

University of  
*Ljubljana*  
Faculty of  
Medicine



**PRESENTATION DOCUMENT**

**UNIFORM SECOND-LEVEL MASTER'S PROGRAM**

**DENTAL MEDICINE**

Academic Year 2023/24

**Title**

PRESENTATION DOCUMENT  
UNIFORM SECOND-LEVEL MASTER'S  
PROGRAM MEDICINE

**Publisher**

University of Ljubljana, Faculty of Medicine, Vrazov trg 2, Ljubljana

***Table of contents***

Information about the course of study .....	3
The basic objective of the program and obtained competences .....	3
Curriculum evaluation and credit requirements according to ECTS .....	3
Conditions and requirements for enrolment .....	4
Criteria for recognition of knowledge and skills acquired prior to enrolment in the program .....	4
Evaluation method .....	5
The requirements for advancement in the program .....	5
Transitions between study programs .....	6
The mode of study .....	7
Conditions for completing the program .....	7
Field of study program according to the classification KLASIUS .....	7
Classification within the Slovenian Qualifications Framework .....	7
Professional title acquired with completing the program .....	7
Study program subjects with lecturers .....	8
Annex No. 2: Presentation of individual subjects .....	27

## PRESENTATION OF THE PROGRAM

### 1. Information about the course of study

The uniform second-level Master's degree study of Dental Medicine lasts six years (12 semesters) and consists of a total of 360 credit points.

### 2. The basic objective of the program and obtained competences

The essential goal of the uniform Master's study program of Dental Medicine is to train an expert to perform professional duties and tasks in the field of dental medicine, and also give him a sound basis for further professional training in the field of specializations and continuing the study onto the PhD level

#### General competencies

- Ability to analyze, synthesize and envisage solutions and consequences,
- mastery of research methods, procedures and processes, development of critical and self-critical judgement,
- ability to apply knowledge in practice,
- autonomy in professional work,
- development of communication abilities and skills,
- ethical reflection and commitment to professional ethics,
- cooperativeness, teamwork, and working in an international environment.

#### Subject-specific competencies

- Knowledge and understanding of the role and development of medicine and dental medicine,
- the ability to solve specific work problems using scientific methods and procedures,
- specific mastery of basic knowledge, and the ability to integrate knowledge from different fields and its use,
- the ability to include new information and interpretations in the context of dental medicine,
- understanding the general structure of dental medicine and the connection between its sub-disciplines,
- understanding and use of methods of critical analysis, development theories and their usage in solving specific work problems,
- development of skills and abilities in the use of knowledge in the field of dental medicine,
- use of information and communication technologies and systems in the field of dental medicine

#### Medicine-specific competencies

- Knowledge of normal and pathological structures on the cellular level and on the level of human organism,
- knowledge of basic biological, behavioral and social factors of health and disease development,
- understanding the place and role of dental medicine in society,
- knowledge of the molecular basis and mechanisms of normal and pathological functioning of the human organism,
- communication skills with patients,
- knowledge of public health problems treatment methods,
- the ability to examine a patient with emphasis on the orofacial region,
- knowledge of the role of environment in the emergence and development of diseases,
- understanding of disease states, their signs and symptoms with emphasis on the orofacial region,
- knowledge of the role of lifestyle in the formation and development of diseases, communication skills with patients,
- knowledge of disease diagnostics and treatment with particular emphasis on the orofacial region, knowledge of preventive measures in dental medicine,
- integration of knowledge and skills at work with a patient at clinical practical course,
- scientific research in the field of dental medicine

### 3. Curriculum evaluation and credit requirements according to ECTS

See Annexes 1 and 2.

## 4. Conditions and requirements for enrolment

In the Uniform second-level Master's degree of Dental Medicine may be enrolled:

- a. those that have passed the general maturity examination,
- b. those who have completed any four year secondary school program before June 1st 1995.

All applicants must demonstrate knowledge of the Slovenian language at B2 level according to the Common European Framework of Reference for Languages (CEFR) and provide appropriate certification. Relevant proof of compliance for this entry condition shall be:

- a pass certificate from an examination of the Slovenian language at B2 level or an equivalent certificate,
- a Republic of Slovenia elementary school certificate of completion, or completion from a foreign elementary school where Slovenian was a taught language,
- a high school graduation certificate or a certificate of completion of the final year of a high school vocational program in which one completed subject was Slovenian,
- a certificate of completion in bilingual high school education (Slovenian and a foreign language) or completion from a foreign high school institution where Slovenian was a taught language,
- a diploma of acquired education in a study program from a higher education institution in the Republic of Slovenia, and a certificate (statement) that the candidate completed the program in the Slovenian language.

Candidates who undertake (have undertaken) a general high school examination or high school vocational examination in the Republic of Slovenia need not send proof of knowledge in the Slovenian language, the required information is submitted to the higher education and information service by the State Examination Centre.

In the case of limited enrolment, the applicants under a) will be selected according to:

- the general grade in the general maturity examination, 30 % of points
- the general grade in third and fourth year, 10 % of points
- success in individual subjects of the general maturity examination:  
mathematics, a foreign language and one natural science subject  
(biology, physics or chemistry). 60 % of points

Candidates under point b), by:

- the general grade in the final examination, 30 % of points
- the general grade in third and fourth year, 10 % of points
- grade in mathematics or a foreign language in the final examination  
and grade from one of the natural science subjects (physics, chemistry  
or biology) in the final exam or in the last year of secondary school,  
when the subject was taught. 60 % of points

## 5. Criteria for recognition of knowledge and skills acquired prior to enrolment in the program

UL MF recognizes acquired knowledge, qualifications or abilities to candidates only in case when this knowledge is acquired in formal forms of education, when candidates transfer to UL MF from other medical study programs. The recognition process is led by the Commission for Student Affairs individually for each candidate. On the basis of the reports of the course lecturers, the Commission identifies differences in the program and recognizes only formally acquired knowledge that corresponds to the general or subject-specific competencies defined in the uniform Master's study program of Dental Medicine.

## 6. Evaluation method

Evaluation method is specified in Regulations for assessment of knowledge and skills for the uniform master's study programs of medicine and dental medicine, which is available on the web site of Medical Faculty.

Final grades for the course exams are as follows:

- 10 – (excellent: exceptional knowledge without or with negligible faults),
- 9 – (very good: very good knowledge with some minor faults),
- 8 – (very good: good knowledge with certain faults),
- 7 – (good: solid knowledge but with several faults),
- 6 – (satisfactory: knowledge only meets minimal criteria),
- 5 – (unsatisfactory: knowledge does not meet minimal standards).

For visiting students, the obtained grades are converted into the ECTS system:

- A – excellent (10),
- B – very good (9),
- C – good (8),
- D – satisfactory (7),
- E – sufficient (6),
- F – insufficient (5),

## 7. The requirements for advancement in the program

The requirements for advancement in the program are distinctly specified in the document called *»Pravila študija UL Medicinske fakultete za Enovita magistrska študijska programa 2. stopnje Medicina in Dentalna medicina«*. A student of the Uniform second-level Master's study programme of Dental Medicine who enrolled into the first year of study in the academic year 2017/2018 or later, may progress to the next year if he fulfils the requirements defined in the program. To advance to the next year of study, the student must collect at least 54 credit points from the current year of study with passed exams in subjects, which are necessary for a successful work in the next year of study.

### 7.1. The requirements for advancement in the program

**From the 1<sup>st</sup> to the 2<sup>nd</sup> year of study:** 54 credit points.

**From the 2<sup>nd</sup> to the 3<sup>rd</sup> year of study:** 54 credit points from the 2<sup>nd</sup> year of study and passed all exams in the 1<sup>st</sup> year of study.

**From the 3<sup>rd</sup> to the 4<sup>th</sup> year of study:** 54 credit points from the 3<sup>rd</sup> year of study and passed all exams in the 1<sup>st</sup> and 2<sup>nd</sup> year of study.

**From the 4<sup>th</sup> to the 5<sup>th</sup> year of study:** 54 credit points from 4<sup>th</sup> year of study and passed all exams from 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year of study and from the 4<sup>th</sup> year of study: Clinical Physiology of Stomatognathic System

**From the 5<sup>th</sup> to the 6<sup>th</sup> year of study:** 54 credit points from 5<sup>th</sup> year of study and passed all exams from 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> year of study and from 5<sup>th</sup> year of study: Oral diseases and periodontology 2

The contents that must be achieved by a student for advancement to a higher year after the repetition of a year, interruption and/or exceptional extension of a student status are determined in the document called *»Pravila študija UL Medicinske fakultete za Enovita magistrska študijska programa 2. stopnje Medicina in Dentalna medicina«*.

## 7.2 Advancement in the program—exceptional advancement to the next year of study

A student of the Uniform second-level Master's degree study of Dental Medicine who enrolled into the first year of study in the academic year 2017/2018 or later may progress exceptional to the next year of study - exceptional advancement to the next year of study, even if he fails to meet conditions (54 credit points) if he:

- has justifiable and sufficient reasons
- has collected at least 46 credit points with passed exams in subjects from the current year of study and has:
  - From the 2nd to 3rd year of study: passed all exams from the 1st year
  - From 3rd to 4th year of study: passed all exams from 1st, and 2nd year
  - From 4th to 5th year of study: passed all exams from 1st, 2nd, and 3rd year and from the 4th year of study: Clinical physiology of stomatognathic system
  - From 5th to 6th year of study: passed all exams from 1st, 2nd, 3rd and 4th year of study and from 5th year of study: Oral disease and periodontology 2

## 7.3 Terms for repetition of a year

A student who has not completed the requirements for advancing to the next year can re-enter a year of study once during the period of study if he has fulfilled at least half of the requirements from the current year of study (30 credit points) and has during the period of study not yet changed the study program or study course.

The Commission for Student Affairs may exceptionally permit enrolment of a student who does not meet the conditions for re-enrolment (exceptional extension of a student status), if the statutory requirements were not met because of the justifiable reasons, which are defined in the document *»Pravila študija UL Medicinske fakultete za Enovita magistrska študijska programa 2. stopnje Medicina in Dentalna medicina«*.

## 8. Transitions between study programs

According to the Criteria for transfers between study programs, the Senate of the Faculty of Medicine defines the number of available places for continuation of study for each year. The terms and number of available places are published in Call for enrolment.

Transition is understood as termination of studies in one study program and continuation of studies in a new study program on the Faculty of Medicine—Uniform second-level Master's degree study of Medicine.

Applications for transitions between study programs in Medicine or Dental Medicine are examined by the Commission for Student Affairs. If there are more applications than free enrolment places, the candidates will be selected on the basis of the average grade of the study so far.

Transitions between study programs are possible:

1. if both study programs ensure acquisition of comparable competences after their completion,
2. if it is possible to acknowledge at least half of the obligations from the first study program under the European Credit Transfer and Accumulation System (hereinafter: ECTS), which are similar to the obligatory courses of the second study program.

The transition from other study programs to the uniform Master's study program of Medicine is possible to the second or third year of study. The candidate must fulfil the requirements for enrolment in to the first year of study regarding the knowledge of the Slovenian language. He must have also passed the general maturity examination, successfully completed the first or the first two years of his current study program (he must have gained 60 credit points for each year of study) and have an average grade of at least 8,5.

The Commission for Student Affairs checks the number of credit points and average grade of the 1<sup>st</sup> year of study or 1<sup>st</sup> and 2<sup>nd</sup> year of the medicine study for candidates who requests for advancement to the 2<sup>nd</sup> or 3<sup>rd</sup> year of study, according to the Criteria for transfers between study programs.

The Commission for Student Affairs defines bridging examination for the subjects, which differ from the study program of the uniform Master's study program of Medicine.

The application for the transition between study programs of medicine or dental medicine must be accompanied by certified photocopies (report cards from 3<sup>rd</sup> and 4<sup>th</sup> years of high school, general certificate of high school education with a report card for the general high school examination and a certificate of passed examinations in a previous course of medicine or dental medicine, including the course of study—for the latter two the document must include information on the scope of the subjects and assessments of completed exams according to ECTS).

Transition is possible if the candidate meets the general requirements for enrolment in accordance with the Higher Education Act of the Republic of Slovenia and the uniform Master's study program of Medicine.

Transitions between study programs is possible only if The Commission for Student Affairs confirms the candidates

Application and only under the conditions, which are defined by The Commission for Student Affairs.

## **9. The mode of study**

The Uniform second-level Master's degree study of Dental Medicine is available to study as full-time study program.

## **10. Conditions for completing the program**

A student completes his study program and graduates when he completes all obligations of the study program and achieves 360 credit points.

## **11. Field of study program according to the classification KLASIUS and scientific discipline according to the Field of Science and Technology classification FRASCATI**

The Uniform second-level Master's degree study of Dental Medicine is classified on classification KLASIUS:

On the first classification level KLASIUS-P-16, the study program is classified under field Health and Welfare.

On the second classification level KLASIUS-P-16, the study program is classified under field Health.

On the third classification level KLASIUS-P-16, the study program is classified under field Dental studies.

1<sup>ST</sup> LEVEL 09

2<sup>ND</sup> LEVEL 091

3<sup>RD</sup> LEVEL 0912

The study program is according to the classification FRASCATI classified under Medical Sciences, which include subgroups Basic Medicine, Clinical Medicine and Public Health.

## **12. Classification within the Slovenian Qualifications Framework, Framework for Qualifications of the European Higher Education Area and European Qualifications Framework**

Slovenian Qualifications Framework /SQF/: level 8

## **13. Professional title acquired with completing the program**

The professional title acquired by the graduate is a Doctor of Dental Medicine (D.M.D.).

## Annex No. 1: Study program subjects with lecturers

Legend:

L – Lectures; S – Seminars; PPC – Preclinical Practical Courses; CPC – Clinical Practical Courses; OFS – Other Forms of Study; SIW – Student's Individual Work; ECTS Credits – European Credit Transfer and Accumulation, System Credits

1 <sup>st</sup> year of study, 1 <sup>st</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1.	<a href="#">Anatomy for Dental Medicine</a>	Erika Cvetko, Marija Hribernik, Marija Meznarič, Iztok Štampelj	20	10	45			75	150	5
2.	<a href="#">Medical Biophysics</a>	Jure Derganc	25		25		25	75	150	5
3.	<a href="#">Medical cell biology</a>	Rok Romih	40		50			90	180	6
4.	<a href="#">Principles of Biochemistry</a>	Marko Goličnik, Damjana Rozman, Tea Lanišnik Rižner	55	47	33			135	270	9
5.	<a href="#">Introduction to Clinical Dental Medicine 1</a>	Jože Balažic, Sergej Pirkmajer, Zvonka Zupanič Slavec, Maja Šoštarič, Ksenija Rener Sitar, Marija Petek Šter	15	10	5		15	15	60	2
6.	<a href="#">Elective subject</a>							90	90	3
TOTAL			155	42	158		65	480	900	30

1 <sup>st</sup> year of study, 2 <sup>nd</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Anatomy for Dental Medicine</a>	Erika Cvetko, Marija Hribernik, Marija Meznarič, Iztok Štampelj	40	65	60			165	330	11
2	<a href="#">Introduction to Clinical Dental Medicine 1</a>	Jože Balažic, Sergej Pirkmajer, Zvonka Zupanič Slavec, Maja Šoštarič, Ksenija Rener Sitar, Marija Petek Šter	49	22	19		45	45	180	6
3	<a href="#">Research in Dental Medicine 1</a>	Ksenija Cankar, Maja Ovsenik, Maja Pohar Perme	6	21	18			45	90	3
4	<a href="#">Histology and Embryology for Dental Medicine</a>	Aleksandra Milutinović Živin, Danijel Petrovič, Ines Cilenšek, Ruda Zorc Pleskovič	30	13	52		10	105	210	7
5	<a href="#">Elective subject</a>							90	90	3



TOTAL		125	121	149		55	450	900	30
-------	--	-----	-----	-----	--	----	-----	-----	----

  

2 <sup>nd</sup> year of study, 3 <sup>rd</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Functional and clinically applied morphology and embryology of the dental organ</a>	Janja Jan, Iztok Štampelj	16		10			34	60	2
2	<a href="#">Public health in dental medicine</a>	Barbara Artnik	26	16	18			60	120	4
3	<a href="#">Research in dental medicine 2</a>	Maja Pohar Perme	13	17	15			45	90	3
4	<a href="#">Biochemistry and Genetics for Dental Medicine</a>	Aljoša Bavec, Petra Hudler	43	44	33			120	240	8
5	<a href="#">Physiology for Dental Medicine</a>	Žarko Finderle, Ksenija Cankar, Helena Lenasi	50	5	30			65	150	5
6	<a href="#">Microbiology and immunology for dental medicine</a>	Alojz Ihan, Eva Ružič Sabljic, Katja Seme, Mateja Pirš, Miroslav Petrovec, Polona Maver Vodičar, Tadeja Matos	50		25			75	150	5
7	<a href="#">Elective subject</a>							90	90	3
TOTAL			202	58	129		22	489	900	30

  

2 <sup>nd</sup> year of study, 4 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Functional and clinically applied morphology and embryology of the dental organ</a>	Janja Jan, Iztok Štampelj	19		30			41	90	3
2	<a href="#">Physiology for Dental Medicine</a>	Žarko Finderle, Ksenija Cankar, Helena Lenasi	40	10	45			115	210	7
3	<a href="#">Introduction to Clinical Dental Medicine 2</a>	Aleš Fidler, Bojan Božič, Boris Gašpirc, Čedomir Oblak, Davorina Petek, Iztok Štampelj, Janja Jan, Ksenija Rener Sitar, Maja Rus Makovec, Vesna Homar, Peter Veranič, Simona Gaberšček	118	52	28	20	37	255	510	17
4	<a href="#">Elective subject</a>							90	90	3
TOTAL			177	54	111	40	17	501	900	30

3 <sup>rd</sup> year of study, 5 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Pathophysiology for Dental Medicine</a>	Uroš Kovačič, Dušan Šuput, Fajko Bajrovič, Helena H. Chowdhury, Mara Bresjanac, Marko Živin, Nina Vardjan, Robert Zorec, Samo Ribarič, Sergej Pirkmajer, Tomaž Marš	12	18	15			45	90	3
2	<a href="#">Dental Preclinical Practicum</a>	Igor Kopač, Janja Jan, Iztok Štampelj	20		55			75	150	5
3	<a href="#">Pathology for Dental Medicine</a>	Nina Zidar, Metka Volavšek	60	15	15			90	180	6
4	<a href="#">Pharmacology for Dental Medicine</a>	Mojca Kržan, Metoda Lipnik Štangelj, Katarina Černe		33	12			45	90	3
5	<a href="#">Clinical Skills in Medicine</a>	Davorina Petek, Igor Frangež, Nataša Ihan Hren, Primož Gradišek, Simona Gaberšček, Uroš Golobič Ahčan, Marko Snoj, Tadeja Pintar, Marija Petek Šter	25	10	35		30	20	120	4
6	<a href="#">Basics of Dental Occlusion</a>	Ksenija Rener Sitar	30		15	30		15	90	3
7	<a href="#">Research in dental medicine 3</a>	Aleš Blinc, Maja Ovsenik, Štefan Grosek, Urh Grošelj, Jadranka Buturovič Ponikvar, Maja Pohar Perme, Lijana Zaletel Kragelj	20	10			15	45	90	3
8	<a href="#">Elecitve subject</a>							90	90	3
TOTAL			144	73	129	30	84	440	900	30

3 <sup>rd</sup> year of study, 6 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Pathophysiology for Dental Medicine</a>	Uroš Kovačič, Dušan Šuput, Fajko Bajrovič, Helena H. Chowdhury, Mara Bresjanac, Marko Živin, Nina Vardjan, Robert Zorec, Samo Ribarič, Sergej Pirkmajer, Tomaž Marš	27	18	15			60	120	4
2	<a href="#">Dental Preclinical Practicum</a>	Igor Kopač, Janja Jan, Iztok Štamfelj	40		65			105	210	7
3	<a href="#">Dental prophedautics 2</a>	Alenka Pavlič, Aleš Fidler, Boris Gašpirc, Janja Jan, Katarina Šurlan Popović, Ksenija Rener Sitar, Maja Ovsenik, Nataša Ihan Hren	60	15		30		105	210	7
4	<a href="#">Pharmacology for Dental Medicine</a>	Mojca Kržan, Metoda Lipnik Štangelj Katarina Černe		33	12			45	90	3
5	<a href="#">Clinical Skills in Medicine</a>	Davorina Petek, Igor Frangež, Nataša Ihan Hren, Primož Gradišek, Simona Gaberšček, Uroš Golobič Ahčan	20	15			30	25	90	3
6	<a href="#">Painless dentistry</a>	Boris Gašpirc, Janja Jan, Mojca Kržan, Nataša Ihan Hren	30	15				45	90	3
7	<a href="#">Eleictve subject</a>							90	90	3
TOTAL			180	73	122	30	20	475	900	30

4 <sup>th</sup> year of study, 7 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Oral Diagnosis</a>	Boris Gašpirc, Janja Jan, Maja Ovsenik, Alenka Pavlič, Ksenija Rener Sitar	30	40		60		20	150	5
2	<a href="#">General and Dental Radiology</a>	Aleš Fidler, Nataša Ihan Hren, Katarina Šurlan Popovič	10	15		15		50	90	3
3	<a href="#">Infectious Diseases and Epidemiology</a>	Janez Tomažič	11	7		27		75	120	4
4	<a href="#">Surgery</a>	Igor Frangež	45		15			60	120	4
5	<a href="#">Medical Clinic 1</a>	Tomaž Lunder, Mateja Dolenc Voljč, Blaž Koritnik, Peter Pregelj	65	20		25	10	0	120	4
6	<a href="#">Dental Diseases 1</a>	Janja Jan	30		45			45	120	4
7	<a href="#">Internal Medicine</a>	Simona Gabersček		44				46	90	3
8	<a href="#">Elective subject</a>							90	90	3
TOTAL			191	126	60	127	10	386	900	30

4 <sup>th</sup> year of study, 8 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Dental Diseases 1</a>	Janja Jan				45	5	70	120	4
2	<a href="#">Oral Diseases and Periodontology 1</a>	Boris Gašpirc, Eva Skalerič, Rok Gašperič, Rok Schara	15			30		45	90	3
3	<a href="#">Maxillofacial and Oral Surgery 1</a>	Nataša Ihan Hren, Andrej Kansky	30			30		30	90	3
4	<a href="#">Fixed Prosthodontics 1</a>	Igor Kopač, Čedomir Oblak, Ksenija Rener Sitar	15	20	10			45	90	3
5	<a href="#">Paediatric and Preventive Dentistry 1</a>	Alenka Pavlič	15			30	5	40	90	3
6	<a href="#">Removable Prosthodontics 1</a>	Milan Kuhar, Peter Jevnikar	15	7		30	38		90	3
7	<a href="#">Orthodontics and Dentofacial Orthopedics 1</a>	Maja Ovsenik, Martina Drevenšek	15	8		30		37	90	3
8	<a href="#">Clinical Physiology of Stomatognathic System</a>	Ksenija Rener Sitar	30	22		38		60	150	5
9	<a href="#">Elective subject</a>							90	90	3
TOTAL			135	57	10	233	48	417	900	30

5 <sup>th</sup> year of study, 9 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Paediatrics and Preventive Dentistry 2</a>	Alenka Pavlič	10		6	26	8	40	90	3
2	<a href="#">Dental Diseases 2</a>	Janja Jan	15			75			90	3
3	<a href="#">Removable Prosthodontics 2</a>	Milan Kuhar, Peter Jevnikar	10	5		45		30	90	3
4	<a href="#">Fixed Prosthodontics 2</a>	Igor Kopač, Čedomir Oblak, Ksenija Rener Sitar	15	10		45		50	120	4
5	<a href="#">Oral Diseases and Parodontology 2</a>	Boris Gašpirc, Eva Skalerič	15			30		45	90	3
6	<a href="#">Maxillofacial and Oral Surgery 2</a>	Nataša Ihan Hren, Andrej Kansky	30			30		30	90	3
7	<a href="#">Pediatrics with Clinical Genetics</a>	Tadej Battelino, Janez Jazbec, Tadej Avčin	17	28		14		31	90	3
8	<a href="#">Medical Clinic 2</a>	Primož Strojman, Saba Battelino, Polona Jaki Mekjavič	32	12		35	10	61	150	5
9	<a href="#">Elective subject</a>							90	90	3
TOTAL			144	55	5	304	15	377	900	30

5 <sup>th</sup> year of study, 10 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Paediatrics and Preventive Dentistry 2</a>	Alenka Pavlič	10		6	26	8	70	120	4
2	<a href="#">Dental Diseases 2</a>	Janja Jan				60		60	120	4
3	<a href="#">Removable Prosthodontics 2</a>	Milan Kuhar, Peter Jevnikar	15	5		45		55	120	4
4	<a href="#">Fixed Prosthodontics 2</a>	Igor Kopač, Čedomir Oblak, Ksenija Rener Sitar	10	15		45		20	90	3
5	<a href="#">Oral Diseases and Periodontology 2</a>	Boris Gašpirc, Eva Skalerič	15			30		45	90	3
6	<a href="#">Orthodontics and Dentofacial Orthopedics 2</a>	Maja Ovsenik, Martina Drevenšek	15	10		30		35	90	3
7	<a href="#">Forensic Medicine</a>	Tomaž Zupanc	30			15		45	90	3
8	<a href="#">Maxillofacial and Oral Surgery 2</a>	Nataša Ihan Hren, Andrej Kansky	30			30		30	90	3
9	<a href="#">Elective subject</a>							90	90	3
TOTAL			125	30	5	285	5	450	900	30

6 <sup>th</sup> year of study, 11 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Paediatric and Preventive Dentistry 3</a>	Alenka Pavlič	4	22	20	40		34	120	4
2	<a href="#">Removable Prosthodontics 3</a>	Milan Kuhar, Peter Jevnikar	5	10		45		60	120	4
3	<a href="#">Dental Diseases 3</a>	Janja Jan		5		75		40	120	4
4	<a href="#">Fixed Prosthodontics 3</a>	Igor Kopač, Čedomir Oblak, Ksenija Rener Sitar	5	10		45		90	150	5
5	<a href="#">Oral Diseases and Parodontology 3</a>	Boris Gašpirc, Rok Schara	15			45		60	120	4
6	<a href="#">Orthodontics and Dentoafacial Orthopedics 3</a>	Maja Ovsenik, Martina Drevenšek	15	10		30	5	30	90	3
7	<a href="#">Maxillofacial and Oral Surgery 3</a>	Nataša IhanHren, Andrej Kansky				90			90	3
8	<a href="#">Elective subject</a>							90	90	3
TOTAL			45	45		370	10	430	900	30



6 <sup>th</sup> year of study, 12 <sup>th</sup> semester										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	<a href="#">Removable Prosthodontics 3</a>	Milan Kuhar, Peter Jevnikar		5		55		60	120	4
2	<a href="#">Dental Diseases 3</a>	Janja Jan		15		75		30	120	4
3	<a href="#">Fixed Prosthodontics 3</a>	Igor Kopač, Čedomir Oblak, Ksenija Renar Sitar		5		60		85	150	5
5	<a href="#">Oral Diseases and Periodontology 3</a>	Boris Gašpirc, Rok Schara	15			45		60	120	4
4	<a href="#">Maxillofacial and Oral Surgery 3</a>	Nataša Ihan Hren, Andrej Kansky		15				105	120	4
6	<a href="#">Dental Implantology</a>	Nataša Ihan Hren, Čedomir Oblak, Milan Kuhar, Rok Gašperšič	15	5	5	5		60	90	3
7	<a href="#">Geriatric Dentistry</a>	Aleš Fidler, Andrej Kansky, Rok Gašperšič, Milan Kuhar, Čedomir Oblak, Jasmina Markovič Božič	15	5		9		61	90	3
8	<a href="#">Elective subject</a>							90	90	3
TOTAL			45	50	5	249		551	900	30

## Information on elective subjects

Elective subjects in 1 <sup>st</sup> year of study										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	Selected topics in cell biology	Peter Veranič, Damjan Glavač, Mateja Erdani Kreft, Rok Romih	15	15	5		10	45	90	3
2	Selected topics of anatomy	Erika Cvetko, Marija Meznarič	15		15		15	45	90	3
3	Selected topics in biochemistry	Marko Goličnik, Damjana Rozman, Tea Lanišnik Rižner	15	30				45	90	3
4	Selected topics in biophysics	Bojan Božič, Gregor Gomišček	15	10			20	45	90	3
5	Selected Topics from Histology and embryology	Aleksandra Milutinović Živin, Danijel Petrovič, Ines Cilenšek, Ruda Zorc Pleskoviič	5	40				45	90	3
6	Selected topics in research in dental medicine 1	Ksenija Cankar, Maja Ovsenik, Maja Pohar Perme					45	45	90	3
7	Selected topics from clinical dental medicine 1	Jožef Balažic, Ksenija Rener Sitar, Maja Šoštarič, Marija Petek Šter, Sergej Pirkmajer, Zvonka Zupanič Slavec	15	15	15			45	90	3

Elective subjects in 2 <sup>nd</sup> year of study										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	Selected Topics in Biochemistry and Genetics for Dental Medicine	Aljoša Bavec, Petra Hudler	15	30				45	90	3
2	Selected themes in physiology	Žarko Finderle, Ksenija Cankar, Helena Lenasi, Nejka Potočnik		20			25	45	90	3
3	Selected public health topics in dental medicine	Barbara Artnik, Andreja Kukec	10	10		25		45	90	3
4	Selected topics of clinical Dental Medicine 2	Janja Jan, Boris Gašpirc, Čedomir Oblak, Ksenija Rener Sitar, Maja Rus Makovec, Simona Gabersček, Iztok Štamfelj, Vesna Homar	15	15			15	45	90	3
5	Selected topics in microbiology and immunology	Mateja Pirš	15	15			15	45	90	3
6	Selected topics in dental medical research 2	Maja Pohar Perme	5	20	20			45	90	3
7	Research in Dental Medicine	All lecturers of the programme					5	75	90	3
8	Research work for the Prešeren student award	All lecturers of the programme		20			5	155	180	6

Elective subjects in 3 <sup>rd</sup> year of study										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	Selected pathology topics for dental medicine	Metka Volavšek	10	12	23			45	90	3
2	Selected topics in pharmacology in dental medicine	Katarina Černe, Metoda Lipnik Štangelj, Mojca Kržan		45				45	90	3
3	Selected topics in Clinical Skills in Medicine	Davorina Petek , Igor Frangež, Nataša Ihan Hren, Primož Gradišek, Simona Gaberšček, Uroš Golobič Ahčan	15	15			15	45	90	3
4	Selected pathophysiology topics for dental medicine	Uroš Kovačič, Dušan Šuput, Fajko Bajrovič,, Helena H. Chowdhury, Mara Bresjanac, Marko Živin, Nina Vardjan, Robert Zorec, Samo Ribarič, Sergej Pirkmajer, Tomaž Marš	10	35				45	90	3
5	Selected topics in research in dental medicine 3	Aleš Blinc, Maja Ovsenik, Štefan Grosek, Urh Grošelj, Jadranka Buturovič Ponikvar, Maja Pohar Perme, Lijana Zaletel Kragelj	5	20	20			45	90	3
6	Selected Topics in Dental Propaedeutics	Alenka Pavlič, Aleš Fidler, Boris Gašpir, Katarina Šurlan Popović, Ksenija Renner Sitar, Maja Ovsenik, Nataša Ihan Hren		30			15	45	90	3
7	Research in Dental Medicine	All lecturers of the programme		10			5	75	90	3
8	Research work for the Prešeren student award	All lecturers of the programme		20			5	155	180	6

Elective subjects in 4 <sup>th</sup> year of study										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	Research in Pharmacology – Selected Topics in Pharmacology	Metoda Lipnik Štangelj, Mojca Kržan, Katarina Černe				20	40	120	180	6
2	Pathology of Organic Systems	Metka Volavšek	30	15				45	90	3
3	Biomedicine Between Laboratories and Hospitalization (7th,8thsem.)	Mara Bresjanac	6				24	60	90	3
4	Diagnostics in Endodontics and Conservative Dentistry	Janja Jan	3	31		12		44	90	3
5	Research Elective – Dental Diseases	Janja Jan			75			105	180	6
6	Elective Pathophysiology Subject: Students' Research Work for the Prešeren's Award or Recognition (7th,8th sem.)	Samo Ribarič, Zoran Grubič			30			150	180	6
7	Hyperbaric Physiology and Medicine	Žarko Finderle	5	20	5			60	90	3
8	Neurophysiology	Ksenija Cankar	5	20				65	90	3
9	Physiology – Electrocardiography (ECG)	Živa Melik	5	20	5			60	90	3
10	Physiology of Sports	Helena Lenasi	5	20				65	90	3
11	Physiology – Microcirculation	Ksenija Cankar	5	20				65	90	3
12	Disaster Medicine (7th/8th sem.)	Radko Komadina	30	30				30	90	3
13	Biochemistry of Steroids	Tea Lanišnik Rižner, Damjana Rozman	6	16			8	60	90	3
14	Research in Pathology	Nina Zidar		10	30	40		100	180	6
15	Gene Technology Applications in Dental Medicine	Nataša Debeljak, Petra Hudler	10	15			20	45	90	3
16	Functional Genomics in Medicine	Damjana Rozman	10	10	10			60	90	3
17	Contemporary Informatics in Biomedicine (8th sem.)	Maja Pohar Perme	8	30	12			40	90	3
18	Research in Dental Medicine	All lecturers of the programme		20			160		180	6

Elective subjects in 4 <sup>th</sup> year of study (										
19	Basics of Genetic Technology and Molecular Medicine	Damjana Rozman, Alja Videtič Paska	15	5			5	65	90	3
20	Experimental Methods in Pharmacogenetics	Vita Dolžan	5	25	60			90	180	6
21	Practical Bioinformatic Approaches in Medicine	Petra Hudler	10	15				65	90	3
22	Research in Biochemistry	Marko Goličnik		20				160	180	6
23	Pharmacogenetics in Medicine	Vita Dolžan	10	20	15			45	90	3
24	Molecular Biology of Mind-Body Association	Metka Ravnik Glavač	4	26				60	90	3
25	Tissue Engineering in Research Studies and Regenerative Medicine	Mateja Erdani Kreft, Peter Veranič	30	30	5		30	85	180	6
26	Clinical Nutrition 1	Nada Rotovnik Kozjek	10	10		5	20	45	90	3
27	Physics of the diagnostic methods in neurology	Maja Trošt	15	15	20			45	90	3

Elective subjects in 5 <sup>th</sup> year of study										
Seq. No.	Subject * Subject *the subject is carried out in the winter and summer semester	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	Research in Pharmacology – Selected Topics in Pharmacology	Metoda Lipnik Štangelj, Mojca Kržan, Katarina Černe				20	40	120	180	6
2	Biomedicine Between Laboratories and Hospitalization(11th, 12th sem.)	Mara Bresjanac	6	24				60	90	3
3	Research Elective – Dental Diseases	Janja Jan			75			105	180	6
4	Interceptive Orthodontic Treatment in Children Dentistry(9thsem)	Maja Ovsenik, Alenka Pavlič	5	10		15	60	0	90	3
5	Elective Pathophysiology Subject: Students' Research Work for the Prešeren's Award or Recognition (9th,10thsem.)	Samo Ribarič, Robert Zorec			30			150	180	6

Elective subjects in 5 <sup>th</sup> year of study										
6	Nutrition in different age periods and oral health	Barbara Artnik	15	30				45	90	3
7	Modern Clinical Methods in Endodontic	Janja Jan	6	21	18			45	90	3
8	Research Elective – Maxillofacial Surgery	Nataša Ihan Hren					75	105	180	6
9	Clinical Treatment of Oromaxillofacial Patients	Nataša Ihan Hren					35	55	90	3
10	Research Elective – Jaw and Teeth Orthopaedics	Maja Ovsenik			75			105	180	6
11	Research Elective – Prosthetics	Milan Kuhar, Igor Kopač					75	105	180	6
12	Research Elective – ORL	Irena Hočevar Boltežar, Saba Battelino	2		10		5	73	90	3
13	Research Elective – Children and Preventive Dentistry	Alenka Pavlič					60	120	180	6
14	Hyperbaric Physiology and Medicine	Žarko Finderle	5	20	5			60	90	3
15	Neurophysiology	Ksenija Cankar	5	20				65	90	3
16	Physiology – Electrocardiography (ECG)	Živa Melik	5	20	5			60	90	3
17	Physiology of Sports	Helena Lenasi	5	20				65	90	3
18	Physiology – Microcirculation	Ksenija Cankar	5	20				65	90	3
19	Disaster medicine(11th/12.th sem. )	Radko Komadina	30	30				30	90	3
20	Biochemistry of Steroids	Tea Lanišnik Rižner, Damjana Rozman	6	16			8	60	90	3
21	Research in Pathology	Nina Zidar		10	30	40		100	180	6
22	Gene Technology Applications in Dental Medicine	Nataša Debeljak, Petra Hudler	10	15			20	45	90	3
23	Functional Genomics in Medicine	Damjana Rozman	10	10	10			60	90	3
24	Contemporary Informatics in Biomedicine 2*	Maja Pohar Perme	6	32	12			40	90	3
25	Research in Dental Medicine*** (11.,12.sem.)	All lecturers of the programme			20			160	180	6
26	Basics of Genetic Technology and Molecular Medicine	Damjana Rozman, Alja Videtič Paska	15	5			5	65	90	3

Elective subjects in 5 <sup>th</sup> year of study										
27	Gynaecology and Obstetrics	Špela Smrkolj		18		16		56	90	3
28	Experimental Methods in Pharmacogenetics	Vita Dolžan	5	25	60			90	180	6
29	Practical Bioinformatic Approaches in Medicine	Petra Hudler	10	15				65	90	3
30	Research in Biochemistry	Marko Goličnik		20				160	180	6
31	Pharmacogenetics in Medicine	Vita Dolžan	10	20	15			45	90	3
32	Molecular Biology of Mind-Body Association	Metka Ravnik Glavač	4	26				60	90	3
33	Tissue Engineering in Research Studies and Regenerative Medicine	Mateja Erdani Kreft, Peter Veranič	30	30	5		30	85	180	6
34	Clinical Nutrition 1	Nada Rotovnik Kozjek	10	10		5	20	45	90	3
35	Clinical Nutrition 2	Nada Rotovnik Kozjek	10	10		5	20	45	90	3
36	Psychosomatics and Behavioral Medicine	Maja Rus Makovec	10	4		10	16	50	90	3
37	Tropical and travel medicine	Tatjana Lejko Zupanc	84	20	10	10	24	32	180	6



Elective subjects in 6 <sup>th</sup> year of study										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
1	Research in Pharmacology – Selected Topics in Pharmacology	Metoda Lipnik Štangelj, Mojca Kržan, Katarina Černe			20		40	120	180	6
2	Biomedicine Between Laboratories and Hospitalization(11th, 12th sem.)	Mara Bresjanac	6	24				60	90	3
3	Research Elective – Dental Diseases	Janja Jan			75			105	180	6
4	Elective Pathophysiology Subject: Students' Research Work for the Prešeren's Award or Recognition(11th., 12thsem.)	Samo Ribarič, Robert Zorec			30			150	180	6
5	Research Elective – Maxillofacial Surgery 5,6	Nataša Ihan Hren					75	105	180	6
6	Research Elective – Jaw and Teeth Orthopaedics	Maja Ovsenik			75		75	105	180	6
7	Research Elective – Prosthetics	Milan Kuhar, Igor Kopač					75	105	180	6
8	Research Elective – ORL	Irena Hočevnar Boltežar	2	17	10		5	56	90	3
9	Research Elective – Children and Preventive Dentistry 5	Alenka Pavlič					60	120	180	6
10	Basics of Management in Health Care	Lijana Zaletel Kragelj, Ivan Eržen	10		35			45	90	3
11	Orthodontic – Surgical Treatment of Orthognathic Patients	Maja Ovsenik, Nataša Ihan Hren					35	55	90	3
12	Combined Prosthetic Care of Patients	Igor Kopač, Milan Kuhar	5	40				45	90	3
13	Hyperbaric Physiology and Medicine	Žarko Finderle	5	20	5			60	90	3
14	Neurophysiology	Ksenija Cankar	5	20				65	90	3
15	Physiology – Electrocardiography (ECG)	Živa Melik	5	20	5			60	90	3
16	Physiology of Sports	Helena Lenasi	5	20				65	90	3
17	Physiology – Microcirculation	Ksenija Cankar	5	20				65	90	3
18	Disaster medicine (11th/12.th sem. )	Radko Komadina	30	30				30	90	3
20	Research in Pathology	Nina Zidar		10	30	40		100	180	6

Elective subjects in 6 <sup>th</sup> year of study										
Seq. No.	Subject	Lecturer	Contact hours					SIW	Total hours	ECTS credits
			L	S	PPC	CPC	OFS			
21	Gene Technology Applications in Dental Medicine	Nataša Debeljak, Petra Hudler	10	5			20	45	90	3
22	Functional Genomics in Medicine	Damjana Rozman	10	10	10			60	90	3
23	Contemporary Informatics in Biomedicine 2*	Maja Pohar Perme	6	32	12			40	90	3
24	Research in Dental Medicine*** (11.,12.sem.)	All lecturers of the programme			20			160	180	6
25	Basics of Genetic Technology and Molecular Medicine	Damjana Rozman, Alja Videtič Paska	15	5			5	65	90	3
26	Gynaecology and Obstetrics	Špela Smrkolj		18		16		56	90	3
27	Experimental Methods in Pharmacogenetics	Vita Dolžan	5	25	60			90	180	6
28	Practical Bioinformatic Approaches in Medicine	Petra Hudler	10	15				65	90	3
29	Research in Biochemistry	Marko Goličnik		20				160	180	6
30	Pharmacogenetics in Medicine	Vita Dolžan	10	20	15			45	90	3
31	Molecular Biology of Mind-Body Association	Metka Ravnik Glavač	4	26				60	90	3
32	Clinical Nutrition 1	Nada Rotovnik Kozjek	10	10		5	20	45	90	3
33	Clinical Nutrition 2	Nada Rotovnik Kozjek	10	10		5	20	45	90	3
34	Tropical and travel medicine	Tatjana Lejko Zupanc	84	20	10	10	24	32	180	6
35	Dental Doctor and Society	Danica Rotar Pavlič, Igor Švab, Janez Tomažič, Janja Jan, Metoda Lipnik Štangelj, Peter Pregelj, Tomaž Marš, Tomaž Zupanc	25	10			10	45	90	3

## **Annex No. 2: Presentation of individual subjects**

### **Anatomy for dental medicine (16 ECTS)**

#### **Aims**

Anatomy is a basic medical subject. Due to international conventions the student has to learn Latin terminology and use it in theory and practice. The content and terminology of the subject are thematically divided into 4 parts (2 in each semester of the 1<sup>st</sup> year of study), which are attached to each other.

#### **Contents**

At this subject, Latin terminology will be used (in accordance with international conventions), beside that the student will have to learn existing Slovene terms. Anatomy will be approached from a functional perspective, with particular emphasis on the clinical anatomy of the adult. At clinically relevant body parts, the student will get the knowledge about the anatomy of a child and adolescent and also about woman's anatomy in pregnancy. The student will be qualified to find and identify those anatomical structures on or in the chest, abdomen and limbs which he will encounter later on at daily clinical work. He will become familiar with clinically significant variations, which could significantly affect the establishment of clinical diagnosis and treatment. On extremities, he will get to know the mechanics of joint motion, he will be able to demonstrate it and to understand its purpose in clinical investigation.

### **Medical biophysics (5 ECTS)**

#### **Aims**

The student will get acquainted with the physical picture of the world in detail. The emphasis is on those physical principles that are important in the formation of biological structures and the functioning of biological systems. He will get to know the physical phenomena which are the basis of physiological processes. He will get acquainted with the physical fundamentals of measurement methods used in diagnosis, and the physical phenomena which some methods of treatment are based on. He will get to know the basics of certain devices used in dental practice. The student will get used to quantitative treatment of physical and other phenomena. He will get acquainted with a scientific, analytically-synthetic method of thinking.

#### **Contents**

Mechanics. Using the laws of mechanics at analysing the locomotor system of a human. Pressure, buoyancy, compressibility, barometric equations, surface tension and capillary phenomena. Bernoulli's equation, the working heart. The flow of viscous fluid through a thin tube. Elastic properties of solid bodies and tissues. Oscillations. Heat and thermodynamics. Equilibrium and non-equilibrium thermodynamics. The first and second laws of thermodynamics. Entropy. Bioenergetics. Thermodynamic potentials. Chemical potential. Solubility. Humidity. Osmotic pressure. Donnan's equilibrium. Transport of matter and energy. Permeability of membranes. Electricity and Magnetism. Electrical and magnetic properties of matter. Bioelectric potentials. Electric current. Conduction of an electrical charge along a cable and nerve. The structure of matter. Atoms, molecules, crystals. Intermolecular forces, the structure of water, hydration. Hydrophobic force. The structure of biological macromolecules and membranes. Fluctuation and sound. The ear. Ultrasound. Electromagnetic fluctuation and optics. Measurement devices for light, the eye. Absorption of light. Light scattering and fluorescence. X-rays. The atomic nucleus and nuclear energy. Isotopes. Radioactivity. Fission and fusion of nuclei. Sources of high-energy ionizing radiation. High energy particle crossing through matter and dosimetry. Regulation in biological systems.

## Medical cell biology (6 ECTS)

### Aims

The student will acquire basic knowledge about the structure and function of cells as building blocks of organisms. He will learn about the processes of cell division, differentiation and intercellular communication, and will understand the principles and role of cell death, which is required knowledge for understanding cellular basics of disease processes. He will get familiar with cell – chromosomal basics of hereditary disease transmission in classic Mendel genetics.

### Contents

Biological membranes, membrane transport principles – connection of different transport systems, intercellular junctions, cell polarity, intercellular communication and transmission of information. Cytoskeleton and cell motion; microtubules, actin and intermediate filaments. Abnormal cytoskeleton structure and function underlie a variety of pathologic states. Biosynthetic secretory pathways and endomembrane systems; endoplasmic reticulum, Golgi apparatus, vesicles and transport, lysosomes and degradation of macromolecules, exocytosis and exocytotic pathways. Endocytotic pathways; endosomes and different pathways of macromolecules in the cell. Normal and abnormal course of exocytosis and endocytosis. Energy-converting organelles; the mitochondria as a semi-autonomous organelles. The nucleus as a carrier of the genome, interphase nucleus, nucleolus, chromatin and levels of chromatin condensation, chromosomes, chromosomal and genomic mutations. Cell division; mitosis, meiosis and genetic recombination. Cell cycle; phases and control points, mechanisms of regulation. Balance between cell proliferation and cell death; apoptosis and necrosis. Cellular basics of Mendelian genetics and different types of inheritance: autosomal inheritance – dominant and recessive, sex-linked inheritance – X-linked (dominant and recessive) and Y-linked inheritance. Mitochondrial, polygenic and multi-factor inheritance. Genetic polymorphism and essentials of immunogenetics. Primordial germ cells, spermatogenesis and oogenesis. Cellular and molecular basics of fertilization, sex determination. Early stages of embryonic development; blastulation and gastrulation. The genetic basis of establishment of body axes.

## Principles of biochemistry (9 ECTS)

### Aims

The student will acquire knowledge about biomolecules in the human body and about fundamental laws and mechanisms of biochemical events that constitute the basics for understanding of life processes in a healthy and disease state of the human organism.

### Contents

Introduction: Biochemistry, the molecular basis of life; the structure of atoms, chemical bonds, intermolecular forces. Water: Structure, properties, H-bonds, hydrophobic interactions, water as a solvent, water as a reagent. Solutions: Gas solutions (Henry's law), colligative properties of solutions (Raoult's law, freezing points depression, boiling point elevation, osmotic pressure), osmotic events in a cell (tonicity, Donnan's equilibrium, passive transport, Fick's law). pH: Ionization of water,  $K_w$ , pH, weak and strong electrolytes, acids and basic substances (titration curves,  $K_a$ ,  $K_b$ ,  $pK_a$ ,  $pK_b$ ), buffers (Henderson-Hasselbalch's equation), buffer systems in human organisms, biological significance of pH. Thermodynamics: Laws of thermodynamics, thermodynamic functions, the standard state, chemical potential, spontaneous and nonspontaneous processes. Chemical equilibrium: Chemical, kinetic and thermodynamic aspects of chemical equilibrium, the influence of concentration, pH and temperature on chemical equilibrium; solubility product; coupled reactions, the role of TP in coupled processes, active transport. Oxidoreduction: Definitions, quantitative characterization of redox reactions (Nernst equation); redox potential and reaction free enthalpy; photosynthesis and respiration as a model of a redox system in a cell. Velocity of chemical reactions: Definitions, order and molecularity of reactions; theories about the velocity of chemical reactions (Arrhenius theory, collision theory, theory of activated complexes); the velocity of chemical reactions and the equilibrium (the energy profile of reactions); the impact of concentration, pH, ionic power and temperature on reaction speed; catalysis. Molecular basis of life: Biologically important elements, ions and biomolecules. Carbon atom: Electronic configuration, resonance, steric properties. Chemical bonds between carbon atoms and between carbon and other elements.

Organic biomolecules: Isomerism; the mutual influence of functional groups (inductive and resonant effects); a brief overview of organic compounds by functional groups and biochemical importance. Carbohydrates: Chemistry of sugars; monosaccharides, disaccharides, polysaccharides – homoglycans and heteroglycans; enzymatic degradation of glycosidic bonds; detoxification of organic compounds in an organism; simple and complex polysaccharides; glycoproteins; bacterial cell walls; cell surface – membrane characteristics; blood groups. Lipids: Simple and complex; fatty acids, triacylglycerols, sphingolipids, lipoproteins, liposomes; biological membranes – structure and function; prostaglandins and terpenes.

Steroids: General characteristics, classification, chemistry of steroids, steroids isomerism; sterols, bile acids; steroid hormones – classification, structure and properties; the basis of functioning of hormones at the molecular level.

Nucleotides: Purine and pyrimidine bases, nucleosides and nucleotides – structure and nomenclature; nucleotides and their role in the transfer of energy; cyclic nucleotides as second messengers, nucleotides as building blocks of nucleic acids. Nucleic acids: Nucleic acid types, structure and biological role; the definition and structural properties of the gene; basics of replication, transcription and translation; mutations; the structure of the human genome, the human genome project, genomics, proteomics, understanding the causes and consequences of genetic diseases/defects at the molecular level. Vitamins: Classification of vitamins; water soluble vitamins (vitamins thiamine, riboflavin, nicotinic acid, folic acid, vitamin C, cobalamin – the structure and biological role), coenzymes and prosthetic groups; lipid-soluble vitamins (vitamins A, D, E, K – the structure and biological role).

Amino acids: Structure, properties, and nomenclature; isoelectric and isoionic points; the analysis of amino acids.

Peptides: biologically active peptides; biogenic amines, the structural basis of peptide hormones and biogenic amines functioning.

Proteins: General structure and properties; division by function (enzymes, transport, storage, contractile, structural, defensive and regulatory proteins); division by structure (fibrillar and globular proteins). The structure of proteins: primary structure – sequence; secondary structure ( $\alpha$ -helix,  $\beta$ -structure); tertiary and quaternary structure; self-assembly of proteins; conformation and conformational change. Fibrillar proteins:  $\alpha$ -keratin, collagen and elastin – the structure and function. Monomeric and oligomeric structure of proteins: myoglobin and hemoglobin. Contractile proteins: muscle contractile proteins (myosin, actin, troponin and tropomyosin); contraction of striated and smooth muscles; non-muscular contractile proteins (kinesin and dynein). Membrane proteins: erythrocyte membrane proteins (glycophorin, spectrin, anion transport protein); K<sup>+</sup>/Na<sup>+</sup>-ATPase; G-proteins (the structure and role in the functioning of hormones); insulin receptors; rhodopsin (sight cycle).

Enzymes: General characteristics; enzyme kinetics (Michaelis-Menten's kinetics, multi-substrate kinetics, cooperativeness, inhibition and activation); mechanisms of enzymatic reactions; regulation of enzyme activity (allosteric modulation, covalent modification (glycogen phosphorylase), regulation by proteolytic enzymes (trypsin)); classification and nomenclature of enzymes. Other proteins: apoproteins of plasma lipoproteins; immunoglobulins (the structure and molecular basics of the immune response).

Conclusion: Functional links – from biomolecules to complex cellular structures.

## Introduction to clinical dental medicine 1 (8 ECTS)

### Aims

The student will get to know basic ethical principles in medicine, including modern deontological guidelines, he will recognize the importance of health for society, he will get to know basic public health concepts and approaches, he will understand the development of medicine, changing of health and disease aspects over time, he will comprehend universality, internationality and interdisciplinarity of medicine and will master the basics of information systems and information technology tools in health care.

## Contents

**Module 1.** Set I presents lectures about national and international declarations, conventions, laws and codes with which the student will gain insight into the doctor's moral, material and criminal responsibility. Set II presents a series of 15 seminars, which will be attended in groups with the aim to study selected chapters of medical deontology in-depth and to meet with some ethical dilemmas faced by doctors in their practice.

**Module 2.** Medicine, public health and public health medicine. Health and disease. Determinants of health. The definition of health determinants and risk factors. Overview of determinants of health. Health care. Methods of studying population health. Management of medical problems. Public health approaches and interventions. Large public health problems.

**Module 3.** Development of medical science and practice throughout history – from ancient medicine to modern medicine. Achievements of Slovenian doctors abroad, of some foreign doctors in our country and development of organized medical associations, hospitals and health care education among Slovenes.

Promoting student thinking and motivating students through seminars and excursions.

**Module 4.** Data collection. Electronic medical records. Information systems in health care. Signals in medicine. Images in medicine. Telemedicine and telematics. Systems to support medical decision making. Information security and cryptography. Nomenclature and classification in medicine. Computer networking and the Internet as infrastructure for scientific information.

## Research in dental medicine 1 (3 ECTS)

### Aims

The aim of the course is to provide the student with a basic understanding of dental medicine as an evidence-based science that requires the incorporation of the best research evidence into the clinical knowledge, in line with unique values and circumstances of the patient. The aim is also to encourage critical thinking about science and to equip students with knowledge that will allow them to find, understand and critically evaluate professional resources, the findings of which can help in later decision-making in clinical work.

The student will gain competencies for the critical appraisal of "best research evidence" in relevant research, ranging from basic to patient-centered clinical research.

### Contents

Introduction to informatics, biostatistics and evidence based dental medicine.

## Histology and embryology for dental medicine 1 (7 ECTS)

### Aims

Aknowledge medicine as a science

During the course students learn about basic preclinic and clinical characteristics of histology. Histology is to be addressed from functional point of view with the special emphasis on normal histology.

Students learn about major characteristics of human development. Embriology is to be addressed from functional point of view, with special emphasis on normal development and on dissfunctional development.

Students gain competences and aknowledge dental medicine as a science.

### Contents

Course of Histology and Embryology is focused on general and special histology, on human development – embryology, and irregularities in development . Epithelia and glands. Types of epithelia. Glandular epithelia. Regeneration of epithelia. Connective tissues. Cells in connective tissues. Interstitial fluid and fibres. Mesenchyme, dense and propper connective tissue. Cartilage. Adipose tissue. White and brown fat tissue. Bone. Types of osification. Muscles. Histofiziology of muscles contraction. Peripheral and central nervous system. Neurons, neuroglia. Peripheral nerve, ganglion. Spinal cord marrow. Cerebellum. Synapses. Nerve endings. Choroid plexus. Skin. Structure and functional histology. Hair, nails, sweat glands. Mammary gland. Endocrine glands and functional histology of each of them. Thyroid gland. Parathyroid glands. Adrenal glands. Pituitary. The pineal gland. Diffuse endocrine system. Paraganglion. Blood and blood cells. Plasma. Hemopoiesis and phases of hemopoiesis. Immune and lymphatic organs. Lymph nodes. Spleen. Thymus. Tonsils. Circulatory system. Heart. Capillaries. Arterioles. Venules. Arteries. Veins. Lymph vessels. Gastrointestinal tract. Esophagus. Stomach.

Small and large intestine. Liver. Pancreas. Respiratory system. Nasal cavity. Larynx. Trachea. Lungs. Urinary system. Kidney. Ureter. Bladder. Urethra. Male reproductive system. Testis. Seminal duct. Accessory glands. Penis. Female reproductive system. Ovaries. Follicular growth. Ovulation. Oviduct. Uterus. Vagina. Sense organs. Eye. Ear. Embryology. Blastocyst formation. Embryo. Fetus. Branchial organs development. Placenta and fetal membranes development. Bone and cartilage development. Development of muscles. Skin, nails, teeth and hair development. Basics of nervous system development. Heart development. Vessels development. Respiratory system development. Urogenital system development. Male and female genitals development. Gastrointestinal system development. Senses development: eye, ear. Teratology. Teratogenic substances. Congenital development irregularities. Anomalies caused by genetic and environmental factors.

## **Functional and clinically applied morphology and embryology of the dental organ (5 ECTS)**

### **Contents**

Histology of the dental organ: histological structure of enamel, dentine, dental pulp, cementum, periodontal ligament, gingiva, and alveolar process. Embryology of the dental organ: orofacial development, odontogenesis, amelogenesis, dentin and root formation, dental pulp formation, periodontium formation, repair and regeneration of dental tissues, tooth eruption. Anatomical basis of tooth modeling: wax carving of individual types of permanent teeth.

## **Public health in dental medicine (4 ECTS)**

### **Contents**

- I. Basic public health concepts
- II. Basic determinants of health of social and physical environment
- III. Complex determinants of health
- IV. Methods of studying population health
- V. Public health measures
- VI. Major public health problems and vulnerable population groups

## **Research in Dental Medicine 2 (3 ECTS)**

### **Contents**

Basics of biostatistics. Basic concepts of probability and statistics, Probability distributions. Fundamentals of parameter estimation and statistical hypothesis testing. Confidence intervals. Basic statistical test: t-test, chi-square, ANOVA, nonparametric tests ... Regression models.

## **Biochemistry and Genetics for Dental Medicine (8 ECTS)**

### **Aims**

General course objective is to understand dental medicine as a science. The student will acquire the following competencies: a) will know how to confidently use the knowledge of biochemical and genetic processes in the human body and oral cavity b) will gain independent understanding of knowledge, principles and facts of basic biomedical sciences relevant for clinical decision making



## Contents

### Dental biochemistry

Introduction to metabolism. Basic mechanisms of organic reactions. Experimental approaches to the study of cellular metabolism. Metabolic pathways. Bioenergetics and oxidative processes. Reactions in glycolysis, Krebs cycle and oxidative phosphorylation. Regulation of glycolysis, Krebs cycle and oxidative phosphorylation. Oxidative breakdown of fatty acids. Metabolism of ketone compounds and ethanol. Oxygen toxicity and free radicals. Protection against ROS. Carbohydrate metabolism. Digestion, absorption and transport of carbohydrates. Metabolism of glycogen and other carbohydrates. Synthesis of glycosides, lactose, glycoproteins and glycolipids. Pentose phosphate pathway. Gluconeogenesis. Regulation of carbohydrate metabolism by hormones. Lipid metabolism. Digestion, absorption and transport of lipids. Synthesis of fatty acids, triacylglycerols and membrane lipids. Lipoprotein metabolism. Metabolism of cholesterol, bile acids, sex hormones, vitamin D and eicosanoids. Regulation of lipid metabolism by hormones. Amino acid metabolism. Digestion, amino acid absorption and protein recycling. Nitrogen removal and urea cycle. Amino acid synthesis and degradation. Metabolism of thyroid hormones and biogenic amines in nerves and muscles. Erythrocyte metabolism. Nucleotide metabolism. Nucleotide synthesis, degradation, and recycling. Tetrahydrofolate, vitamin B12 and S-adenosylmethionine. Regulation of metabolism and homeostasis

Integration of amino acid metabolism. Integration of carbohydrate and lipid metabolism. Integration by regulating the metabolism of tissues and organs. Biomineralization. Composition of hard dental tissues. Crystallization of hydroxyapatite. Biomineralization of dental dentin and enamel. The process of demineralization and remineralization in dental hard tissues. Biochemical properties of proteins in hard tissues. Calcium and phosphate metabolism

Calcium and phosphate homeostasis. Regulation of calcium and phosphate metabolism by hormones. Dental diseases associated with impaired mechanisms of calcium and phosphate metabolism. Biochemistry of saliva. Composition and role of inorganic and organic components in saliva. Structure and role of important proteins in saliva. The role of saliva in the prevention of caries. Biochemical processes on the tooth surface. The origin and role of the pellicle. Metabolic activities of bacteria in the oral cavity. Metabolism of carbohydrates and amino acids in biofilms and dental plaque. Biochemistry of periodontal tissues

Biochemical properties of proteins in periodontal tissues. Biochemical processes in periodontal tissues.

### Genetics

DNA as genetic material, Storage and preservation of genetic information - replication complex and replication of nuclear and mitochondrial DNA in eukaryotes. Fundamentals of DNA replication in prokaryotes. DNA damage and DNA repair. Mutations and genetic variability and their significance in dental medicine. Genetic information transfer (expression), Regulation of genetic expression, genetic and epigenetic mechanisms of gene expression. Biosynthesis and processing of RNA. Non-coding RNA. Protein biosynthesis, Genetic technology and molecular approaches for nucleic acids analysis. Fundamentals of recombinant DNA technology and its use in dental medicine. Fundamentals of molecular genetic methods, Genetics of developmental defects of dental organ components and periodontal tissues

Genetics of tooth development and developmental defects of enamel and dentin with clinical cases. Genetics of periodontal disease with clinical cases, Fundamentals of diagnostic methods in genetics, Molecular genetics and cytogenetic diagnostics, Basics of inheritance and human population genetics, Mendel's laws, deviations from Mendel's laws in inheritance, patterns of inheritance: autosomal dominant and recessive, sex-linked inheritance, mitochondrial inheritance. Population genetics.



## Physiology for dental medicine (12 ECTS)

### Aims

The student will learn about the function of a normal organism. He will master fundamental concepts in physiology. He will get to know the principles of physiology phenomena measurements and will be, in accordance with concepts, getting used to interpreting the results of measurements. Lessons in physiology will be based on the knowledge gained from the lessons of biophysics, biochemistry, biology and normal morphology. The ability to independently solve problems and critical thinking will be developed. The habit of self-education will be encouraged.

### Contents

Physiological principles: Physiology as science, homeostasis. Transport phenomena in the body and across the cell membranes. System analysis and regulation in biological systems. Membrane potential. Electrical communication (localized and propagating potentials). Skeletal muscle. Smooth muscle. Blood circulation and the heart: General description, division, cardiac cycle. Electrical activity of the heart. Heart muscle cell, heart energetics. Monitoring of the cardiac function. Hemodynamics. Arteries and veins. Microcirculation (capillary exchange, regulation). Regulation of cardiac output. Regulation of arterial pressure. Respiration: Structure – function relationship of the respiratory system. Ventilation. Mechanics of breathing. Diffusion in lungs. Pulmonary blood flow. Blood transport of gases. Ventilation, diffusion, perfusion matching. Regulation of breathing.

Kidneys and the traffic of electrolytes in the body: Structure – function relationship. Glomerular filtration and renal blood flow. Renal function tests, renal clearance. Transtubular transport of matter. Countercurrent multiplier system. Transport of water in the body, osmolality control. Transport of sodium and water in the body. Transport of potassium in the body. Acid-base physiology – buffers and Davenport's diagram. Physiology of acid-base balance – kidneys and the regulation of pH in the body. Digestion: Gastric and intestinal wall structure and its impact on the digestive functions, neural and hormonal control of the digestive tract, characteristic motor activity of the digestive tract, secretion of saliva, gastric secretion, exocrine pancreas, secretion and the role of bile, absorption of nutrients in the gastrointestinal tract.

Endocrine system: Principles of endocrine functions, control of hormone secretion, major classes of hormones and their actions, nervous system – endocrine system interactions, hormones of adeno- and neurohypophysis, thyroid and adrenal glands, homeostasis of calcium and phosphate, sex hormones, pregnancy and childbirth.

Metabolism: Transformations of matter and energy in the body, the metabolism in different physiological states of the organism, regulation of blood glucose concentration, basal metabolism, regulation of body temperature.

Nervous system: General properties and functions of the nervous system, organization of the nervous system, homeostasis of the nervous functions, synaptic transmission, general properties of the sensory systems, somatosensory system, the physiology of pain, optics of vision, photoreception, neurophysiology of vision, psychophysics of vision, conduction of sound to the inner ear and sound transduction, psychophysics of hearing, vestibular apparatus, smell and taste, the general scheme of the motor system, motor role of the spinal cord, motor role of the brain stem, cortical control of movement, motor functions of the cerebellum and basal ganglia, control of eye movements, the role of the vegetative nervous system, integrative functions of the brain stem, nerve control of instinctive behaviors, speech control.

## Introduction to Clinical Dental Medicine 2 (17 ECTS)

### Aims

- The course assists the student to:
- be able to use knowledge and clinical skills for a team approach and patient-centered care;
- be able to work safely in a clinical environment;
- be able to understand the processes of student's own learning of clinical medicine and the motivation to develop their abilities throughout life;
- be able to cooperate and work in multi-professional times;
- be capable of empathic and holistic psychosomatic communication with patients, their owners and co-workers;
- respect confidentiality and cultural and social diversity;
- be able to recognize personal limitations, take responsibility for one's own actions in seeking advice and assistance;
- be able to take care of personal mental, physical and relationship health;
- to adhere to high ethical and professional standards.

### Contents

- Introduction to diagnostics and minimally invasive dentistry
- Dental materials and technology of dental materials
- Team work
- Medical psychology
- General propedeutics
- Dental propedeutics 1

## Microbiology and immunology for dental medicine (5 ECTS)

### Contents

Bacterial cell, Metabolism, bacterial reproduction, bacterial genetics, bacterial classification, spread of germs. Normal bacterial flora. Diagnostics of bacterial infections. Collection and transport of samples for bacterial examination. **Disinfection** and sterilization. Antibiotics and chemotherapeutics. The purpose of the use of antibiotics. Mechanisms of bacterial resistance against antibiotics. Current problems in bacterial resistance, antibiogram. General properties of viruses. Replication of viruses. Genetics of viruses and origin of viruses. Direct and indirect methods for detection of viruses. Pathogenesis of viral infections. Viral oncogenesis. Natural antiviral resistance in immune antiviral response. Chemotherapy of viral diseases.

Characteristics of fungi and mold, dimorphism. The agents of cutaneous mycosis, dermatophytes. The agents of subcutaneous and systemic fungal infections.

Characteristics of parasites causing infections in humans and animals.

Natural immunity. Immune system. Antigens. Antibodies. Hypersensitivity. Autoimmunity. T-cell receptor and MHC molecules. Activation of lymphocytes, immune tolerance. Regulation of immune response. Immune response in microbial infections. Infections due to lowered resistance. Immunosuppression. Vaccines and regular vaccination program.

## Pathophysiology for dental medicine (7 ECTS)

### Contents

The content encompasses pathophysiology of the following diseases and pathological processes:

Changes of body temperature. Starvation. Diabetes. Hypoglycemia. Diseases of the thyroid gland. Burns. Radiation disease. Cell death in disease.

Inflammation. Response to stress. Free radicals. Cancerogenesis and neoplastic cell. Changes in body fluids. Dehydration. Acidosis and alkalosis. Changes in calcium and phosphorus metabolism. Renal failure and tests of renal function. Hemorrhagic states. Thrombosis.

Respiratory dysfunction. Hypoxia and cyanosis. Dysfunctions due to changes of air pressure. Cough. Dyspnea. Asthma and obstructive lung diseases. Pneumothorax. Bleeding and shock. Hypertension. Hypotension

Heart failure and edema. Atherosclerosis. Complications of transfusion. Ischemic muscle necrosis.

Liver diseases and liver function tests. Patobiochemistry of alcoholism. Peptic ulcer disease. Gastrointestinal dysfunctions. Dysfunction of neuromuscular transmission. Disturbances of consciousness. Dysfunction of locomotion and paralysis. Pathologic pain. Headache. Increased intracranial pressure. Parkinson's disease. Psychic and psychosomatic diseases. Stroke.

## Dental Preclinical Practicum (12 ECTS)

### Contents

Ergonomics, preparation of dental unit, patient and therapist, cross-infection control, use and, maintenance of dental instruments, instruments for scaling and root planing, rotary instruments (air turbine, handpieces, burs) and hand instruments, diamond burs and Instruments for crowns preparations, impression making, metal casting and welding procedures, procedures for crowns preparations (full metal crowns, porcelain fused to metal crowns) with impression techniques, dental laboratory procedures, definitive casts and dies, wax patterns, metalceramic restorations, allceramic restorations, investing and casting, framework design provisional restorations removable partial dentures full dentures, direct and indirect post and core procedures, caries (morphology and clinical appearance), field isolation (cotton rolls and rubber dam), cavity preparation and amalgam fillings, cavity preparation and composite filling, prevention of pulpitis, therapy of pulpitis, pulp pathology and periapical pathology (etiology, pathology and clinical appearance), endodontic therapy (tooth preparation, rubber dam placement, access cavity, working length determination, endodontic instruments, root canal cleaning and shaping, irrigation, canal medication, obturation, coronal seal), anatomy of permanent and deciduous teeth. Fundamentals of occlusion, articulation and chewing. Histology of tooth organ (enamel, dentine, dental pulp, cement, periodontium, bone, gingiva). Development of the oral cavity and of the dental organ (early tooth development, the development of dentin, enamel, root, dental cement, periodontium, alveolar process, parodontal ligament, gingiva, tooth pulp). Tooth eruption, regeneration and reparation of dental hard tissues. Biology and biochemistry of saliva, dental hard tissues, parodontal tissues. Particular aspects of molecular biology in dental medicine.

## Pathology for dental medicine (6 ECTS)

### Contents

Students learn about basic pathologic processes – their etiology and pathogenesis, and are introduced to the analysis of morphological changes in diseased cells, tissues and organs with light microscopy. They familiarize with clinical pictures, basic imaging diagnostic, macroscopic and microscopic changes of the most important disease processes through clinico-pathologic study of typical cases. The basic pathology course deals with cell injury and adaptation, inflammation, regeneration and reparation, circulatory disorders, immunopathology, neoplasms, genetic and pediatric disorders, infectious diseases, environmental and nutritional diseases. The organ pathology course deals with the most important diseases of the cardiovascular, gastrointestinal, respiratory systems, kidney, liver, pancreas and biliary tract, central and peripheral nervous system, female genital tract and breast, musculoskeletal and hematopoietic systems.

The oral pathology course deals with the most relevant disorders of the oral cavity and pharynx, salivary glands, cervical lymphnodes, cysts of the head and neck, jaws, and developmental, inflammatory and neoplastic conditions of the teeth and periodontal tissues.

## General Pharmacology and Toxicology (6 ECTS)

### 1. General Pharmacology:

- Definition of pharmacology, links with other fields
- Molecular targets for drug action and mechanisms of their action
- Concentration-response relationship, its analysis
- Drug receptors
- Pharmacokinetic processes and fate of drugs in the body
- Pharmacokinetic parameters
- Nonclinical drug testing

### 2. Fundamentals of pharmacology of the nervous system

- Fundamentals of pharmacology of the peripheral nervous system
- Fundamentals of pharmacology of the central nervous system

### 3. Fundamentals of toxicology

- Mechanisms of toxic effects of exogenous substances, Toxicokinetics.

## Clinical Skills in Medicine (7 ECTS)

### Aims

The course assists the student to:

- be able to use knowledge and clinical skills to manage common general clinical conditions
- be competent to manage life threatening conditions
- be able to work safely in a clinical environment;
- be curious, motivated for life-long learning of clinical medicine and motivated for professional development;
- able to collaborate with the coworkers of the dental team (dental assistants, dental technicians, oral hygienists)
- develop the ability to cooperate and work in multi-professional times;
- be capable of empathic and holistic and motivational psychosomatic communication with patients, their relatives and co-workers;
- make decisions accordant to ethics and evidence-based medicine
- be able to recognize personal limitations, take responsibility for his/her actions in seeking advice and assistance;
- adhere to high ethical and professional standards.

### Contents

Special clinical examination and basics of surgery, Advanced life support and emergencies, Interprofessional collaboration.

## Basics of Dental Occlusion (3 ECTS)

### Contents

Theoretical foundations of static and dynamic dental occlusion, analysis of dental occlusion on the patient and in the articulator, selection and use of articulators with face-bow, various registrations of inter-jaw relationships, preparation of study gypsum models and articulation procedure, anterior and posterior occlusal determinants, selection of appropriate occlusion concept for new prosthetic occlusion.

## Dental prophedautics 2 (7 ECTS)

- Methods and ways of examining a dental patient

- Examination of a dental patient with associated systemic diseases
- Imaging examinations in dentistry

Knowledge and understanding:

- Cognitive basics, types, and ways of taking anamnesis.
- Knowledge of the types of clinical examinations of the dental patient and indications for their implementation.
- Knowledge and mastery of methods and procedures of extraoral and intraoral examination of a dental patient.
- Knowledge of instruments and devices used by the dentist in diagnosis and treatment.
- Knowledge and understanding of basic and clinical knowledge for the recognition of associated systemic diseases during the examination of a dental patient.
- Knowledge of physical laws and concepts essential for understanding imaging diagnostics in dentistry.
- Knowledge of dental radiology methods, indications and limitations for implementation, and interpretation of results.

## General Pharmacology and Toxicology (6 ECTS)

### Contents

#### 1. General Pharmacology:

- Definition of pharmacology, links with other fields
- Molecular targets for drug action and mechanisms of their action
- Concentration-response relationship, its analysis
- Drug receptors
- Pharmacokinetic processes and fate of drugs in the body
- Pharmacokinetic parameters
- Nonclinical drug testing

#### 2. Fundamentals of pharmacology of the nervous system

- Fundamentals of pharmacology of the peripheral nervous system
- Fundamentals of pharmacology of the central nervous system

#### 3. Fundamentals of toxicology

- Mechanisms of toxic effects of exogenous substances

Toxicokinetics

## Painless dentistry (3 ECTS)

### Contents

The course assists the student to:

- be able to recognize the signs and symptoms of fear and anxiety in a dental patient;
- be able to work safely and painlessly in a clinical environment;
- be able to anticipate, identify and adequately address possible complications of local anesthesia;
- be capable of empathic and holistic psychosomatic communication with patients, their owners and co-workers;

## Research in dental medicine 3 (3 ECTS)

### Aims

To gain an indepth understanding of the principles of research in dental medicine, to build upon the knowledge gained in the first two years and be able to transfer the gained competences to critical appraisal of the literature and active research. Learning about the research options in various areas of dental medicine. disorders. Stroke.

## Contents

1. Ethical principles of research in medicine and dentistry; 2. Clinical research in medicine and dentistry; 3. Research in the field of public health; 4. Designing medical research according to the research question; 5. Critical reading of a scientific article; 6. Digitization in medicine and medical/dental research; 7. Artificial intelligence / machine learning in database analysis

## Oral Diagnosis (5 ECTS)

### Aims

The purpose of this subject is to teach the student the orderly steps of anamnesis acquisition, clinical examination, diagnosis establishment of diagnosis and treatment plan of dental patients. The student will get basic knowledge how to perform different types of dental clinical examinations, such as complete dental clinical examination, screening and control dental clinical examination and limited or emergency dental clinical examination. The student will be able to take anamnesis, to make clinical general and oral examination, to write clinical records, to establish the diagnosis and elaborate the treatment plan.

### Contents

Types of dental clinical examination. Symptoms and signs in the oral cavity. Questionnaires about health. Anamnesis. The importance of drugs in oral diagnostics. Principles of clinical examination. General clinical examination. Examination of the oral cavity. Examination of parodontal tissues. Examination of teeth. Bite and identification of orthodontic anomalies. Examination of toothless parts of the jaw. Oral radiological examination. Further examination of a dental patient. Study models. Recording findings of clinical examination. Dental treatment plans. Specialties of dental examination of children and adolescents. Writing clinical records, patient admission forms and dismissal letters for patients with malignant and benign diseases, injuries, developmental abnormalities and congenital anomalies of the oral cavity, head and neck. Writing records for patients who require oral-surgical operations.

## General and Dental Radiology (3 ECTS)

### Aims

The student will get knowledge about the importance and the principles of radiological imaging and diagnostic technologies that are used in diagnostics of disease processes and injuries of the teeth and maxillofacial area. He will get to know about digital X-ray imaging, computerized tomography, interventional radiology, diagnostic ultrasound and magnetic resonance tomography.

Knowledge of clinical indications for each imaging technique. Knowledge of intraoral imaging (parallel imaging techniques and dental crown imaging). Knowledge of general principles of analysis and interpretation of X-ray images and other radiological imaging of examinations.

### Contents

Normal radiological anatomy of teeth and parodontal tissues, of maxilla and mandible, of temporomandibular joint and other parts of the maxillofacial area, pathoanatomic changes, relevant for understanding of radiological visible signs, radiological features of congenital abnormalities, injuries, inflammations, tumors and degenerative changes in the area of teeth and parodontal tissues, maxilla, mandible, temporomandibular joint and other parts of maxillofacial area, clinical indications for the use of certain radiological technologies, intraoral imaging technology and development of images.

## Infectious Diseases and Epidemiology (4 ECTS)

### Aims

The aim of study of infectious disease and epidemiology is understanding and knowledge of the theoretical basics of infections and diseases caused by microorganisms. The dental medicine student will understand clinical images of infectious diseases in daily practice. He will be able to establish diagnosis of diseases caused by microorganisms in the neck and head, using clinical examination or uncomplicated diagnostic

examinations. He will be familiar with the differential diagnostics of these diseases, with treatment methods and with prevention and epidemiology of infectious diseases.

### **Contents**

Epidemiology and prevention of major infectious diseases, including passive and active prophylaxis. Chemoprophylaxis of common infectious diseases, endocarditis prophylaxis. Pathophysiology and diagnostics of infectious diseases (clinical and laboratory). Infectious diseases by organic systems, in particular oral infections and infections of the neck and head. Major exanthematous diseases, systemic infections (bacteriemia, sepsis). Head and neck infections in an immunocompromised and weakened patient. Approaches to a patient with fever and/or suspected infection. Artificial materials infection. Aids (HIV infection). Herpes virus infections (HSV, VZV, CMV, EBV, HHV-6, HHV-7, HHV-8). Nosocomial infections. Important zoonoses, which are Reflected with symptoms in the head and neck area (anthrax, tularemia, cat scratch disease). Important parasitoses (toxoplasmosis, trichinosis). Systemic and local fungal infections in the head and neck area and their treatment. Major tropical diseases (malaria, travellers' diseases). Emerging infectious diseases. Infections with anaerobes (tetanus, botulism, infection with *Clostridium difficile* and *Clostridium perfringens*, local infections with anaerobes). Recognition and treatment of sexually transmitted diseases, that are reflected by symptoms in the head and neck area. Treatment of infections in the head and neck area (antibacterial, antifungal, antiviral medications and treatment of parasitoses).

## **Surgery (4 ECTS)**

### **Aims**

The student of dental medicine will acquire knowledge about surgical propedeutics to the same extent as the student of medicine. He will learn how, on the basis of anamnestic data and clinical examination, to build a diagnosis of surgical diseases or injuries, related to dental medicine. He will learn how to autonomously provide emergency medical care for these diseases or injuries. He will get acquainted with the currently valid ways of treatment and with possible future development of therapeutic methods.

### **Contents**

Conditions for surgical work. Surgical instruments. Surgical materials. Basic operational techniques. Principles of diagnosis and treatment of surgical infections. General traumatology. General plastic surgery and facial plastic surgery. General neurosurgery and surgical treatment of trigeminal neuralgia. Differential diagnosis and assessment of halitosis.

## **Medical Clinic 1 (4 ECTS)**

### **Aims**

Module 1. The goal of the study of dermatovenereology is understanding and knowledge of the theoretical bases of skin and venereal diseases. After the end of the module, the student of dental medicine will be able to understand the clinical pictures in patients with skin and venereal diseases in every-day clinical practice. The student will be able to state the diagnosis of the skin and sexually transmitted diseases with manifestation in the head and neck region, with clinical examination and basic diagnostic procedures. He will be familiar with differential diagnosis, the methods of treatment and prevention, and the epidemiology of these diseases. Module 2. The goals of neurology study is to get basic knowledge about most common neurological diseases which have an impact on orodental disease or demand modification of patients treatment. The student will become able to autonomously provide the emergency medical aid in neurological patients which may occur during orodental treatment. Holistic treatment of a patient without a narrow focus on a single disease will be emphasized.

Module 3. The study of psychiatry is directed towards the understanding of fundamental psychological and psychosocial characteristics of the population, which must be taken into consideration at practical work.

The student will get to know and understand the common types of mental disorder which may interfere with the treatment and may in their own way modify the work in a dental clinic. The student will get acquainted with the easiest ways to establish a proper relationship with and cooperation of a mentally disordered patient.

### **Contents**

Module 1. Propaedeutic of dermatovenereology, treatment of skin diseases, bacterial skin infections, skin tuberculosis, viral diseases of skin and mucous membranes, dermatomycology, parasitic skin diseases, sexually transmitted diseases, non-sexually transmitted diseases of external genitalia, allergic and reactive skin diseases, autoimmune skin diseases, photodermatoses, erythematosquamous skin diseases, diseases of the sebaceous glands, genodermatoses, skin tumours, disorders of pigmentation, diseases of the nails, hairs and sweat glands, metabolic skin disorders, vasculitic skin manifestations, chronic venous insufficiency, tropical skin diseases, diseases of the oral cavity.

Module 2. Functional units of the central nervous system, symptoms and signs of neurological diseases, classification of neurological diseases, a way to a neurological diagnosis, selected emergency situations in neurology, chronic neurological and psychiatric diseases, neurological complications of diseases in other organ systems.

Module 3. The content of the lectures meaningfully connects the knowledge about etiology and the development of individual groups of mental disorders, their clinical picture and therapeutic treatment, with special emphasis on the needs of dental practitioner.

Contents that are specifically relevant for dentists are put in a way that give to the student the possibility to obtain complementary skills while working with experts (relaxation methods, psychotherapy, working with anxious people...).



## Dental Diseases 1, 2, 3 (23 ECTS)

### Aims

The student will upgrade his knowledge and understanding of pre-clinical subjects; from the stomatology subjects these are: "Oral Biology", "Pre-clinical Practicum", "Dental Materials" and "Dental Propedeutics". He will gain clinical knowledge and skills, he will get knowledge about developmental defects of the dental organ, developmental defects of teeth eruption, number, size and shape of teeth, dental defects of the functional period among adults, he will explain the etiopathogenetic mechanisms, he will make a diagnosis and will describe therapeutic interventions in developmental defects and defects of the functional period, he will be trained for independent clinical work on a patient while treating conservative and endodontic cases (in the sixth year of study he treats patients completely).

### Contents

Upgrading of the knowledge obtained at pre-clinical subjects at practical course, seminars and elective courses. At clinical practical course the emphasis is on endodontic and conservative treatment of the patient (in the sixth year of study with an integrated approach), on causal factors of developmental abnormalities of teeth, on abnormal number of teeth, on abnormal teeth eruption, on abnormal shape and size of teeth, on developmental abnormalities of dental hard tissues caused by external factors or genetic defects, on acute mechanical damage of teeth in the active period among adults, on creating a list of acute injuries of teeth, on dental hard tissue abrasion, on resorption of teeth, on tooth staining, on teeth whitening after endodontic treatment, on dentin and cement production in diseased tooth.

## Oral Diseases and Periodontology 1, 2, 3 (17 ECTS)

### Aims

The aim of studying oral diseases is having knowledge about epidemiology, etiopathogenesis and a clinical picture of the most common oral mucosal disorders. The student will get to know differential diagnostics and the basics of treating conditions and oral mucosal disorders. The aim of studying parodontics is that student becomes acquainted with epidemiology, etiopathogenesis, diagnostics and parodontal tissue disease treatment. The student will be able to recognize different forms of parodontal tissue diseases and will understand their importance for oral and systemic health. He will perform the hygienic phase and maintenance phase of parodontal disease treatment. The student will also get familiar with basics of planning and of the surgical part of dental implant procedures.

### Contents

Contents of the subject include the following items:

8<sup>th</sup> semester. Introduction to parodontology, gum, dentogingival epithelium, epithelial differentiation, periodontium, cement, alveolar bone, vascular, lymphatic and nervous system of parodontium, classification of parodontal diseases, parodontal indices, epidemiology of parodontal diseases, dental plaques, dental tartar, microorganisms associated with parodontal disease, microorganisms associated with parodontal disease II, pathogenesis of parodontal disease.

9<sup>th</sup> semester. Modifying factors, susceptibility to parodontal disease, gum inflammation that was not caused by dental plaques, gum inflammation caused by dental plaques, parodontitis, aggressive parodontitis, necrotizing parodontal disease, parodontal disease as a risk factor for systemic diseases, parodontal abscesses, acute parodontal diseases, lesions of endodontic origin, peri-implant mucositis, peri-implantitis, examination of patients with parodontal disease, treatment planning of parodontal diseases, systemic phase of parodontal disease treatment.

10<sup>th</sup> semester. Developmental abnormalities, hereditary diseases, mechanical, chemical and thermal injuries, changes in the oral mucosa due to medication, tongue disorders, lip diseases, viral infections, changes in the oral cavity due to HIV infection, bacterial infections, fungal infections, autoimmune diseases, skin diseases accompanied with changes in the oral mucosa, changes in the mouth due to blood diseases, changes in the oral mucosa due to vitamin deficiency.

11<sup>th</sup> semester. Motivational interview, mechanical and chemical control of supragingival plaque, non-surgical treatment of parodontal disease, basics of parodontal surgery 1 and 2, anaesthesiology, accessories, lobe operations 1 and 2, root bifurcation treatment, endodontics and parodontics, regenerative parodontal treatment, mucogingival surgery, parodontal plastic surgery 2, parodontal plastic microsurgery.

12<sup>th</sup> semester. Antibiotics in parodontal treatment, toothless alveolar ridge, healing after tooth extraction, reconstruction of toothless ridge, traumatic occlusion, orthodontics and parodontics, principles of osseointegration, selection of patients and dental implant surgery 1 and 2, supportive parodontal treatment, halitosis, complex parodontal treatment – clinical cases.

## **Maxillofacial and Oral Surgery 1, 2, 3 (16 ECTS)**

### **Aims**

The student will learn the theoretical basics of tooth extraction and all associated conditions. He will acquire knowledge about dentoalveolar illnesses and oral cavity conditions that require oromaxillofacial surgical treatment. He will become acquainted with the injuries and illnesses of the facial skeleton, facial soft tissue structures and neck. At clinical practical course he will learn directed oromaxillofacial examination, differential diagnostics and basic skills for tooth extraction and surgical treatment of intraoral inflammatory conditions. In addition, he will learn first medical aid and how to guide oromaxillofacial patients from dental toward specialist treatment.

### **Contents**

8<sup>th</sup> semester. Indications and contraindications for tooth extraction, basic and simple techniques for tooth extraction, endangered patient and antibiotic prophylaxis at oral surgery interventions. Local anesthesia. Complications during or after tooth extraction. Treatment of not fully erupted teeth, surgical and surgical-orthodontic treatment of not fully erupted teeth. Surgical extractions, hemisections and dental root amputation. The etiology and pathogenesis of odontogenic infections, diagnosis and treatment of odontogenic infections. Specifics of tooth extraction and odontogenic infections among children.

9<sup>th</sup> semester. Characteristics and treatment for osteomyelitis of the jaws. Surgical treatment of chronic periapical parodontitis. Odontogenic diseases of the maxillary sinus. Jaw cysts and their treatment. Pre- prosthetic surgery: fundamentals, interventions in local and general anesthesia. Basics of osteointegration and implantology care for toothless patients.

10<sup>th</sup> semester. Tumors of the facial skin. Melanoma and other pigment changes in the oral cavity. Odontogenic tumors and other similar odontogenic changes. Non-odontogenic tumors of the jaws. Pre-malignant changes in the oral cavity. Tumor diagnostics. Oral cavity carcinomas. Soft tissue neoplasms and lymphomas. Indurations in the neck. Salivary gland tumors. Tumors of the maxillary sinus. Surgical treatment of head and neck tumors and their multidisciplinary treatment. Congenital anomalies of the head and neck – syndromes. Cheilognathopalatoschises, their surgical and multidisciplinary treatment. Dysgnathias and their treatment. Arthropathy of temporomandibular joints. Atypical facial pain.

11<sup>th</sup> semester. Clinical practical course.

12<sup>th</sup> semester. Seminars in selected topics of oromaxillofacial surgery.

## Fixed Prosthodontics 1, 2, 3 (20 ECTS)

### Aims

The student will get acquainted with the biological, technological and clinical principles of the subject, he will gain manual dexterity, skills and theoretical knowledge, so that he will be qualified for diagnostics, planning and manual work in the fourth, fifth and sixth years of study. The student will be qualified for performing fixed prosthodontic treatment and combined fixed and removable prosthodontic treatment, for understanding implant prosthodontic care and for interdisciplinary cooperation with other dental professionals and for independent work on a patient.

### Contents

8<sup>th</sup> semester. Introduction and overview of modern methods for fixed prosthodontic care and rehabilitation. Overview of doctrinal viewpoints on fixed prosthetic care and rehabilitation: anchor and construction systems. Phases of work in clinical fixed prosthodontics. Fixed prosthodontic diagnostics and assessment of biological conditions. The needs index after prostodontic care. Fixed prosthodontic planning: biological aspects of planning dental bridges, analysis of gaps in the tooth row, static aspects of planning dental bridges, decision-making algorithms in fixed prosthodontic planning. Sanitation and preparatory procedures before fixed prosthodontic care. Oral hygiene of prosthodontic patients and preventive aspects of prosthodontics. Preparations in fixed prosthodontics: in general and for individual restoration, drill selection, marginal preparation, cementing and preparation. Fixed prosthodontic upgrades of vital and endodontically fitted teeth. Impression: methods, materials, selection. Temporary fixed prosthodontic care: protection against dental lesion and temporary fixed prosthodontic care. Bite registration and concepts of new prosthetic occlusion.

9<sup>th</sup> semester. Communicating with a dental laboratory and the principles of alloy selection. Methods of color selection in fixed prosthodontics. Verification of fixed prosthodontic constructions. Cementing in fixed prosthodontics: types of cements and clinical selection, temporary and permanently cementing: classical and adhesive; dentin and enamel bonding. Clinic for individual restoration: full, partial, metal, composite, ceramic, combined. Fixed prosthodontic care of partial teeth loss: Static, firm, biological aspects of dental bridges, types of dental bridges and dental joints. Clinic for metal, composite, and ceramic techniques: selection, indications, comparisons. Aesthetics in fixed prosthodontics and the concept of an aesthetic stomatology or multidisciplinary approach in fixed prosthodontics.

10<sup>th</sup> semester. Combination of fixed and detachable prostheses: five levels. Prosthetic ligaments and conical constructions. Fixed prosthodontic care during childhood. Fixed prosthodontic care of elderly patients. Parodontal prosthetics. Local and systemic effects of fixed prosthodontic care, corrosion, galvanism, allergies to dental materials. Epidemiology of needs after prosthodontic care. Quality criteria of fixed prosthodontic care and the impact of prostheses on quality of life.

11<sup>th</sup> semester. The rules of good clinical practice in fixed prosthodontics and interdisciplinary cooperation. Course of execution of complete fixed prosthodontic care, diagnostic modulation in wax, temporary construction, permanent construction, malocclusion care, bite lift. Implant prosthodontic care. The revision of doctrinal viewpoints of fixed prosthodontic care and rehabilitation.

12<sup>th</sup> semester. Integration of theoretical knowledge and clinical practice.

## Internal Medicine (3 ECTS)

### Aims

The student will get knowledge about clinical picture, diagnostics and therapy of internal diseases which have impact on the dental medicine.

### Contents

Knowledge of etiopathogenesis, clinical course, diagnostics and principles of treatment of selected internal diseases. Intensive medicine and cardiology: Heart failure, cardiac rhythm disorders, rheumatic and infectious endocarditis, acquired heart defects, ischemic heart disease, arterial hypertension, shock and reanimation. Angiology: Atherosclerosis and vascular disability, venous thrombosis. Pulmonology: Bronchitis, asthma, COPD, pneumonia, respiratory cancers, pulmonary tuberculosis. Gastroenterology: Esophagitis and gastritis, esophageal tumors, peptic ulcers of the upper gastrointestinal tract, ulcerative colitis and Crohn's disease, hepatitides and liver cirrhosis, acute cholecystitis and gallstones, obstructive jaundice. Nephrology: Acute and chronic renal failure, glomerulonephritis, nephrotic syndrome, bacterial infections in the urinary tract, urinary stones. Hematology: Anemias, myelodysplastic syndromes, acute and chronic leukemias, thrombocytopenias and drug-induced thrombocyte dysfunction, hemophilias and von Willebrand disease, coagulation disorders due to liver disease and medications. Rheumatology: Rheumatoid fever, rheumatoid arthritis, systemic lupus erythematosus, scleroderma, Sjögren's syndrome, ankylosing spondylitis. Endocrinology: Thyroid disease, diabetes, pathophysiology and basic clinical data of other glands with inner secretions.

## Paediatric and Preventive Dentistry 1, 2, 3 (14 ECTS)

### Aims

At the completion of graduate studies, the student has theoretical and practical clinical skills required for performing basic preventive and basic curative work in children's and youth dentistry.

### Contents

8<sup>th</sup> semester. At the lectures, the student will get acquainted with the following items: aspects of pediatric dentistry, mental development of children and the impact on oral cavity health, behavioural characteristics and problems of children and adolescents, growth, development and child's health, anamnesis and clinical examination in pediatric dentistry, radiological examination and diagnosis in pediatric dentistry, pain and pain prevention in pediatric dentistry, local anesthesia, sedation and general anesthesia in pediatric dentistry. At the seminar, the student will present a patient case in the form of a seminar paper (anamnesis, clinical examination, radiological examination, additional diagnostic tests, diagnosis, plan of treatment). The purpose will be to acquire skills of taking anamnesis and to learn the clinical procedure of dental examination of child or adolescent, with an emphasis on the systematics and recording of the findings. During clinical practical training the student will become acquainted with the basics of preventive and curative procedures for treating caries and dental pulp diseases of deciduous and permanent teeth.

9<sup>th</sup> semester. At the lectures, the student will get acquainted with the following items: special features and treatment of carious lesions in different age groups, filling materials in pediatric dentistry, traumatic injuries of primary and permanent teeth with immature root development (classification of traumatic injuries types, immediate care, clinical monitoring of patients after traumatic injuries of teeth, complications following teeth injuries and treatments in such cases).

At the preclinical tutorials the student will install the rubber dam on an arch model of primary and mixed dentitions; he will seal fissure of permanent tooth, make enameloplasty, class II restoration and preparation for the stainless steel crown (SSC), completion of a tooth with a strip crown and pulpotomy.

At clinical practical training the student will perform a dental examination of a child or adolescent, will make a diagnosis and a plan of treatment. Under supervision or with the participation of an assistant, the student will learn basic procedures for prevention or treatment of dental diseases on deciduous and permanent teeth.

10<sup>th</sup> semester. At the lectures, the student will get acquainted with the following items: developmental changes in number and shape of teeth and their treatment, innate and acquired developmental disorders of hard dental tissues, eruption and loss of deciduous teeth, development of occlusion, preventive and interceptive orthodontics, usage of local anaesthesia in paediatric dentistry, sedation and dental treatment under general anaesthesia. At the preclinical tutorials the student will take care of "damaged teeth" on a model of traumatised teeth: he will take care for complicated trauma of tooth crown with an exposed dental pulp and will make reposition and immobilization after tooth avulsion. Within clinical practical training the student will continue with work from 9th semester.

11<sup>th</sup> semester. At the lectures, the student will get acquainted with the following items: characteristics and parodontal tissue disease treatment among children and adolescents, oral mucosal lesions among children and adolescents, basic dental and oral surgery in pediatric dentistry, temporomandibular joint disorders, impacts on oral health and dental treatment of children with chronic diseases and children with special needs. The student will select and present in the form of a seminar paper one of the following items: dynamics of caries development; motivation of preschool, elementary or secondary school children for their own oral health; fluorides (presence in the environment, entry into the body and metabolism; physiochemical interactions between fluoride and enamel, application forms, fluoride action on bacteria, fluoride toxicity). At the clinical practice the student will continue and upgrade his work of this course from the 10th semester.

At clinical practical course the student learns about and is partly involved in performing preventive programs within the framework for primary dental care of children and adolescents (in preschool educational institutions, elementary schools, institutions for children and adolescents with special needs). He will also get familiar with dispensary work in pediatric dentistry clinics at examinations with counseling for one-year, two-year and three-year-old children.

## **Removable Prosthodontics 1, 2, 3 (18 ECTS)**

### **Aims**

The student will acquire clinical and laboratory knowledge and skills that are required for clinical rehabilitation of partly or completely toothless patients with removable dental prostheses. At the lectures he will acquire knowledge about biological features and modern theoretical principles for making a full dental prosthesis, immediate prosthesis, parodontally supported full prosthesis, acrylic partial prosthesis, partial prosthesis with a molded base, obturator prosthesis, dental facade prosthesis and removable diagnostic appliances. At seminary lessons he will use his knowledge acquired at lectures for autonomous planning of removable prosthodontic care. At clinical practical course he will be trained for self-reliant decision making about the treatment of partially or completely toothless patients (clinical examination, recognizing different states, planning, writing records, providing different removable prosthetic appliances, work evaluation, communicating with a patient or with a wider team of various experts). At laboratory practical course he will become acquainted with work in a dental laboratory.

### **Contents**

8<sup>th</sup> semester. Full dental prosthesis: biological basics for a full prosthesis, retention and stabilization principles and methods of installing removable prosthetic teeth, making a full prosthesis in a dental clinic and laboratory, prosthesis polymerization methods, reocclusion of the prosthesis in the articulator, relining and repairing of full prostheses, production of a full immediate prosthesis. Partial prosthesis I: biological basics for partial prosthesis, modern principles of partial prosthesis in terms of transferring chewing forces onto supporting teeth, denture base of the acrylic partial prosthesis and partial prosthesis with a molded base, types of partial prostheses, elements of a partial prosthesis with a molded base, parallelometer in terms of molded bases and its use.

9<sup>th</sup> semester. Partial prosthesis II: planning using analysis of forces for treatment with partial prosthesis with a molded base, creation of a partial prosthesis with a molded base in the dental clinic and in the laboratory, programs of removable prosthodontic care, transformation of supporting and anchoring teeth and protective procedures following the transformation, theoretical basics of intentional crowns, shafts and modern elements of anchoring, dental attachments and working with them, theoretical basics of milling, telescopic and conical crowns and work with them, repairing and relining of partial prostheses.

10<sup>th</sup> semester. Parodontally supported full prosthesis: theoretical basics and work with modern anchoring elements. Special prostheses – theoretical basics: prostheses on congenital and acquired defects of jaw bones, dental facade prosthesis, removable molded metal splint, Dahl's splint.

11<sup>th</sup> and 12<sup>th</sup> semester. An integral treatment of patients with an emphasis on removable prosthodontic rehabilitation.

## Orthodontics and Dentofacial Orthopedics 1, 2, 3 (9 ECTS)

### Aims

The student will learn about diagnostic procedures. He will become familiar with irregularities of individual teeth, groups of teeth, irregularities of the dental arches and the skeletal abnormalities of the orofacial system. At clinical practical course he will learn to perform the basic dental and gnathic orthopedic examination. The student will get familiar with the development of the craniofacial system, with its physiological functioning and pathological deviations. He will acquire knowledge about critical periods for the formation of developmental abnormalities. The student will become familiar with the benefits of orthodontic treatment based on the developmental periods, with simple interceptive interventions and will recognize abnormalities that necessitate orthodontic treatment. At clinical practical course he will perform preventive and basic interceptive interventions on patients that are in different periods of development.

The student will get familiar with measures for creating conditions for normal development of the craniofacial system and for preventing the occurrence of developmental abnormalities. He will get acquainted with interceptive treatment – orthodontic-parodontal, orthodontic-surgical, orthodontic-prosthetic treatment and cooperation with specialists of other dental and medical sciences. At clinical practical course he will become acquainted with planning singular stages of orthodontic treatment with removable and non-removable orthodontic appliances.

### Contents

The epidemiology of developmental abnormalities, classification of orofacial system irregularities, diagnostic procedures in jaw and dental orthopedics – basic gnatho-orthopedic examination with function analysis (lip posture, ways of breathing, swallowing, chewing, speaking, temporomandibular joint function, habits), analysis of study models, X-ray image analysis (local and panoramic X-ray images). Growth and development of the craniofacial system. Planning of orthodontic treatment according to different kinds of irregularities of the orofacial region in class I, class II and class III. Biological and physical processes following orthodontic teeth movement. Planning, monitoring and evaluation of orthodontic treatment. Benefits of orthodontic treatment according to developmental periods. Basic preventive and interceptive interventions. Active orthodontic appliances (removable and non-removable appliances). Myofunctional therapy. Dental extractions in jaw and dental orthopedics. Orthodontic treatment of certain types of anomalies. Combined orthodontic treatment.

## Clinical Physiology of the Stomatognathic System (5 ECTS)

### Aims

Student will acquire understanding and will get familiar with the complexity of jaw relations and with functioning of the stomatognathic system (SGS). He will acquire knowledge about practical use of basic techniques of gnathology: selection and the use of articulators with the facebow system, bite registration, preparation of a model and plastering in the articulator, selection of the concept of building a new occlusion. He will be acquainted with occlusion pathology, SGS and their impact on the human organism. He will learn to implement gnathology into the treatment and care in all dental disciplines.

### Contents

The student will get to know the complexity of the functioning of the stomatognathic system in physiological and pathological conditions, treatment modalities and links of the stomatognathic system and the quality of life. The student will be trained to get skilled in gnathological techniques at clinical work. The student will be capable of critical thinking and integration of the acquired skills. The student will acquire biological, technical and clinical knowledge for assessing the patient's dental occlusion, which is the basis for clinical prosthetic dentistry, and the theoretical knowledge for multidisciplinary treatment approach composed of various medical and dental specialties.

## Medical Clinic 2 (5 ECTS)

### Aims

Module 1.

Oncology: the student will acquire knowledge about most common types of cancer with emphasis on tumors in the head and neck area.

Module 2.

Otorhinolaryngology: the student will become familiar with ear diseases, nose and paranasal sinuses diseases, pharyngeal and laryngeal diseases, with diseased changes on the neck and with causes for hearing and equilibrium disorders. He will be instructed how to autonomously provide medical aid in certain otorhinolaryngologic emergency situations. At clinical practical course he will learn otorhinolaryngologic (ORL) examination techniques, treating an otorhinolaryngologic patient and will test his skill in contact with patients.

Module 3.

Ophthalmology: the student will acquire basic knowledge about common eye diseases, especially those that are in connection with diseases of the orbit, diseases of paranasal sinuses or orodental diseases. He will be instructed how to autonomously provide medical aid in certain ophthalmologic emergency situations in which may occur during the work in dental clinic. Holistic treatment of a patient without a narrow focus on a single disease will be emphasized.



## Contents

The student will get acquainted with the epidemiology and biology of tumors, general principles of oncology, etiology, course of diseases, clinical signs and symptoms of the most common cancer types with emphasis on head and neck tumors. He will get acquainted with the possibilities of early detection and with diagnostic procedures. He will get acquainted with the basic methods of multidisciplinary treatment (surgery, radiotherapy, systemic therapy) and with ensuring the quality of life (analgesia). The student will learn about the frequency, causes, course of disease, clinical signs and symptoms of the disease of the ear, nose, paranasal sinuses, pharynx, larynx and the neck area. He will learn about congenital abnormalities, trauma, inflammation and tumors in these areas. He will learn about diagnostic procedures and about methods of treatment including first medical aid. He will acquire understanding about connections between dental medicine and other specialties of adjacent areas. The students will get familiar with the functional eye system (vision and ocular movement), symptoms and signs of eye diseases, classification of eye diseases. He will get familiar with the path to ophthalmological diagnosis, with selected emergency states in ophthalmology, chronic eye diseases, complications of diseases of other systems on the eyes.

## Pediatrics with Clinical Genetics (3 ECTS)

### Aims

The student acquires knowledge about the basics of pediatric propedeutics and the comprehensive approach to the treatment of a child, adolescent and a young adult. He becomes familiar with the frequency, clinical pictures and differential diagnostics of the most common diseases and states in pediatrics. He will acquire knowledge of contemporary diagnostic procedures and their adjustments for the pediatric population. He will get familiar with the contemporary approaches to comprehensive treatment and therapy. He will get to know the basics of preventive pediatrics, dispensary work and social pediatrics. The student will gain knowledge of clinical genetics in general, contemporary genetic diagnostic methods, cytogenetic and molecular diagnostics, genetic syndromes with involvement of orofacial area, genetics of periodontal diseases, genetics of tooth development, genetics of developmental defects of enamel and genetics of cancer of the oral cavity.

### Contents

Presentation of selected contents from pediatric propedeutics, general pediatrics, social pediatrics, preventive and dispensary treatment of children, adolescents and young adults, normal growth and development, neonatology, pediatric cardiology, pediatric hematology and oncology, pediatric neurology, pediatric pulmonology, pediatric infectology, pediatric immunology and rheumatology, pediatric gastroenterology, pediatric endocrinology, diabetology and metabolic diseases, pediatric nutrition. Introduction of clinical genetics in general; cytogenetic and molecular diagnostics, treatment of genetic syndromes with involvement of orofacial area, genetics of periodontal diseases, genetics of tooth development, genetics of developmental defects of enamel and genetics of cancer of the oral cavity.

## Forensic Medicine (3 ECTS)

### Aims

The student will acquire knowledge about basics of forensic medicine, he will get familiar with injury mechanisms, especially of the head, facial part and teeth in connection with forensic expertise. He will become acquainted with the rights, duties and responsibilities that are related to his profession. Knowledge of all pre-clinical and the majority of clinical subjects is required to attend the lectures.



## Contents

The student will be acquainted with basics of classical forensic medicine from the mechanisms of natural and violent deaths to the signs of death. He will acquire knowledge about following items: general and special identification with the emphasis on the role of dental medicine in mass accidents, basics of forensic toxicology (alcohol, drugs, medication, traffic safety), autopsy (required and permissible in the light of legislation) and exhumation, determination of death, blunt force injuries, injuries with a sharp and pointed object, forensically significant maxillofacial injuries, the basics of forensic traumatology, craniocerebral trauma, shooting injuries, iatrogenic injuries in dentistry. The student will get familiar with legislation – both health and criminal, with the basics of expert work and with emphasis on assessing injuries of the maxillofacial area, especially dental injuries. He will get acquainted with the rights, duties and responsibilities that are related to his profession. He will get familiar with interdisciplinary cooperation.

## Dental Implantology (3 ECTS)

### Aims

The students get familiar with basic fundamentals of implantology and indications for implant prosthodontic care on different levels of partially and completely toothless patients. They learn about preparatory and diagnostic procedures, the surgical and prosthodontic care and monitoring of implantology patients.

### Contents

The basics of osseointegration and conditions for it, technological properties of dental implants, the relationship between the implant and the mucosa, general indications and contraindications for implantology treatment, diagnostics of an implantology patient, planning the implantologic-prosthodontic care, implant insertion protocols and loads, surgical preparation for a dental implant, procedures for completion of the jaw bone, dental implants in the visual area – surgical and prosthodontic treatment, characteristics of the dental crown on the implant, dental implants on a partially toothless patient – surgical and prosthodontic treatment, performance and characteristics of fixed prosthetic constructions on implants, temporary care, dental implants on completely toothless patients – surgical and prosthodontic treatment, characteristics of implantology-supported removable prosthetic constructions, orthodontic implants and orthodontic therapy in the treatment of an implantology patient, implantology-supported epithesis, complications of implantology treatment, mucositis and peri-implantitis, monitoring of an implantology patient and maintenance of dental implants and surrounding tissues.

## Geriatric Dentistry (3 ECTS)

### Aims

The student will get acquainted with specific dental problems of the elderly. He will get familiar with preventive measures and treatment specialties of oral cavity diseases, dental rehabilitation of the elderly and modifications of dental treatment and rehabilitation due to the presence of systemic diseases. The student will renew basic cardiopulmonary resuscitation procedures (CPR) and will learn how to perform them properly. Special emphasis will be on providing first medical aid in a dental clinic. Relieving pain will also be discussed.

## Contents

### Module 1.

Physiology of aging: The most common systemic diseases of the elderly. Consequences of systemic diseases and taking medicine on the oral health of the elderly. Age changes in the oral cavity (teeth, parodontal tissues, oral mucosa, salivary gland, maxilla, motor and sensory functions). Characteristics, prevention and treatment of caries (root caries, secondary caries) and parodontal tissue diseases among the elderly. The most common oral mucosa diseases among the elderly, basics of treatment. Elderly people with prosthetic applications: morphological – physiological specialties. Diagnostics and planning of dental treatment and rehabilitation among the elderly. Customization of the dental prosthodontic rehabilitation to different psychophysical states of the patient (the concept of shortened dental arches, functional or aesthetic care, restoration of old or development of new dental substitutes). Specialties of selection and methods of work with filling materials among the elderly. Special features of endodontic diagnostics and treatment among the elderly. Oral surgery among the elderly. Pre-prosthetic surgery due to jaw atrophy. Implantology care of an elder person. Renewal procedure among people that have already been provided with a prosthesis, elements adapted to the elderly and procedures in rehabilitation with various removable prosthodontic applications.

### Module 2.

Causes of clinical death: Assessment of the level of consciousness. Assessment and establishment of breathing. Assessment and establishment of blood circulation. Medical first aid for acute coronary syndrome. Medical first aid for stroke. Peculiarities of CPR in the dental clinic. Basic principles of pain relief in the dental clinic.