinical opinions and evaluation in order to make valid differential, preliminary and definitive diagnoses, based on the interpretation of results of clinical and radiological examination, and other available diagnostic tests, always taking into account social and cultural background of patients
- Be aware of their own limitations and be able to refer their patients to a specialist if necesarry
- understand the meaning and importance of public health care guidelines and the need for dental health care of the individual and community; be able to constantly perform preventive measures and health promotion in order to improving oral health on all levels
- are required to obtain and store properly documentation regarding the medical, oral and dental status of the patients; this includes all the information relevant for evaluation of oral and dental status of patients
- Students should be aware of and behave in accordance with ethical standards
- They should also be familiar with and respect modern legal regulations relating to everyday clinical practice.

Course description

Theoretical education

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Practical education

- Operative dentistry – 110 classes
- Dental Prosthetics – 110 classes
- Oral medicine and periodontology – 100 classes
- Oral surgery – 100 classes
- Pediatric and preventive dental medicine – 100 classes
- Maxillary orthopedics – 50 classes
- Maxillofacial surgery – 30 classes

Number of active classes	**Theoretical classes:** –	**Practical classes:** **Other classes:** 600

Teaching methods:

Student can attend clinical practice on specific clinical word, after completing all the courses regarding this branch of dental medicine.
During clinical practice students are under constant supervision of teachers or associates of various areas of dental medicine. Clinical practice includes improvement of student's clinical skills, demonstration of clinical competencies and consultation.
Teachers and associates keep records of student's attendance and activities. After completing all provided activities, Chief of the Chair of Dental Medicine is signing and entering ECTS credits into students Index.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures		Written	
Practices		Oral	
Colloquium			
Essay			

Course title: Basics of Periodontal Surgery

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

The aim of this course is to acquaint students with options of surgical treatment and therapy modalities offered by modern periodontal surgery.

Expected outcome of the course:

Acquiring knowledge on diverse therapy procedures in the field of surgical treatment or periodontitis.
Acquiring basic knowledge and manual skills in handling surgical instrumentation by working on models, attending and assisting during surgical procedures.

Course description

Theoretical education

1. Indications and contraindications for periodontal surgery
2. Types of surgical procedures on affected periodontium
3. Resective surgical methods for the elimination of periodontal pockets
4. Regenerative surgical methods for the elimination of periodontal pockets
5. Guided tissue regeneration
6. Surgical methods for the elimination of mucogingival deformities
7. Esthetic periodontal surgery
8. Periodontal surgery in pre-prosthetic preparation of the patient
9. Complex periodontal-implant therapy
10. Complications of periodontal surgery
11. Outcome of surgical treatment and maintenance of the results

Practical education

1. Introduction to periodontal surgery;
2. Indications and contraindications for periodontal surgery;
3. Instruments and materials in periodontal surgery;
4. Preoperative preparation of the patient;
5. Surgical suture techniques. Working on models;
6. Passive or active participation in surgical procedures

Literature

Compulsory

1. Newman MG, Takei HH, Klokkevold PR, Caranza FA. Carranza's clinical periodontology. Elsevier, 2014

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:
Theoretical and practical

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	
Practices	20	Oral	60
Colloquium			
Essay	10		

Course title: Health Promotion			
Course status: elective			
ECTS Credits: 3			
Condition: –			
Course aim To capacitate students in understanding the roll of health and other sectors of the society and their active cooperation in the health promotion process.			
Expected outcome of the course: Acquiring skills to work with health and other professionals, groups and individuals in the community in order to implement health promotion.			
Course description *Theoretical education* Definition and term of health promotion, principles and strategies. Health promotion and health education in strategic documents. Settings for health promotion (WHO health promotion settings approach – „Healthy cities", Healthy school", „Healthy kindergarten"). Population and high risk strategies in the prevention of non-communicable diseases. Behavioral and biological risk factors for non-communicable diseases. Health promotion in prevention of communicable diseases. Behavioral models of health decision-making and behaviors. Health education – definitions, aims, methods and tools. Health promotion and prevention programme structure. Content and organization of work in health promotion centers in Institutes of Public Health. Evaluation of the health promotion programmes. *Practical education* Health education tools and methods, health promotion and prevention programme, action plan, health promotion campaigns.			
Literature *Compulsory* 1. Poland B, Green LW, Rootman I, editors. Settings for health promotion: Linking theory and practice. Thousand Oaks, CA: Sage; 2000. 2. Glanz K, Rimer BK, Viswanath K, editors. Health behavior and Health Education. 4h edition. San Francisco, CA: Jossey-Bass A Wiley imprint; 2008.			
Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30	
Teaching methods:			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	5	Written	
Practices	15	Oral	55
Colloquium			
Essay	25		

Course title: Healthcare Management

Course status: elective

ECTS Credits: 3

Condition: –

Course aim
Introduction with the healthcare management principles, as well as with leadership skills aimed at healthcare work efficiency improvement

Expected outcome of the course:
Abilities and skills in understanding individual segments of the organisation and organisation as a whole, team work skills, knowledge of leadership skills

Course description
Theoretical education
– Human resources in healthcare
– Importance of different healthcare systems
– Importance of planning in healthcare
– Organisational behaviour and management
– Management in healthcare system
– Importance of economics and financial management in healthcare system
– Assessment of health needs in healthcare
– Importance of cost analysis in healthcare
– Ethics and Law in healthcare system management
– Health policy and decision-making
– Healthcare marketing,
– Healthcare leadership
– Strategic management and changes

Practical education
– Written assignments, group and individual activities
– Needs plan, cost analysis, strategic planning, human resources

Literature
Compulsory
1. Basics of Healthcare Management. Published by the Ministry of Health of RS. Authors: Bjegović **Mikanović Vesna et al.**, April 2011, Belgrade
Additional
2. Psychology in Management. Abraham Maslow. Published by Adižes Novi Sad, 2004.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:
Lectures, exercises, interactive teaching, seminars.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	50
Practices	10	Oral	
Colloquium			
Essay	30		

Course title: Professionalism in Healthcare

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

Introduction with importance of professionalism in work, personal role management, contact with patient and patient's family, importance of empathy and authority for the purposes of increased efficiency of outcomes in primary tasks of physicians and other healthcare professionals.

Expected outcome of the course:

Abilities and skills in organisational role analysis, abilities in maintaining professionalism and empathy in performance of primary tasks of physicians and other healthcare professionals.

Course description

Theoretical education

- Professionalism in healthcare organisations
- Human resources and professionalism
- Challenges of medical profession today (social and political context)
- Organisational role analysis
- Organisational culture and primary task
- Authority, power and competence in professional role
- Welfare and professionalism

Practical education

- Practical exercise and group work – Organisational role analysis
- Organisational norms and primary task – exercise
- Authority and power in professional role – group work
- Written assignments on chosen topics

Literature

Compulsory

1. ON BEING A DOCTOR, Redefining medical professionalism for better patient care. Rebecca Rosen and Steve Dewar, ISBN 1857174755, www.kingsfund.org.uk/publications

Additional

1. Group Processes. Rupert Brown. Published by Naklada Slap. Zagreb, 2006. (Grupni procesi. Rupert Brown. Izdavač Naklada Slap. Zagreb, 2006)
2. Mirko Štifanić, Iva Rinčić. Ethics and Professionalism Now (Etičnost i profesionalizam smjesta), JAHR, Vol. 3, No. 5, 2012. UDK 17:614.252.

Number of active classes	**Theoretical classes:** 15	**Practical classes:** 30

Teaching methods:

Lectures, exercises, interactive teaching, seminars.

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	50
Practices	10	Oral	
Colloquium			
Essay	30		

Course title: Salivary Theranostics

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

The aim of the course is to acquaint students with the importance and possibilities of salivary diagnostics of oral and general diseases, as well as the possibilities of local and systemic oral delivery of active medical substances.

Expected outcome of the course:

Knowledge: Allows the student to understand the importance, role and capabilities of salivary theranostics in maintaining oral and general health.

Skills: To master basic knowledge in salivary diagnostics that plays an important role in the early detection and prevention of many oral and systemic diseases in a rapid and non-invasive manner.

Familiarity with saliva collection techniques, which is a simple, repeatable and inexpensive diagnostic source that can be used to diagnose and monitor various diseases in real time. Detection, knowledge, development and validation of saliva biomarkers that have the potential to reach clinical practice. Mastering technologies and systems that have the potential to enable screening, early detection, prognosis and monitoring of various diseases. Expanding the diagnostic potential of saliva from the oral cavity to the entire physiological system, including personalized individual drug applications

Course description

Theoretical education

1. Introduction to the subject of salivary theranostics; The importance of salivary theranostics for oral and systemic health
2. Saliva as a diagnostic fluid
3. Salivary biomarkers in the diagnosis of caries
4. Salivary biomarkers in the diagnosis of periodontal disease
5. Salivary biomarkers in the diagnosis of general diseases
6. Application of microfluidic systems in salivary theranostics
7. The concept of personalized medicine
8. Extraoral microfluidic diagnostic systems
9. Intraoral microfluidic diagnostic systems
10. Intraoral theranostic systems
11. Local delivery of oral medicine
12. Buccal delivery of drugs in the oral cavity
13. Sublingual oral drug delivery
14. Salivary theranostics in pediatric dentistry
15. Salivary theranostics in persons with special needs

Practical education

Practical classes that accompany the theoretical instruction program will be held at the appropriate Chair of the School of Medicine to familiarize the students with the importance of salivary theranostics, as well as to discuss current knowledge of oral hygiene methods and materials.

Literature

Compulsory

1. Koch G, Poulsen S: Paediatric Dentistry – a clinical approach. Copenhagen: Munksgaard, 2001.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Lectures, Practice

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	20	Written	20
Practices	20	Oral	40
Colloquium			
Essay			

Course title: Orofacial Pain

Course status: elective

ECTS Credits: 3

Condition: –

Course aim

The aim this program is research and clinical management of orofacial pain, diagnosis and treatment of a wide variety orofacial pain.

Expected outcome of the course:

Knowledge: The program focuses on acquisition of strong clinical skills in evaluation, diagnosis and treatment of a wide variety orofacial pain disorders.

Skills: During this time they work on clinical interviewing skill acquisition, head and neck examination skills, gaining solid diagnostic skills. They will also begin, (treatment procedures), to work with splints, physical medicine techniques, health psychology and pharmacotherapy.

Course description

Theoretical education

1. Complete clinical history
2. Complete head and neck examination. Imaging and laboratory technique with interpretation
3. Classification of Orofacial Pain
4. Differential diagnosis of orofacial pain disorders
5. Diagnostic procedures. Behavioral and psychosocial assessment
6. Orofacial pain associated with disorders of the temporomandibular Joint (TMJ)
7. Orofacial pain associated with regional muscles. Masticatory musculoskeletal pain
8. Orofacial pain due to disorders of dentoalveolar and associated intraoral structures (Dental pain and non-dental pain)
9. Orofacial pain associated with lesion/disorders of the cranial nerves. Neuropathic pain
10. Interdisciplinary treatment planning
11. Treatment procedures
12. Pharmacotherapy and chemical abuse management
13. Physical medicine modalities, therapeutic exercises, and orthotics
14. Principles of Research in Orofacial Pain
15. Clinical Case Presentations

Practical education

The program involves historical data, clinical, didactic, and research training, imaging assessment; interview and clinical examination.

Literature

Compulsory

1. Yair Sharav, Rafael Benoliel 2008 Orofacial Pain and Headache. Elsevier, 2008.

Number of active classes	**Theoretical classes:** 30	**Practical classes:** 15

Teaching methods:

Lectures; Practices

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	60
Practices	10	Oral	
Colloquium			
Essay	20		

Course title: Otorhinolaryngology

Course status: compulsory

ECTS Credits: 4

Condition: –

Course aim

Making students understand etiopathogenesis, clinical features, introducing them into diagnostic procedures and therapies in otorhinolaryngological ailments and the ailments of the head and neck.

Expected outcome of the course:

Unsupervised performance of otorhinolaryngological clinical examination, diagnosing and doing the procedure in ENT. Making diagnoses on the basis of radiological and functional findings by themselves. Consulting, advising and controlling ENT patients. Training on medical manikins: injuries, stopping nose bleeding, ear rinsing, conicotomy, endotracheal intubation, nasogastric sonde placing. Casuistics.

Course description

Theoretical education

1. Anatomy and physiology of the ear. Diagnostics of otological diseases. 2. Injuries of the ear. Foreign bodies of the external hearing canal and cerumen. 3. Acute inflammation of the outer and middle ear. 4. Chronic inflammation of the middle ear. 5. Otogenic complications. 6. Inner ear disease. Benign and malignant tumors of the outer, middle and inner ear. 7. Audiology. Vestibulology. 8. Anatomy and physiology of the nose and paranasal cavities. Congenital and acquired malformations of the nose. 9. Foreign body in the nose. Injuries of the nose. Bleeding from the nose. Inflammation of the skin of the nose. 10. Facial injuries. 11. Acute and chronic inflammation of nasal mucosa. Allergic rhinitis. Nasal polyps. 12. Acute and chronic inflammation of the paranasal cavities. Complications associated with paranasal cavity inflammations. 13. Rare diseases of the nose and paranasal cavities. Tumors of the nose and paranasal cavities. 14. Anatomy and Physiology of oral cavity and pharynx. Reticulo-endothelial function. Hypertrophy of the lymphatic ring. Taste disorders. 15. Congenital anomalies of the oral cavity and pharynx. Injuries of oral cavity and pharynx. Inflammatory diseases of the oral cavity. Autoimmune diseases of the oral cavity. 16. Tonsillar problem. Acute and chronic inflammation of pharyngeal mucosa. Pharyngeal abscesses. 17. Diseases of the tongue. Tumors of oral cavity. Tongue tumors. 18. Neurogenic and non-infectious pharyngeal diseases. 19. Tumors of the epipharynx and mesopharynx. 20. Anatomy and physiology of the larynx. Diagnostic methods in laryngology and phoniatrics. Symptoms of larynx diseases and voice and speech disorders. Congenital malformations of the larynx. 21. Laryngeal edema. Laryngeal paralysis. Laryngeal trauma. 22. Acute and chronic inflammatory processes of the larynx. 23. Benign tumors of the larynx. Pseudo tumors of the larynx. Malignant tumors of the larynx and hypopharynx. 24. Basics of phoniatrics. 25. Foreign bodies of the laryngotracheal tree. Stenosis of the larynx and trachea. Coniotomy and tracheotomy. 26. Esophageal motility disorders. Dysphagia. Esophageal diverticulum. Injuries and foreign bodies of the esophagus. Esophageal tumors. 27. Topographic anatomy of the neck. Congenital cysts and fistula in the neck. Lymphadenitis colli. Neck abscesses. Neck trauma. 28. Lymph nodes in the neck. Neck lymph node metastases. 29. Anatomy and physiology of salivary glands. Acute and chronic inflammatory processes of salivary glands. 30. Benign and malignant tumors of the salivary glands.

Practical education

1. Introduction to practical otorhinolaryngology classes. Anamnesis. 2. Working place (head mirror, light source, the position of patients, optical aids, directoscop, microscope). 3. Examination of the nose. 4. Examination of the mouth and oropharynx. 5. Examination of the ear. 6. Examination of the larynx and the neck. 7. Interventions in rhinology (extraction of foreign bodies of the nose, method of evacuation of secretions from the nose and sinuses according to Protz, Aerosol Therapy of rhinosinusitis, application of nose drops). X-ray of the nose and paranasal cavities- the interpretation of the results. 8. Stopping the nose bleeding. 9. Rhinomanometry, allergy testing of patients. Patients with injuries of the nose and sinuses, reposition of nasal bones. Displaying patients with frontoenthmoidal injuries. Patients with sinusogenic complications. 10. Functional endonasal sinus surgery and surgery of paranasal cavities. Patients with benign and malignant tumors of the nose and sinuses. 11. Interventions in the oral cavity and pharynx, extraction of foreign bodies. Interventions in the oral cavity and throat, incision of the peritoneal abscess. 12. Patients with acute and chronic tonsilitis. Patients with phlegmon and neck abscess. 13. Patients with pharyngeal tumors, biopsy of the tumor in oral cavity and pharynx. Diagnostic procedures and principles of surgical treatment of patients with throat tumors. 14. Patients with facial injuries, 15. X-ray diagnosis of parapharyngeal space tumors. 16. Patients with salivary gland tumors. 17. Post-operative care of patients after surgery in the region of oral cavity and maxilla. Diagnosing throat diseases, clinical diagnostics, ultrasound, X-ray diagnosis. Patients with cervical metastases. Neck dissection. 18. Rinsing foreign bodies and cerumena from external ear canal. Local therapy of ear surpuration. Management of outer and middle ear injuries, incision of othematoma, setting the sterile strips. Paracentesis. 19. X-Ray diagnostics of otological diseases, interpretation of basic X-ray scans. Politzer methods. Quantitative and qualitative methods for hearing evaluation. Evaluation of hearing through whispering and loud speech. Tuning fork tests (Weber, Rhinne, Schwabach, Gele). tonal audiometry, types of hearing impairments, types of audiograms. Impedancemetry, tympanometry and typical curves, stapedius reflex. 20. Examination of vestibular apparatus, orthostatic and dynamostatic tests, caloric test (Dix Hallpike), electronystagmography. 21. Directoscopy of the larynx, laringomicroscopy. Diagnostics of laryngeal and hypopharyngeal tumors. X-ray diagnosis of the diseases of the larynx and hypopharynx. 22. Ultrasound diagnostics of the neck. Biopsy of laryngeal and hypopharyngeal tumors. 23. Treatment of acute inflammation of the larynx, inhalation therapy. Treatment of acute laryngeal edema in children and adults, subglottic laryngitis, Quincke laryngeal edema. 24. Endoscopic surgery of laryngeal tumors and pseudotumors. 25. Surgical therapy of tumors of the larynx, post-operative care of patients after laryngectomy, nasogastric probe, tracheostoma, rehabilitation of swallowing. 26. Videostroboscopy, dysphonia treatment. Speech of patients underwent laryngoectomy, laryngophone, esophageal voice and speech, vocal prosthesis. 27. Foreign bodies in the airways, diagnosis and therapy. 28. Tracheostomy, demonstration of surgical intervention, postoperative care of patients underwent tracheotomy, replacement of cannila. 29. Foreign bodies of the esophagus, diagnosis and extraction. 30. Corrosive injuries of the oral cavity, pharynx and esophagus, first aid in corrosive injuries, diagnosis and treatment of corrosive injuries, therapy of late complication of corrosive injuries of the esophagus.

Literature 1. Probst R, Grebers G, Iro H. Basic Otorhinolaryngology. Thieme, 2006.			
Number of active classes	**Theoretical classes:** 30		**Practical classes:** 30
Teaching methods: Theoretical lectures, seminars, practical			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	20
Practices	20	Oral	50
Colloquium			
Essay			

Course title: Forensic Medicine

Course status: compulsory

ECTS Credits: 3

Condition: Surgery

Course aim

The aim of this course is to provide students with knowledge and skills to understand and correlate medicine and law in order to provide personal physical and psychological integrity. Legal status of dentistry practice, ethical and legal responsibility of medical professionals. Use of acquired knowledge in practice. Development of critical thinking skills and skills necessary for scientific research.

Expected outcome of the course:

Practical application of theoretical knowledge. Examination of injured persons, classification and qualification of injuries. Issuance of medical documents – death certificates and medical reports of injuries. Taking biological samples for purpose of identification and toxicology screening. Use of medical knowledge in trial cases. Understanding the principles of causation – complex relations between primary cause (injury or disease), course of injury or disease along with all possible complications, and final consequences (complete or incomplete recovery vs. death).

Course description

Theoretical education

1. Brief history of forensic medicine. Basic tasks of forensic medicine. Forensic medicine in relation to other medical and academical branches, primarily law.
2. Diseases and injuries. Deaths due to natural causes. Classification of injuries. Medico-legal aspects of natural death. Relationship between injuries and personal characteristics of the injured. Morbous injuries and traumatic diseases.
3. Dying and death, terms and definitions. Forensic classification of death. Concept of brain death. Medicolegal aspects of transplantation.
4. Tanatology. Postmortem changes. Time of death.
5. Injury related organism reactions. Vital, agonal and postmortal injuries. Embolism. Shock.
6. Mechanical injuries – classification and characteristics. Common and specific features of wounds and injuries. Classification.
7. Physical injuries. Hyperthermia and hypothermia; the effect of heat and cold; electrocution; lightning injuries; radiation injuries.
8. Asphyxia. External and internal autopsy findings. Suffocation. Strangulation. Pressure on the chest and abdomen. Environmental suffocation and suffocating gasses.
9. General and special toxicology. Definitions and classification of poisons. Caustic poisons. Pesticides. Inhalants. Strychnine. Lead, iron and mercury poisoning. Mushroom poisoning. Convulsion poisons. Drugs, chemical warfare.
10. Drug addiction. Opioids, psychostimulants, hallucinogens.
11. Ethyl alcohol – forensic aspects.
12. Craniocerebral injuries – classification and biomechanics. Types of cranial fractures, translation and rotation head injuries, primary and secondary brain injuries.
13. Nutritional, biological and psychic injuries.
14. Accident, suicide, homicide. Suicide vs. homicide – injury patterns. Definition.
15. Forensic expert, legal provisions and basics of medicolegal expertise.
16. Forensic qualification of injuries. Legal provisions and medical criteria. Forensic expertise in civil proceedings (pain, fear, etc.).
17. Legal status of medical practice. Medicolegal aspects of medical interventions.

Practical education

1. Institute of Forensic Medicine – introduction to basic fields of work.
2. Work in autopsy room

– External body examination. Identification. Time and cause of death.
– Description of postmortem changes.
– Evidence of injuries. Evidence of recent medical and/or surgical interventions.

3. Forensic anthropology and identification. Identification in mass accidents.
4. Medical criminology, biological traces. DNA analysis. Paternity testing.
5. Chemical and toxicology laboratory: GC, GC/MSD, HPLC and UV spectrophotometrics use in forensic chemistry. Methodology of alcohol abuse expertise.
6. Medicolegal expertise (findings, discussion and conclusion) of court files. Elements of analysis and synthesis. Relevant findings in reports, forensic issues and reports.
7. Video presentation of postmortem changes, mechanical injuries, physical injuries, craniocerebral injuries and asphyxia.

Literature

Compulsory

1. DiMaio D, DiMaio VJ. Forensic pathology (Practical Aspects of Criminal and Forensic Investigations), second Edition. CRC press, 2001.
2. Mason JK. Forensic medicine (an illustrated reference). Chapman and Hall medical, 1993.

Number of active classes	**Theoretical classes:** 15		**Practical classes:** 15
Teaching methods:			
Student activity assessment (maximally 100 points)			
Pre-exam activities	**points**	**Final exam**	**points**
Lectures	40	Written	30
Practices	20	Oral	
Colloquium			
Essay	10		

Course title: Graduation Paper Course (research topic development)

Course status: compulsory

ECTS Credits: 10

Condition: –

Course aim

- students develop their own *research design independently*
- students conduct literature searches independently
- students apply adequate methodology of scientific research
- students apply knowledge from the field of statistical data processing and the appropriate tabular and graphical presentation

Expected outcome of the course:

Course description

Working under the supervision of mentor:

- definition of research theme (paper can be theoretical, experimental or professional)
- research design
- literature search
- conduction of research
- assisting in statistical data processing
- interpretation of given results and discussion
- training for independent preparation and defence of graduation thesis.

Procedure of application of the graduation thesis is determined by the Bylaw on the Graduation Paper Preparation at Undergraduate, Undergraduate Academic and Integrated Studies at the Faculty of Medicine in Novi Sad, and technical instructions are given on the Faculty web-site.

Literature

1. Rašković A, et al. Authorized handouts for Introduction to scientific research work.
2. Stewart A. Basics statistics and epidemiology. A practical guide. Abingdon, UK: Radcliffe Medical Press Ltd; 2002.
3. Harris M, Taylor G, editors. Medical statistics made easy, third edition. Banbury, UK: Scion Publishing; 2014.
4. Moore DS, editor. The basic practice of statistics, third edition. New York: W.H. Freeman and Company; 2004.

Other relevant literature recommended by a mentor.

Number of active classes	**Theoretical classes:**	**Practical classes:** **Other classes:** 75

Teaching methods:

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Activity in lectures		Written exam	
Activity in practice classes		Oral exam	
Colloquium(s)			
Essay(s)			

Course title: Graduation Paper (preparation and defence)

Course status: compulsory

ECTS Credits: 10

Condition: –

Course aim

- to practically apply knowledge acquired during studies
- to apply the methodology of scientific research to an actual problem
- to apply knowledge from the field of statistical data processing and the appropriate tabular and graphical presentation
- to acquire the ability to search for appropriate literature data by searching national and international databases
- to acquire the ability to present results of a research paper in a written form and oral defence.

Expected outcome of the course:

- successful defence of the Graduation paper and competence for further scientific-research work and independent publishing of the results of observation and research
- acquisition of competencies which students will use as educators in the process of continuing education.

Course description

Preparation and defence of the Graduation paper represent the last phase of the Graduation paper writing. After preparatory conversations with a mentor, which include defining the topic and research design and receiving instructions on how to search for relevant literature, and after data gathering and statistical data processing, a student starts to prepare independently for paper writing and defence. Students prepare the Graduation paper in a form which consists of the following chapters: introduction, aims, material and methods, results, discussion, conclusion and literature. The technical style sheet of the paper is determined by the Bylaw on the Graduation Paper Preparation at Undergraduate, Undergraduate Academic and Integrated Studies at the Faculty of Medicine in Novi Sad.

The paper requires two positive reviews. Students deliver the final hardbound version of the paper and the reviewers' report to the Student Affairs Office in order to set the date for the defence.

At the end, a student defends the paper in an oral presentation before a three-member committee. The defence is oral and public. The Committee assesses the Graduation paper by giving a grade from 5 to 10, and a received positive grade (from 6 to 10) enters a student's average grade. A paper which is not defended successfully receives the grade 5.

After the defence, all documents are submitted to the Student Affairs Office in order to issue the Higher Education Degree and Academic Title Acquisition Certificate.

Literature

Literature is recommended by a mentor.

Number of active classes	**Theoretical classes:**	**Practical classes:** **SRW:** 150

Teaching methods:

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Activity in lectures		Written exam	
Activity in practice classes		Oral exam	
Colloquium(s)			
Essay(s)			

Sixth year

CLINICAL PRACTICE (600 HOURS)

OPERATIVE DENTISTRY (110 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

DENTAL PROSTHETICS (110 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

ORAL MEDICINE AND PERIODONTOLOGY (100 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

Sixth year

CLINICAL PRACTICE (600 HOURS)

OPERATIVE DENTISTRY (110 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

DENTAL PROSTHETICS (110 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

ORAL MEDICINE AND PERIODONTOLOGY (100 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

ORAL SURGERY (100 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

PEDIATRIC AND PREVENTIVE DENTISTY (100 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

MAXILLARY ORTHOPEDICS (50 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

MAXILLOFACIAL SURGERY (30 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

ORAL SURGERY (100 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

PEDIATRIC AND PREVENTIVE DENTISTY (100 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

MAXILLARY ORTHOPEDICS (50 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

MAXILLOFACIAL SURGERY (30 hours)

date from _____ to _____

....
(date) (teaching base) (signature and facsimile of the mentor)

UNIVERSITY OF NOVI SAD
FACULTY OF MEDICINE
Number: _____

NAME AND SURNAME OF THE STUDENT

_____

STUDY PROGRAM _____

STUDENT REGISTRATION (INDEX-BOOK) NUMBER _____

THE DURATION OF THE STUDY PROGRAM (TOTAL NUMBER OF SEMESTERS)

_____

THE APPOINTED STUDENT ATTENDED THEORETICAL AND PRACTICAL CLASSES (TOTAL NUMBER OF SEMESTERS)

_____

THIS DOCUMENT CONFIRMS THAT THE APPOINTED STUDENT ATTENDED THEORETICAL AND PRACTICAL CLASSES ACCORDING TO THE AFOREMENTIONED STUDY PROGRAM.

VERIFIED BY AN AUTHORIZED PERSON _____

....
(date) (signature of an authorized person)

School stamp