University *of Ljubljana*
Faculty *of Medicine*

# PRESENTATION DOCUMENT

# UNIFORM SECOND-LEVEL MASTER'S PROGRAM

# MEDICINE

**Ljubljana 2015**

**Title**
PRESENTATION DOCUMENT
UNIFORM SECOND-LEVEL MASTER'S PROGRAM
MEDICINE

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# Presentation of the program

## 1. Information about the course of study

The uniform second-level Master's degree study of Medicine lasts six years (12 semesters) and consists of a total of 360 credit points. The professional title acquired by the graduate is doctor of medicine (dr. med.).

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

The essential goal of the uniform Master's study program of Medicine is to train an expert to perform professional duties and tasks in the field of 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 analyse, 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,
- 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 medicine,
- understanding the general structure of 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 medicine,
- use of information and communication technologies and systems in the field of medicine.

## Medicine-specific competencies

- Knowledge of the molecular basis and mechanisms of normal and pathological functioning of the human organism,
- 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 of the place and role of medicine in society,
- communication skills with patients,
- knowledge of public health problems treatment methods,
- knowledge of patient care basic principles,

- the ability to examine a patient,
- knowledge of the role of environment in the emergence and development of diseases,
- understanding of disease states, their signs and symptoms,
- knowledge of the role of lifestyle on the formation and evolution of diseases,
- knowledge of disease diagnostics and disease treatment,
- knowledge of preventing diseases and their rehabilitation,
- integration of knowledge and skills at work with a patient in a hospital, clinic or at home,
- scientific research in the field of medicine.

## 3. Admission requirements and criteria for selection at limited enrolment

In the Uniform second-level Master's degree of 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.

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

- the general grade in the general maturity examination, 35% of points
- the general grade in third and fourth year, 20% of points
- success in individual subjects of the general maturity examination: mathematics, a foreign language and one natural science subject (biology, physics or chemistry). 45% of points

Candidates under point b), by:

- the general grade in the final examination, 35% of points
- the general grade in third and fourth year, 20% 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. 45% of points

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

Knowledge and skills acquired prior to enrolment in the program shall not be considered as enrolment conditions or criteria for selection in case of limited enrolment.

## 5. The requirements for advancement in the program

- Terms for advancing from year to year

A student 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 with passed exams in subjects which are necessary for a successful work in the next year of study:

– from the 1st to the 2nd year of study: 54 credit points
– from the 2nd to the 3rd year of study: 54 credit points from the 2nd year of study and passed exams in Anatomy 1, Biophysics, Cell Biology, Biochemistry 1, Emergency Medical Care 1
– from the 3rd to the 4th year of study: 54 credit points from the 3rd year of study and passed exams in Anatomy 1, Biophysics, Cell Biology, Biochemistry 1, Emergency Medical Care 1, Anatomy 2, Biochemistry 2, Physiology, Histology and Embryology
– from the 4th to the 5th year of study: 54 credit points from the 4th year of study and passed exams in Anatomy 1, Biophysics, Cell Biology, Biochemistry 1, Emergency Medical Care 1, Anatomy 2,

Biochemistry 2, Physiology, Histology and Embryology, General Pharmacology and Toxicology, Basic Microbiology and Immunology, Pathology, Pathophysiology, Emergency Medical Care 2, Fundamentals of Investigative Methods, Propedeutics

– from the 5th to the 6th year of study: 54 credit points from the 5th year of study and passed exams in Anatomy 1, Biophysics, Cell Biology, Biochemistry 1, Emergency Medical Care 1, Anatomy 2, Biochemistry 2, Physiology, Histology and Embryology, General Pharmacology and Toxicology, Basic Microbiology and Immunology, Pathology, Pathophysiology, Emergency Medical Care 2, Fundamentals of Investigative Methods, Propedeutics, Nervous System, Infectious Diseases and Epidemiology, Skin and Venereal Diseases, Musculoskeletal System, Pediatrics 1, Otorhinolaryngology, Ophthalmology. Prior the examinations at the subjects Internal Medicine and Surgery the student must pass the exams at subjects with internal and surgical contents (Gastrointestinal Tract, Cancer and Blood Diseases, Diseases of Hearth and Blood Vessels, Respiratory System, Urinary Tract, Immune Diseases and Metabolic Diseases).

Exceptionally and due to justifiable reasons, a student can advance to the next year if he has collected 46 credit points with passed exams in subjects which are necessary for a successful work in the next year of study:

– from the 1st to the 2nd year of study: 46 credit points
– from the 2nd to the 3rd year of study: 46 credit points from the 2nd year of study and passed exams in Anatomy 1, Biophysics, Cell Biology, Biochemistry 1, Emergency Medical Care 1
– from the 3rd to the 4th year of study: 46 credit points from the 3rd year of study and passed exams in Anatomy 1, Biophysics, Cell Biology, Biochemistry 1, Emergency Medical Care 1, Anatomy 2, Biochemistry 2, Physiology, Histology and Embryology
– from the 4th to the 5th year of study: 46 credit points from the 4th year of study and passed exams in Anatomy 1, Biophysics, Cell Biology, Biochemistry 1, Emergency Medical Care 1, Anatomy 2, Biochemistry 2, Physiology, Histology and Embryology, General Pharmacology and Toxicology, Basic Microbiology and Immunology, Pathology, Pathophysiology, Emergency Medical Care 2, Fundamentals of Investigative Methods, Propedeutics
– from the 5th to the 6th year of study: 46 credit points from the 5th year of study and passed exams in Anatomy 1, Biophysics, Cell Biology, Biochemistry 1, Emergency Medical Care 1, Anatomy 2, Biochemistry 2, Physiology, Histology and Embryology, General Pharmacology and Toxicology, Basic Microbiology and Immunology, Pathology, Pathophysiology, Emergency Medical Care 2, Fundamentals of Investigative Methods, Propedeutics, Nervous System, Infectious Diseases and Epidemiology, Skin and Venereal Diseases, Musculoskeletal System. Prior the examinations at the subjects Internal Medicine and Surgery the student must pass the exams at subjects with internal and surgical contents (Gastrointestinal Tract, Cancer and Blood Diseases, Diseases of Hearth and Blood Vessels, Respiratory System, Urinary Tract, Immune Diseases and Metabolic Diseases).

- 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). The Board for Student Affairs may exceptionally permit re-enrolment of a student who does not meet the conditions for re-enrolment (who has less than 30 credit points) if the statutory requirements were not met because of the following justifiable reasons: longer absence due to illness or treatment, birth or difficult social conditions that are proven with appropriate documents. The student is permitted to repeat or exceptionally repeat a year of study only once during his period of study.

In case of questions regarding the study program students can approach heads of the departments, representatives of the Student Council, tutors, the Board for Student Affairs, the Head of the Department of undergraduate study and the Dean of the Faculty of Medicine.

- Additional explanation of the Faculty of Medicine, University of Ljubljana from April 8th, 2013:

The current terms for advancement define that the student can advance to the next year of study if he has collected at least 54 credit points in the current year of study or in some exceptional cases, less than 54 credit points. The decision on justification of the reasons for an exceptional advancement is made by the Board for Student Affairs. The student who has repeated the year of study must complete also all the obligations from the previous year of study to be permitted to advance to the next year of study.
The new terms define which subjects must be completed prior to the enrolment to the higher year of study more precisely.
The requirements for the advancement are selected in a way that the understanding of the subjects in the higher year of study is enabled. The content of the subjects of the 4th and 5th year of study is being examined summatively in the 6th year of study at the subjects Internal medicine and Surgery. Therefore, the potential load due to the missing exams in these subjects wouldn't be critical; it would, however, ensure that the student would precisely study all fields of internal medicine and surgery.

## 6. 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.

## 7. Transitions between study programs

Transition is understood as termination of studies in one study program and continuation of studies in a new study program. Applications for transitions between study programs in Medicine are examined by the Board 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:

- if both study programs ensure acquisition of comparable competences after their completion,
- 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 under the following conditions: the candidate must have passed the general maturity examination and he must have successfully completed the first or the first two years of his current study program (he must have gained 60 ECTS for each year of study with an average grade of at least 8,5. The Board for Student Affairs defines bridging examination for the subjects which differ from the study program of the uniform Master's study program of Medicine.

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.

## 8. Evaluation method

Knowledge of students is tested and assessed in individual subjects so that the learning process for each subject ends with an examination. Curricula of subjects define obligations of students and the form and method of examination. Various forms of student progress evaluation, defined in the curriculum, are considered in the final examination grade. The process of testing and assessment of knowledge is regulated by the examination regulations book of UL MF. A student acquires the right to attend an exam of a subject if he fulfils all requirements. Attendance at practical courses is mandatory and is a prerequisite for the exam. Student must pass all required knowledge and skills, prescribed by the curriculum and pass the prescribed colloquium, which is a prerequisite for attending the exam.

## 9. 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

| 1st year of study, 1st semester | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Anatomy 1 | lecturer will be announced later | 15 | 7 | 45 | | | 143 | 210 | 7 |
| 2. | Biophysics | Jure Derganc | 60 | 15 | 30 | | | 105 | 210 | 7 |
| 3. | Cell Biology | Peter Veranič<br>Mateja Erdani Kreft | 75 | 15 | 60 | | | 120 | 270 | 9 |
| 4. | Communication | Marija Petek Šter<br>Bojan Zalar | 14 | 6 | 16 | | 18 | 66 | 120 | 4 |
| 5. | Introduction to Medicine | Lijana Zaletel Kragelj<br>Janez Stare<br>Jože Balažic<br>Zvonka Zupanič Slavec | 30 | 15 | 12 | | | 33 | 90 | 3 |
| TOTAL | | | 194 | 58 | 163 | | 18 | 467 | 900 | 30 |
| SHARE | | | 21,56 | 6,44 | 18,11 | | 2 | 51,89 | 100 | |

| 1st year of study, 2nd semester | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Anatomy 1 | lecturer will be announced later | 15 | 8 | 45 | | | 142 | 210 | 7 |
| 2. | Concepts in Biochemistry | Radovan Komel<br>Damjana Rozman | 75 | 45 | 45 | | 50 | 145 | 360 | 12 |
| 3. | Emergency Medical Care 1 | Maja Šoštarič<br>Uroš Golobič Ahčan | 15 | 15 | 30 | | | 30 | 90 | 3 |
| 4. | Introduction to Medicine | Lijana Zaletel Kragelj<br>Janez Stare<br>Jože Balažic<br>Zvonka Zupanič Slavec | 35 | 5 | 5 | | | 15 | 60 | 2 |
| 5. | Elective 1 | | | | | | | 180 | 180 | 6 |
| TOTAL | | | 140 | 73 | 125 | | 50 | 512 | 900 | 30 |
| SHARE | | | 15,56 | 8,11 | 13,89 | | 5,56 | 56,89 | 100 | |

| **2nd year of study, 3rd semester** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Anatomy 2 | lecturer will be announced later | 30 | 15 | 60 | | | 45 | 150 | 5 |
| 2. | Biochemistry 2 | Ana Plemenitaš<br>Vita Dolžan | 70 | 30 | 60 | | 5 | 165 | 330 | 11 |
| 3. | Physiology | Martin Štrucl<br>Žarko Finderle | 18 | 2 | 22 | | | 48 | 90 | 3 |
| 4. | Physiology of the Nervous System | Martin Štrucl<br>Žarko Finderle | 30 | 10 | 30 | | | 80 | 150 | 5 |
| 5. | Histology and Embryology | Ruda Zorc Pleskovič<br>Danijel Petrovič<br>Aleksandra Milutinović Živin | 10 | 8 | 18 | | | 54 | 90 | 3 |
| 6. | Elective | | | | | | | 90 | 90 | 3 |
| TOTAL | | | 158 | 65 | 190 | | 5 | 482 | 900 | 30 |
| SHARE | | | 17,56 | 7,22 | 21,11 | | 0,56 | 53,56 | 100 | |

| **2nd year of study, 4th semester** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Physiology | Martin Štrucl<br>Žarko Finderle | 52 | 8 | 68 | | | 142 | 270 | 9 |
| 2. | Histology and Embryology | Ruda Zorc Pleskovič<br>Danijel Petrovič<br>Aleksandra Milutinović Živin | 26 | 22 | 42 | | | 120 | 210 | 7 |
| 3. | Health and the Environment | Lijana Zaletel Kragelj | 20 | 40 | | | | 60 | 120 | 4 |
| 4. | Contact with a Patient | Metka Moharič<br>Marko Kolšek | 3 | 2 | 40 | | | 45 | 90 | 3 |
| 5. | Basics of Biostatistics | Janez Stare | 30 | | 30 | | | 60 | 120 | 4 |
| 6. | Elective | | | | | | | 90 | 90 | 3 |
| TOTAL | | | 131 | 72 | 180 | | | 517 | 900 | 30 |
| SHARE | | | 14,56 | 8 | 20 | | | 57,44 | 100 | |



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| 3rd year of study, 5th semester | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | General Pharmacology and Toxicology | Mojca Kržan<br>Metoda Lipnik Štangelj<br>Katarina Černe | 20 | 5 | 15 | | | 50 | 90 | 3 |
| 2. | Methods of Public Health | Lijana Zaletel Kragelj | 30 | 30 | | | | 60 | 120 | 4 |
| 3. | Emergency Medical Care 2 | Uroš Golobič Ahčan<br>Maja Šoštarič | 30 | | 30 | | | 30 | 90 | 3 |
| 4. | Basic Microbiology and Immunology | Miroslav Petrovec<br>Srečko Koren<br>Alojz Ihan<br>Mario Poljak<br>Manica Mueller Premru<br>Katja Seme<br>Eva Ružić Sabljić<br>Tadeja Matos | 30 | 30 | 30 | | | 90 | 180 | 6 |
| 5. | Pathology | Nina Zidar<br>Mara Popović | 45 | 15 | 30 | | | 90 | 180 | 6 |
| 6. | Pathophysiology | Zoran Grubič<br>Dušan Šuput<br>Samo Ribarič | 30 | 15 | 45 | | 14 | 46 | 150 | 5 |
| 7. | Elective | | | | | | | 90 | 90 | 3 |
| TOTAL | | | 185 | 95 | 150 | | 14 | 456 | 900 | 30 |
| SHARE | | | 20,56 | 10,56 | 16,67 | | 1,56 | 50,67 | 100 | |

| 3rd year of study, 6th semester | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Special Pharmacology and Toxicology | Mojca Kržan<br>Metoda Lipnik Štangelj<br>Katarina Černe | 10 | 30 | | | | 50 | 90 | 3 |
| 2. | Pathophysiology | Zoran Grubič<br>Dušan Šuput<br>Samo Ribarič | 15 | 15 | 15 | | 15 | 90 | 150 | 5 |
| 3. | Fundamentals of Investigative Methods | Katarina Šurlan Popovič | 26 | 19 | 20 | | | 85 | 150 | 5 |
| 4. | Pathology | Nina Zidar<br>Mara Popović | 20 | 10 | 20 | | | 40 | 90 | 3 |
| 5. | Propedeutics | Tomaž Kocjan | 45 | | 90 | | 30 | 165 | 330 | 11 |
| 6. | Elective | | | | | | | 90 | 90 | 3 |
| TOTAL | | | 116 | 74 | 145 | | 45 | 520 | 900 | 30 |
| SHARE | | | 12,89 | 8,22 | 16,11 | | 5 | 57,78 | 100 | |

| **4th year of study, 7th semester** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Nervous System | Zvezdan Pirtošek | 21 | 20 | | 40 | 50 | 169 | 300 | 10 |
| 2. | Mental Health | Peter Pregelj | 16 | 20 | | 40 | 30 | 134 | 240 | 8 |
| 3. | Musculoskeletal System | Vane Antolič | 20 | 26 | | 36 | 26 | 102 | 210 | 7 |
| 4. | Gastrointestinal Tract | Borut Štabuc | 25 | 15 | | 45 | | 65 | 150 | 5 |
| TOTAL | | | 82 | 81 | | 161 | 106 | 470 | 900 | 30 |
| SHARE | | | 9,11 | 9 | | 17,89 | 11,78 | 52,22 | 100 | |

| **4th year of study, 8th semester** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Skin and Venereal Diseases | Tomaž Lunder<br>Mateja Dolenc-Voljč | 20 | 20 | | 30 | | 110 | 180 | 6 |
| 2. | Infectious Diseases | Janez Tomažič | 45 | 30 | | 105 | | 180 | 360 | 12 |
| 3 . | Cancer and Blood Diseases | Primož Strojan<br>Peter Černelč | 30 | 15 | | 45 | | 90 | 180 | 6 |
| 4. | Elective | | | | | | | 180 | 180 | 6 |
| TOTAL | | | 95 | 65 | | 180 | | 560 | 900 | 30 |
| SHARE | | | 10,56 | 7,22 | | 20 | | 62,22 | 100 | |

| 5th year of study, 9th semester | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Diseases of Hearth and Blood Vessels | Dušan Štajer<br>Borut Geršak | 24 | 20 | | 80 | 52 | 94 | 270 | 9 |
| 2. | Forensic Medicine | Jože Balažic | 16 | 20 | | 40 | | 74 | 150 | 5 |
| 3. | Maxillofacial Surgery with Fundamentals of Dental Medicine | Nataša Ihan Hren | 6 | 5 | | 16 | 8 | 55 | 90 | 3 |
| 4. | Otorhinolaryngology | Irena Hočevar Boltežar | 14 | 7 | | 30 | 35 | 64 | 150 | 5 |
| 5. | Ophthalmology | Marko Hawlina | 17 | 6 | | 30 | 31 | 66 | 150 | 5 |
| 6. | Elective | | | | | | | 90 | 90 | 3 |
| TOTAL | | | 77 | 58 | | 196 | 126 | 443 | 900 | 30 |
| SHARE | | | 8,56 | 6,44 | | 21,78 | 14 | 49,22 | 100 | |

| 5th year of study, 10th semester | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Gynaecology and Obstetrics | Ksenija Geršak | 23 | | | 75 | 82 | 120 | 300 | 10 |
| 2. | Pediatrics 1 | Tadej Battelino<br>David Neubauer<br>Janez Jazbec<br>Rok Orel | 40 | 20 | | | | 30 | 90 | 3 |
| 3. | Respiratory System | Mitja Košnik<br>Miha Sok | 7 | 15 | | 8 | 20 | 70 | 120 | 4 |
| 4. | Urinary Tract | Andrej Bren | 7 | 15 | | 8 | 20 | 40 | 90 | 3 |
| 5. | Metabolic Diseases | Marija Pfeifer | 7 | 15 | | 8 | 20 | 70 | 120 | 4 |
| 6. | Immune Diseases | Matija Tomšič | 7 | 14 | | 8 | 17 | 44 | 90 | 3 |
| 7. | Elective | | | | | | | 90 | 90 | 3 |
| TOTAL | | | 91 | 79 | | 107 | 159 | 464 | 900 | 30 |
| SHARE | | | 10,11 | 8,78 | | 11,89 | 17,67 | 51,56 | 100 | |

| **6th year of study, 11th semester** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Internal Medicine | Aleš Blinc | | 32 | | 530 | | 8 | 570 | 19 |
| 2. | Pediatrics 2 | Tadej Battelino | | 14 | | 200 | | 26 | 240 | 8 |
| 3. | Elective | | | | | | | 90 | 90 | 3 |
| TOTAL | | | | 46 | | 730 | | 124 | 900 | 30 |
| SHARE | | | | 5,11 | | 81,11 | | 13,78 | 100 | |

| **6th year of study, 12th semester** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Surgery | Alojz Pleskovič | 70 | 180 | | 45 | | 155 | 450 | 15 |
| 2. | Primary Health Care | Igor Švab<br>Marjan Bilban | 14 | 60 | | 60 | 150 | 76 | 360 | 12 |
| 3. | Elective | | | | | | | 90 | 90 | 3 |
| TOTAL | | | 84 | 240 | | 105 | 150 | 321 | 900 | 30 |
| SHARE | | | 9,33 | 26,67 | | 11,67 | 16,67 | 35,67 | 100 | |

## 10. Information on elective subjects

Legend:
* – the subject is carried out in the winter semester; ** – the subject is carried out in the summer semester;
*** – the subject is carried out in the winter and summer semester

| Elective subjects in 1st year of study | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Using Physics and Biophysics in Diagnostics and Treatment** | Jure Derganc<br>Bojan Božič | 3 | 12 | | | | 75 | 90 | 3 |
| 2. | Biochemistry of Steroids** | Damjana Rozman<br>Tea Lanišnik Rižner | 8 | 8 | 4 | | | 70 | 90 | 3 |
| 3. | Structure and Function of Proteins ** | Jure Stojan | 4 | 10 | 6 | | | 70 | 90 | 3 |
| 4. | Basics of Medical Cell Biology** | Peter Veranič | | 15 | | | 15 | 60 | 90 | 3 |
| 5. | Health Facilities** | Barbara Artnik | 15 | 15 | 15 | | | 45 | 90 | 3 |
| 6. | Basics of Computer Supported Methods of Imaging in Medicine** | Bojan Božič | 5 | 10 | | | | 75 | 90 | 3 |
| 7. | E-education and E-learning Materials in Medicine** | Janez Stare | 8 | 34 | 8 | | | 40 | 90 | 3 |
| 8. | Health Informatics Practicum** | Janez Stare | 12 | 34 | 8 | | | 36 | 90 | 3 |
| TOTAL | | | 55 | 138 | 41 | | 15 | 471 | 720 | 24 |

| Elective subjects in 2nd year of study | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Topographic Anatomy* | lecturer will be announced later | | 5 | 10 | | | 75 | 90 | 3 |
| 2. | Neuroanatomy* | lecturer will be announced later | | 10 | 5 | | | 75 | 90 | 3 |
| 3. | Biomechanics of the Hip*** | Vane Antolič | 15 | 10 | 30 | | 20 | 105 | 180 | 6 |
| 4. | Non-Coding RNA** | Metka Ravnik Glavač | 6 | 14 | | | | 70 | 90 | 3 |
| 5. | Biochemistry of Steroids*** | Damjana Rozman<br>Tea Lanišnik Rižner | 8 | 8 | 4 | | | 70 | 90 | 3 |
| 6. | New Developments in Selected Metabolic Processes* | Ana Plemenitaš<br>Bronislava Črešnar<br>Vita Dolžan<br>Nataša Debeljak | 4 | 8 | | | | 78 | 90 | 3 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 7. | Biochemistry and Molecular Biology of Teeth and Bones** | Ana Plemenitaš<br>Bronislava Črešnar<br>Petra Hudler | 4 | 8 | | | | 78 | 90 | 3 |
| 8. | Hyperbaric Physiology and Medicine** | Žarko Finderle | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 9. | Physiology – Electrocardiography (ECG)** | Vito Starc | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 10. | Neurophysiology** | Martin Štrucl | 5 | 20 | | | | 65 | 90 | 3 |
| 11. | Human Genetics – Selected Cases** | Damjan Glavač | 15 | 15 | | | | 60 | 90 | 3 |
| 12. | Alternative Nutrition** | Barbara Artnik | 15 | 30 | | | | 45 | 90 | 3 |
| 13. | Modeling in Biochemistry*** | Jure Stojan | 1 | | 149 | | | 30 | 180 | 6 |
| 14. | Embryology** | Danijel Petrovič | 3 | 12 | | | | 75 | 90 | 3 |
| 15. | Physiology of Sports** | Helena Lenasi | 5 | 20 | | | | 65 | 90 | 3 |
| 16. | Physiology – Microcirculation** | Ksenija Cankar | 5 | 20 | | | | 65 | 90 | 3 |
| 17. | Specific Aspects of Gene Technology Application*** | Nataša Debeljak | 10 | 5 | | | 5 | 70 | 90 | 3 |
| 18. | Computational Simulations of Dynamical Processes in Biochemistry** | Marko Goličnik | 15 | 15 | | | 10 | 50 | 90 | 3 |
| 19. | Basics of Genetic Engineering and Molecular Medicine*** | Radovan Komel | 15 | 5 | | | 5 | 65 | 90 | 3 |
| 20. | Research in Medicine*** | | | 20 | | | | 160 | 180 | 6 |
| 21. | E-education and E-learning Materials in Medicine** | Janez Stare | 8 | 34 | 8 | | | 40 | 90 | 3 |
| 22. | Practical Bioinformatic Approaches in Medicine** | Petra Hudler | 5 | 6 | | | 9 | 70 | 90 | 3 |
| 23. | Foundations of Biomedical Research** | Tadej Battelino | 26 | 26 | 38 | | | 90 | 180 | 6 |
| 24. | Research in Biochemistry** | Ana Plemenitaš | | 20 | | | | 160 | 180 | 6 |
| TOTAL | | | 175 | 351 | 254 | | 49 | 1781 | 2610 | 87 |

**Elective subjects in 3rd year of study**

| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Biomechanics of the Hip*** | Vane Antolič | 15 | 10 | 30 | | 20 | 105 | 180 | 6 |
| 2. | Non-Coding RNA** | Metka Ravnik Glavač | 6 | 14 | | | | 70 | 90 | 3 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3. | Motivational Techniques* | Marko Kolšek | 3 | | 10 | | 4 | 73 | 90 | 3 |
| 4. | Basics of Clinical Pharmacology* | Mojca Kržan<br>Katarina Černe<br>Metoda Lipnik Štangelj | | 30 | 15 | | | 45 | 90 | 3 |
| 5. | Research in Pharmacology – Selected Topics in Pharmacology*** | Metoda Lipnik Štangelj<br>Mojca Kržan<br>Katarina Černe | | | 20 | | 40 | 120 | 180 | 6 |
| 6. | Hyperbaric Physiology and Medicine** | Žarko Finderle | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 7. | Research in Biochemistry*** | Ana Plemenitaš | | 20 | | | | 160 | 180 | 6 |
| 8. | The Doctor and the Environment – Evidence Based Public Health*** | Lijana Zaletel Kragelj<br>Ivan Eržen | 5 | 15 | | 25 | | 45 | 90 | 3 |
| 9. | Selected Topics in Immunology* | Alojz Ihan | 10 | 5 | | | | 75 | 90 | 3 |
| 10. | Pathogenetic Mechanisms in Bacterial and Viral Diseases* | Srečko Koren | 10 | 5 | | | | 75 | 90 | 3 |
| 11. | Opportunistic and Tropical Parasites* | Srečko Koren | 10 | 5 | | | | 75 | 90 | 3 |
| 12. | Gastrointestinal Pathology** | Jera Jeruc | 10 | | 15 | 15 | | 50 | 90 | 3 |
| 13. | Head and Neck Pathology** | Nina Gale | | 15 | | | | 75 | 90 | 3 |
| 14. | Clinical-pathologic Correlations in Nephropatology** | Nina Zidar | 10 | | 15 | 15 | | 50 | 90 | 3 |
| 15. | Neuropathology** | Mara Popović | 15 | | | | | 75 | 90 | 3 |
| 16. | Human Genetics – Selected Cases*** | Damjan Glavač | 15 | 15 | | | | 60 | 90 | 3 |
| 17. | Cytopathology of the Breast*** | Margareta Strojan Fležar | 1 | | 14 | | | 75 | 90 | 3 |
| 18. | Biomedicine Between Laboratory and Hospital Bed*** | Mara Bresjanac | 6 | 24 | | | | 60 | 90 | 3 |
| 19. | Modeling in Biochemistry* | Jure Stojan | 1 | | 149 | | | 30 | 180 | 6 |
| 20. | Practical Medical Genetics*** | | 5 | | 10 | | | 75 | 90 | 3 |
| 21. | Pathophysiology – New Approaches, Advanced Topics and Knowledge Integration** | Samo Ribarič | 6 | | 24 | | | 60 | 90 | 3 |
| 22. | Research in Public Health*** | Lijana Zaletel Kragelj<br>Ivan Eržen | 5 | 15 | 10 | | | 150 | 180 | 6 |
| 23. | Physiology of Sports** | Helena Lenasi | 5 | 20 | | | | 65 | 90 | 3 |
| 24. | Physiology – Microcirculation** | Ksenija Cankar | 5 | 20 | | | | 65 | 90 | 3 |
| 25. | Medical Psychology* | Blanka Kores Plesničar | 20 | | | 10 | | 60 | 90 | 3 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 26. | Neurophysiology** | Martin Štrucl | 5 | 20 | | | | 65 | 90 | 3 |
| 27. | Physiology – Electrocardiography (ECG)** | Vito Starc | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 28. | Biochemistry of Steroids*** | Damjana Rozman<br>Tea Lanišnik Rižner | 8 | 8 | 4 | | | 70 | 90 | 3 |
| 29. | Specific Aspects of Gene Technology Application*** | Nataša Debeljak | 10 | 5 | | | 5 | 70 | 90 | 3 |
| 30. | Dermatopathology* | Boštjan Luzar | 10 | | 15 | 15 | | 50 | 90 | 3 |
| 31. | Basics of Genetic Engineering and Molecular Medicine*** | Radovan Komel | 15 | 5 | | | 5 | 65 | 90 | 3 |
| 32. | Metabolic Disorders*** | Zoran Grubič<br>Marija Pfeifer | 10 | 20 | | | | 60 | 90 | 3 |
| 33. | Contemporary Informatics in Biomedicine 1** | Janez Stare | 8 | 30 | 12 | | | 40 | 90 | 3 |
| 34. | Research in Medicine*** | | | 20 | | | | 160 | 180 | 6 |
| 35. | Rural and Remote Medicine** | Igor Švab | 5 | 10 | | | 60 | 105 | 180 | 6 |
| 36. | Practical Bioinformatic Approaches in Medicine** | Petra Hudler | 5 | 6 | | | 9 | 70 | 90 | 3 |
| 37. | Experimental Methods in Pharmacogenetics*** | Vita Dolžan | 5 | 10 | 60 | | 15 | 90 | 180 | 6 |
| 38. | Pharmacogenetics in Medicine** | Vita Dolžan | 10 | 20 | 15 | | | 45 | 90 | 3 |
| TOTAL | | | 264 | 407 | 428 | 80 | 158 | 2803 | 4140 | 138 |

**Elective subjects in 4th year of study**

| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Biomechanics of the Hip** | Vane Antolič | 15 | 10 | 30 | | 20 | 105 | 180 | 6 |
| 2. | Non-Coding RNA** | Metka Ravnik Glavač | 6 | 14 | | | | 70 | 90 | 3 |
| 3. | Functional Genomics in Medicine** | Damjana Rozman | 10 | 10 | 10 | | | 60 | 90 | 3 |
| 4. | Pharmacogenetics in Medicine** | Vita Dolžan | 10 | 20 | 15 | | | 45 | 90 | 3 |
| 5. | Basics of Molecular Epidemiology** | Vita Dolžan | 6 | 9 | 15 | | 15 | 45 | 90 | 3 |
| 6. | Hormone Dependent Gynecological Diseases: Clinical and Biochemical Aspects** | Andrej Vogler<br>Špela Smrkolj<br>Tea Lanišnik Rižnar | 6 | 10 | | | | 74 | 90 | 3 |
| 7. | Human Genetics – Selected Cases** | Damjan Glavač | 15 | 15 | | | | 60 | 90 | 3 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 8. | Research in Family Medicine** | Igor Švab<br>Marko Kolšek | | | | | 60 | 120 | 180 | 6 |
| 9. | Research in Pharmacology – Selected Topics in Pharmacology** | Metoda Lipnik Štanngelj<br>Mojca Kržan<br>Katarina Černe | | | 20 | | 40 | 120 | 180 | 6 |
| 10. | Hyperbaric Physiology and Medicine** | Žarko Finderle | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 11. | Research in Biochemistry** | Ana Plemenitaš | | 20 | | | | 160 | 180 | 6 |
| 12. | The Doctor and the Environment – Evidence Based Public Health** | Lijana Zaletel Kragelj<br>Ivan Eržen | 5 | 15 | | 25 | | 45 | 90 | 3 |
| 13. | Hip Fractures and Pathology** | | | | | | 45 | 135 | 180 | 6 |
| 14. | Osteosynthesis** | Matjaž Veselko | | | | | 45 | 135 | 180 | 6 |
| 15. | Exploring Tissues** | Dragica Maja Smrke | | | | | 45 | 135 | 180 | 6 |
| 16. | Injuries of the Ligamental Joint Apparatus** | Matjaž Veselko | | | | | 45 | 135 | 180 | 6 |
| 17. | Dementias** | Zvezdan Pirtošek | 2 | 11 | 10 | | | 67 | 90 | 3 |
| 18. | Extrapyramidal Diseases** | Maja Trošt | 2 | 11 | 10 | | | 67 | 90 | 3 |
| 19. | Cerebrovascular Diseases** | Janja Pretnar Oblak | 2 | 11 | 10 | | | 67 | 90 | 3 |
| 20. | Peripheral Nerve Defects** | David Vodušek | 2 | 11 | 10 | | | 67 | 90 | 3 |
| 21. | Research in Pathology** | Nina Zidar | | 10 | 30 | 40 | | 100 | 180 | 6 |
| 22. | Biomedicine between Laboratory and Hospital Bed** | Mara Bresjanac | 6 | 24 | | | | 60 | 90 | 3 |
| 23. | Metabolic Diseases** | Zoran Grubič<br>Marija Pfeifer | 10 | 20 | | | | 60 | 90 | 3 |
| 24. | Pathophysiological Basics of Critical Conditions 1** | Tomaž Marš<br>Matej Podbregar<br>Fajko Bajrović<br>Uroš Kovačič | 15 | | 10 | 6 | | 59 | 90 | 3 |
| 25. | Modeling in Biochemistry** | Jure Stojan | 1 | | 149 | | | 30 | 180 | 6 |
| 26. | Practical Medical Genetics** | | 5 | | 10 | | | 75 | 90 | 3 |
| 27. | Psychiatry** | Borut Škodlar | | | | | 30 | 60 | 90 | 3 |
| 28. | Basics of Genetic Engineering and Molecular Medicine** | Radovan Komel | 15 | 5 | | | 5 | 65 | 90 | 3 |
| 29. | Research in Public Health** | Lijana Zaletel Kragelj<br>Ivan Eržen | 5 | 15 | 10 | | | 150 | 180 | 6 |
| 30. | Physiology of Sports** | Helena Lenasi | 5 | 20 | | | | 65 | 90 | 3 |
| 31. | Physiology – Microcirculation** | Ksenija Cankar | 5 | 20 | | | | 65 | 90 | 3 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 32. | Neurophysiology** | Martin Štrucl | 5 | 20 | | | | 65 | 90 | 3 |
| 33. | Biochemistry of Steroids** | Damjana Rozman<br>Tea Lanišnik Rižner | 8 | 8 | 4 | | | 70 | 90 | 3 |
| 34. | Dermatovenerology** | Tomaž Lunder<br>Mateja Dolenc-Voljč | 10 | 10 | | | 10 | 60 | 90 | 3 |
| 35. | Physiology – Electrocardiography (ECG)** | Vito Starc | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 36. | Disaster Medicine** | Radko Komadina | 30 | 30 | | | | 30 | 90 | 3 |
| 37. | Specific Aspects of Gene Technology Application** | Nataša Debeljak | 10 | 5 | | | 5 | 70 | 90 | 3 |
| 38. | Elective Subject – Orthopaedics** | Vane Antolič | 15 | | | | | 75 | 90 | 3 |
| 39. | Interprofessional Collaboration** | Lijana Zaletel Kragelj | 30 | 60 | | | | 90 | 180 | 6 |
| 40. | Open Airway Management: from Basic Tools to Difficult Intubation** | Maja Šoštarič | 6 | 10 | 14 | | | 60 | 90 | 3 |
| 41. | Elective Pathophysiology Subject: Students' Research Work for the Prešern's Award or Recognition** | Samo Ribarič<br>Zoran Grubič | | | 30 | | | 150 | 180 | 6 |
| 42. | Contemporary Informatics in Biomedicine 1** | Janez Stare | 8 | 30 | 12 | | | 40 | 90 | 3 |
| 43 | Research in Medicine** | | | 20 | | | | 160 | 180 | 6 |
| 44. | Rural and Remote Medicine** | Igor Švab | 5 | 10 | | | 60 | 105 | 180 | 6 |
| 45. | Practical Bioinformatic Approaches in Medicine** | Petra Hudler | 5 | 6 | | | 9 | 70 | 90 | 3 |
| 46. | Experimental Methods in Pharmacogenetics** | Vita Dolžan | 5 | 10 | 60 | | 15 | 90 | 180 | 6 |
| 47. | Conditions for Surgical Work* | | 24 | 30 | | | | 36 | 90 | 3 |
| TOTAL | | | 319 | 570 | 469 | 71 | 449 | 3792 | 5670 | 189 |

**Elective subjects in 5th year of study**

| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Biomechanics of the Hip*** | Vane Antolič | 15 | 10 | 30 | | 20 | 105 | 180 | 6 |
| 2. | Non-Coding RNA*** | Metka Ravnik Glavač | 6 | 14 | | | | 70 | 90 | 3 |
| 3. | Functional Genomics in Medicine*** | Damjana Rozman | 10 | 10 | 10 | | | 60 | 90 | 3 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 4. | Pharmacogenetics in Medicine*** | Vita Dolžan | 10 | 20 | 15 | | | 45 | 90 | 3 |
| 5. | Basics of Molecular Epidemiology*** | Vita Dolžan | 6 | 9 | 15 | | 15 | 45 | 90 | 3 |
| 6. | Hormone Dependent Gynecological Diseases: Clinical and Biochemical Aspects*** | Andrej Vogler<br>Špela Smrkolj<br>Tea Lanišnik Rižnar | 6 | 10 | | | | 74 | 90 | 3 |
| 7. | Research in Family Medicine*** | Igor Švab<br>Marko Kolšek | | | | | 60 | 120 | 180 | 6 |
| 8. | Research in Pharmacology – Selected Topics in Pharmacology*** | Metoda Lipnik Štangelj<br>Mojca Kržan<br>Katarina Černe | | | 20 | | 40 | 120 | 180 | 6 |
| 9. | Hyperbaric Physiology and Medicine** | Žarko Finderle | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 10. | Selected Topics from Gynaecology and Obstetrics*** | Ksenija Geršak | | 18 | | | | 72 | 90 | 3 |
| 11. | Research in Biochemistry*** | Ana Plemenitaš | | 20 | | | | 160 | 180 | 6 |
| 12. | Tropical and Travel Medicine*** | Tatjana Lejko Zupanc<br>Janez Tomažič | 84 | 20 | 10 | 10 | 24 | 32 | 180 | 6 |
| 13. | The Doctor and the Environment – Evidence Based Public Health*** | Lijana Zaletel Kragelj<br>Ivan Eržen | 5 | 15 | | 25 | | 45 | 90 | 3 |
| 14. | Death and Grief*** | Lijana Zaletel Kragelj | 30 | 30 | | | | 120 | 180 | 6 |
| 15. | Public Health Approaches to Management of Cardiovascular Diseases* | Lijana Zaletel Kragelj | 10 | | 35 | | | 45 | 90 | 3 |
| 16. | Atrial Fibrillation Surgery – Research*** | Borut Geršak | | | | | 45 | 135 | 180 | 6 |
| 17. | Laparoscopic Surgery*** | Mirko Omejc | | | | | 45 | 135 | 180 | 6 |
| 18. | Urology: Functional Morphological Tests in Urology** | Andrej Kmetec | 5 | 5 | | 35 | | 135 | 180 | 6 |
| 19. | Research in Maxillofacial Surgery*** | Nataša Ihan Hren | | | | | 75 | 105 | 180 | 6 |
| 20. | Selected Topics in Maxillofacial Surgery* | Nataša Ihan Hren | | | | | 35 | 55 | 90 | 3 |
| 21. | Dementias** | Zvezdan Pirtošek | 2 | 11 | | 10 | | 67 | 90 | 3 |
| 22. | Extrapyramidal Diseases** | Maja Trošt | 2 | 11 | | 10 | | 67 | 90 | 3 |
| 23. | Cerebrovascular Diseases** | Janja Pretnar Oblak | 2 | 11 | | 10 | | 67 | 90 | 3 |
| 24. | Peripheral Nerve Failures** | David Vodušek | 2 | 11 | | 10 | | 67 | 90 | 3 |
| 25. | Research in Neurology*** | David Vodušek | | | | | 75 | 105 | 180 | 6 |
| 26. | Research in Otorhinolaryngology*** | Irena Hočevar Boltežar | | | | | 75 | 105 | 180 | 6 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 27. | Human Genetics – Selected Cases*** | Damjan Glavač | 15 | 15 | | | | 60 | 90 | 3 |
| 28. | Research in Pathology*** | Nina Zidar | | 10 | 30 | 40 | | 100 | 180 | 6 |
| 29. | Biomedicine Between Laboratory and Hospital Bed*** | Mara Bresjanac | 6 | 24 | | | | 60 | 90 | 3 |
| 30. | Metabolic Disorders*** | Zoran Grubič<br>Marija Pfeifer | 10 | 20 | | | | 60 | 90 | 3 |
| 31. | Pathophysiological Basics of Critical Conditions 2** | Tomaž Marš<br>Matej Podbregar<br>Fajko Bajrović<br>Uroš Kovačič | 15 | | 10 | 6 | | 59 | 90 | 3 |
| 32. | Forensic Medicine** | Jože Balažic | 10 | | | | 5 | 75 | 90 | 3 |
| 33. | Modelling in Biochemistry*** | Jure Stojan | 1 | | 149 | | | 40 | 180 | 6 |
| 34. | Practical Medical Genetics*** | | 5 | | | 10 | | 75 | 90 | 3 |
| 35. | Research in Public Health*** | Lijana Zaletel Kragelj<br>Ivan Eržen | 5 | 15 | 10 | | | 150 | 180 | 6 |
| 36. | Physiology of Sports** | Helena Lenasi | 5 | 20 | | | | 65 | 90 | 3 |
| 37. | Physiology – Microcirculation** | Ksenija Cankar | 5 | 20 | | | | 65 | 90 | 3 |
| 38. | Neurophysiology** | Martin Štrucl | 5 | 20 | | | | 65 | 90 | 3 |
| 39. | Biochemistry of Steroids*** | Damjana Rozman<br>Tea Lanišnik Rižner | 8 | 8 | 4 | | | 70 | 90 | 3 |
| 40. | Physiology – Electrocardiography (ECG)** | Vito Starc | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 41. | Scientific Degree Project for International Medical Students*** | Igor Švab<br>Samo Ribarič<br>Tomaž Marš | | | | 300 | | 300 | 600 | 20 |
| 42. | Disaster medicine*** | Radko Komadina | 30 | 30 | | | | 30 | 90 | 3 |
| 43. | Clinical Electrocardiography** | Dušan Štajer | 15 | | | | | 75 | 90 | 3 |
| 44. | Elective Subject – Orthopaedics** | Vane Antolič | 15 | | | | | 75 | 90 | 3 |
| 45. | Specific Aspects of Gene Technology Application* | Nataša Debeljak | 10 | 5 | | | 5 | 70 | 90 | 3 |
| 46. | Basics of Genetic Engineering and Molecular Medicine*** | Radovan Komel | 15 | 5 | | | 5 | 65 | 90 | 3 |
| 47. | Interprofessional Collaboration*** | Lijana Zaletel Kragelj | 30 | 60 | | | | 90 | 180 | 6 |
| 48. | Implementation of Ultrasound in Anesthesia Practice** | Maja Šoštarič | 6 | 10 | | 8 | 6 | 60 | 90 | 3 |
| 49. | Elective Pathophysiology Subject: Students' Research Work for the Prešern's Award or Recognition*** | Samo Ribarič<br>Zoran Grubič | | | 30 | | | 150 | 180 | 6 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 50. | Contemporary Informatics in Biomedicine 2* | Janez Stare | 6 | 32 | 12 | | | 40 | 90 | 3 |
| 51. | Research in Medicine*** | | | 20 | | | | 160 | 180 | 6 |
| 52. | Selected Topics in Internal Medicine** | Pavel Poredoš<br>Dušan Štajer | 10 | 10 | 10 | | | 60 | 90 | 3 |
| 53. | Practical Bioinformatic Aproaches in Medicine*** | Petra Hudler | 5 | 6 | | | 9 | 70 | 90 | 3 |
| 54. | Experimental Methods in Pharmacogenetics*** | Vita Dolžan | 5 | 10 | 60 | | 15 | 90 | 180 | 6 |
| 55. | Research in Ophthalmology*** | Marko Hawlina | | | | | 75 | 105 | 180 | 6 |
| TOTAL | | | 365 | 608 | 479 | 184 | 619 | 4505 | 6750 | 225 |

**Elective subjects in 6th year of study**

| Seq. No. | Subject | Lecturer | Contact hours | | | | | SIW | Total hours | ECTS credits |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | S | PPC | CPC | OFS | | | |
| 1. | Pain* | Maja Šoštarič<br>Mara Bresjanac | 6 | 10 | | 8 | 6 | 60 | 90 | 3 |
| 2. | Anesthesiology* | Maja Šoštarič | 6 | 10 | | 14 | | 60 | 90 | 3 |
| 3. | Biomechanics of the Hip*** | Vane Antolič | 15 | 10 | | 30 | 20 | 105 | 180 | 6 |
| 4. | Non-Coding RNA** | Metka Ravnik Glavač | 6 | 14 | | | | 70 | 90 | 3 |
| 5 | Functional Genomics in Medicine*** | Damjana Rozman | 10 | 10 | 10 | | | 60 | 90 | 3 |
| 6. | Biochemical and Molecular Diagnostics of Congenital Metabolic Diseases*** | Tadej Battelino<br>Vita Dolžan | 5 | 15 | 25 | | | 45 | 90 | 3 |
| 7. | Pharmacogenetics in Medicine*** | Vita Dolžan | 10 | 20 | | | 15 | 45 | 90 | 3 |
| 8. | Basics of Molecular Epidemiology*** | Vita Dolžan | 6 | 9 | 15 | | 15 | 45 | 90 | 3 |
| 9. | Biochemical and Molecular Diagnostics of Inborn Metabolic Disorders*** | Tadej Battelino<br>Vita Dolžan | 5 | 15 | 25 | | 45 | 90 | 180 | 6 |
| 10. | Research in Family Medicine*** | Igor Švab<br>Marko Kolšek | | | | | 60 | 120 | 180 | 6 |
| 11. | Research in Pharmacology – Selected Topics in Pharmacology*** | Metoda Lipnik Štanngelj<br>Mojca Kržan<br>Katarina Černe | | | 20 | | 40 | 120 | 180 | 6 |
| 12. | Hyperbaric Physiology and Medicine** | Žarko Finderle | 5 | 20 | 5 | | | 60 | 90 | 3 |
| 13. | Research in Biochemistry*** | Ana Plemenitaš | | 20 | | | | 160 | 180 | 6 |
| 14. | Research in Pathology*** | Nina Zidar | | 10 | 30 | 40 | | 180 | 180 | 6 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 15. | Tropical and Travel Medicine*** | Janez Tomažič<br>Tatjana Lejko Zupanc | 84 | 20 | 10 | 10 | 24 | 32 | 180 | 6 |
| 16. | The Doctor and the Environment – Evidence Based Public Health*** | Lijana Zaletel Kragelj<br>Ivan Eržen | 5 | 15 | | 25 | | 45 | 90 | 3 |
| 17. | Death and Grief*** | Lijana Zaletel Kragelj | 30 | 30 | | | | 120 | 180 | 6 |
| 18. | Basics of Management in Health Care* | Ivan Eržen | 10 | | 35 | | | 45 | 90 | 3 |
| 19. | Medicine of Sports* | Marjan Bilban | 10 | 25 | | 10 | | 45 | 90 | 3 |
| 20. | Research in Maxillofacial Surgery* | Nataša Ihan Hren | | | | | 75 | 105 | 180 | 6 |
| 21. | Dementias** | Zvezdan Pirtošek | 2 | 11 | | 10 | | 67 | 90 | 3 |
| 22. | Extrapyramidal Diseases** | Maja Trošt | 2 | 11 | | 10 | | 67 | 90 | 3 |
| 23. | Cerebrovascular Diseases** | Janja Pretnar Oblak | 2 | 11 | | 10 | | 67 | 90 | 3 |
| 24. | Peripheral Nerve Defects** | David Vodušek | 2 | 11 | | 10 | | 67 | 90 | 3 |
| 25. | Research in Neurology*** | David Vodušek | | | | | 75 | 105 | 180 | 6 |
| 26. | Research in Otorhinolaryngology*** | Irena Hočevar Boltežar | | | | | 75 | 105 | 180 | 6 |
| 27. | Human Genetics – Selected Cases* | Damjan Glavač | 15 | 15 | | | | 60 | 90 | 3 |
| 28. | Biomedicine Between Laboratory and Hospital Bed*** | Mara Bresjanac | 6 | 24 | | | | 60 | 90 | 3 |
| 29. | Metabolism Disorders*** | Zoran Grubič<br>Marija Pfeifer | 10 | 20 | | | | 60 | 90 | 3 |
| 30. | Modelling in Biochemistry*** | Jure Stojan | 1 | | 149 | | | 30 | 180 | 6 |
| 31. | Practical Medical Genetics*** | | 5 | | | 10 | | 75 | 90 | 3 |
| 32. | Research in Public Health*** | Lijana Zaletel Kragelj<br>Ivan Eržen | 5 | 15 | 10 | | | 150 | 180 | 6 |
| 33. | Physiology of Sports** | Helena Lenasi | 5 | 20 | | | | 65 | 90 | 3 |
| 34. | Physiology – Microcirculation** | Ksenija Cankar | 5 | 20 | | | | 65 | 90 | 3 |
| 35. | Neurophysiology** | Martin Štrucl | 5 | 20 | | | | 65 | 90 | 3 |
| 36. | Scientific Degree Project for International Medical Students*** | Igor Švab<br>Samo Ribarič<br>Tomaž Marš | | | | 300 | | 300 | 600 | 20 |
| 37. | Biochemistry of Steroids*** | Damjana Rozman<br>Tea Lanišnik Rižner | 8 | 8 | 4 | | | 70 | 90 | 3 |
| 38. | Physiology – Electrocardiography (ECG)** | Vito Starc | 5 | 20 | 5 | | | 60 | 90 | 3 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 39. | Disaster Medicine*** | Radko Komadina | 30 | 30 | | | | 30 | 90 | 3 |
| 40. | Clinical Electrocardiography** | Dušan Štajer | 15 | | | | | 75 | 90 | 3 |
| 41. | Health Promotion in Hospitals** | Jerneja Farkaš Lainščak | 5 | 25 | 15 | | | 45 | 90 | 3 |
| 42. | Specific Aspects of Gene Technology Application*** | Nataša Debeljak | 10 | 5 | | | 5 | 70 | 90 | 3 |
| 43. | Basics of Genetic Engineering and Molecular Medicine*** | Radovan Komel | 15 | 5 | | | 5 | 65 | 90 | 3 |
| 44. | Interprofessional Collaboration*** | Lijana Zaletel Kragelj | 30 | 60 | | | | 90 | 180 | 6 |
| 45. | Elective Pathophysiology Subject: Students' Research Work for the Prešern's Award or Recognition*** | Samo Ribarič<br>Zoran Grubič | | | 30 | | | 150 | 180 | 6 |
| 46. | Contemporary Informatics in Biomedicine 2* | Janez Stare | 6 | 32 | 12 | | | 40 | 90 | 3 |
| 47 | Research in Medicine*** | | | 20 | | | | 160 | 180 | 6 |
| 48. | Selected Topics in Internal Medicine* | Pavel Poredoš<br>Dušan Štajer | 10 | 10 | 10 | | | 60 | 90 | 3 |
| 49. | Practical Bioinformatic Aproaches in Medicine* | Petra Hudler | 5 | 6 | | | 9 | 70 | 90 | 3 |
| 50. | Experimental Methods in Pharmacogenetics*** | Vita Dolžan | 5 | 10 | 60 | | 15 | 90 | 180 | 6 |
| 51. | Subspecialty and Research in Paediatrics*** | Tadej Battelino<br>Tadej Avčin<br>Janez Jazbec<br>Rok Orel<br>Štefan Grosek<br>Darja Paro Panjan<br>Matjaž Homan<br>David Neubauer | 10 | | 10 | 30 | 30 | 100 | 180 | 6 |
| 52. | Research in Ophthalmology*** | Marko Hawlina | | | | | 75 | 105 | 180 | 6 |
| TOTAL | | | 432 | 662 | 480 | 517 | 589 | 4300 | 6900 | 230 |

# 11. Presentation of individual subjects

## Anatomy 1 (14 ECTS)

### Aims

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.

### Contents

The upper limb: Skeleton, the science of joints, functional anatomy of joints, science of muscles, skeletal muscle, functional anatomy of musculature, spinal nerve, brachial plexus and peripheral nerves, deep and subcutaneous blood vessels, topographical regions.
The lower limb: Skeleton, functional anatomy of joints, functional anatomy of musculature, lumbosacral and pudendal plexus, deep and subcutaneous vasculature, topographical regions.
The chest: Skeleton, functional anatomy of joints and muscles, diaphragm, mammary gland, esophagus, trachea, bronchial tree and lungs, pleura, heart, heart cavities, valves, cardiac vasculature, cardiac innervation, pericardium, pulmonary circulation, mediastinum, lymph nodes , auscultation sites of the heart and lungs on the chest, topographical regions.
The abdomen: Abdominal wall and the inguinal canal, stomach, duodenum, small and large intestine, rectum, liver and pancreas, spleen, embrionic development of organs in the abdominal cavity, abdominal membrane, gastrointestinal vasculature, portal vein, kidneys and adrenal glands, urinary ducts, urinary bladder, large and small pelvis, male and female urethra and female genital organs, male genital organs, descensus testis, retro- and subperitoneal space, lymph nodes, functional anatomy of the spine, topographical regions.

## Biophysics (7 ECTS)

### Aims

The student will get acquainted with the physical image of the world in detail. The emphasis will be on physical principles that are important for the formation of biological structures and for 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 diagnostics, and the physical phenomena which some methods of treatment are based on. He will get to know the basics of certain devices used in medical practice. The student will become used to quantitative treatment of physical and other phenomena. He will be 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 equation, 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 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.

## Cell Biology (9 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, principles and role of cell death, which is required knowledge for understanding of cellular basics of disease processes. He will get familiar with chromosomal abnormalities and with basics of hereditary disease transmission in terms of classical Mendelian 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.
Endocytosis and endocytotic pathways; endosomes and different pathways of macromolecules in the cell. Normal and abnormal course of exocytosis and endocytosis. Energy-converting organelles; mitochondria as 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 fertilisation, sex determination. Early stages of embryonic development; blastulation and gastrulation. The genetic basis of establishment of body axes.

## Communication (4 ECTS)

### Aims

The student will learn about the basics of medical psychology. He will become familiar with the elementary rules of communication with a healthy person and with a patient. He will be able to communicate in a group and to understand the importance of mutual relation between a patient and a physician.

### Contents

The subject consists of lectures on the theoretical foundations of communication and of practical course in the classroom where students will gain basic practical guidance for fieldwork and will train to communicate with role-playing exercises. Practical fieldwork will be held in health and social care institutions (e.g. retirement homes, institutes for rehabilitation of persons with disabilities). During and after the practical work the students will share their experiences with other students and supervisors at seminars or at individual

consultations. The following areas of communication will be discussed in lectures: an interview with the patient; how to communicate better; leading the conversation; open/closed questions; silent communication; communication and the relationship between patient and physician; communication with a child and with an adolescent; communication in a team; communicating with a family; communication between the team and family members; the relationship between physician, patient and relatives; role playing with recording and analysis of the recordings. In small groups the students will practice communication skills with each other on the basis of prepared examples. Students will act as a patient, physician and observer. After the role-play, there will be a discussion which will be followed by analysis of communication. The students will perform fieldwork in pairs, so that one student will lead the conversation with a patient or resident of the retirement home, while the other will observe their communication. It is planned that students will, after the first part of fieldwork, practice fieldwork again, and repeat the exercises after discussion, which will be moderated by a supervisor.

## Introduction to Medicine (5 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 onto the physician'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 physicians 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 physicians abroad, of some foreign physicians 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.

## Concepts in Biochemistry (12 ECTS)

### Aims

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

### Contents

ntroduction: Atoms, chemical bonds, intermolecular forces.
Water: Structure, properties, H-bonds, hydrophobic interactions.
Solutions: Gas solutions, colligative properties, osmotic phenomena, ionization of water, Kw, pH, electrolytes, acids and basic substances, buffers.
Thermodynamics: Thermodynamic laws and functions, the standard state, chemical potential.
Chemical equilibrium: Chemical, kinetic and thermodynamic aspects; solubility product; coupled reactions and ATP, transport.
Oxidoreduction: Quantitative characterization, photosynthesis and respiration.
Velocity of chemical reactions: Order and molecularity; theories of the velocity of chemical reactions; influences on reaction velocity; catalysis.
Molecular basis of life: Bio-elements, ions and biomolecules.
Carbon atom: Structure, resonance, steric properties, chemical bonds.
Biomolecules: Isomerism; review of functional groups, mutual interactions.
Carbohydrates: Chemistry of sugars, mono-, oligo- and polysaccharides; glycosidic bonds; detoxification in the organism; glycoproteins; cell wall; membrane characteristics; blood groups.
Lipids: Classification, simple and complex: fatty acids, triacylglycerols, phospholipids, sphingolipids; lipoproteins, biological membranes; prostaglandins and terpenes, steroids.
Nucleotides: Purine and pyrimidine bases, nucleosides and nucleotides, energy transfer; cyclic nucleotides.
Nucleic acids: Classification, structure and biological role, gene, basics of DNA replication, transcription and translation; mutations; human genome, genomics, proteomics, genetic diseases.
Vitamins: Water soluble and lipid soluble vitamins; coenzymes and prosthetic groups.
Amino acids: Structure, properties, analytics. Peptides and biogenic amines: Structure and function.
Proteins: Classification, structure, self-assembly, conformation. Fibrillar proteins: alpha-keratin, collagen and elastin. Monomeric and oligomeric proteins: myoglobin and hemoglobin. Contractile proteins: muscular and non-muscular contractile proteins; muscle contraction. Membrane proteins: erythrocyte membrane proteins; $Na^+/K^+$-ATPase; receptors, G-proteins. Enzymes: enzyme mechanisms and kinetics, regulation, classification.
Other proteins: apolipoproteins, immunoglobulins.
Functional links: From biomolecules to complex cellular structures.

## Emergency Medical Care 1 (3 ECTS)

### Aims

The student will learn basic cardiopulmonary resuscitation (CPR) and first aid in situations which endanger life or impair health. He will get to know first aid tools.

### Contents

Medical first aid (legal and ethical aspects, mechanisms of injuring), loss of consciousness, approach to the injured or suddenly sick person, restoring breathing, restoring blood circulation (use of automated external defibrillation – AED), video records (emergency medical care), rescue methods – sequence of operations, bleeding, methods of transportation, immobilization, first aid in acute poisonings.

## Anatomy 2 (5 ECTS)

### Aims

Anatomy will be approached from a functional perspective, with particular emphasis on the clinical anatomy of the adult. Clinically important aspects of child and adolescent anatomy will also be discussed. The student will become familiar with the structures of the head and neck, which are relevant for his later clinical study, the establishment of diagnosis and treatment. He will get acquainted with the structure of head cavities, especially those related to the previous study of the digestive and respiratory system. In the field of neuroanatomy, the student will acquire basic knowledge of the structure and elementary functions of the central and peripheral nervous system, of meninges, pertinent blood vessels and sense organs.

### Contents

Head and neck: The skull. Topographical divisions of head and neck. Lateral triangle of the neck. Submandibular triangle and the floor of mouth. Carotid triangle. Retromandibular fossa. Infratemporal fossa. The nasal cavity. The oral cavity. Pharynx. Larynx. Vasculature and lymph nodes of head and neck.
Central nervous system (CNS): Brain stem and brain nerves. Autonomic nervous system and parasympathetic ganglia in the head. Principles of the CNS organization. The spinal cord and spinal nerves. Sympathetic nervous system. Cerebrum. Cerebellum. Pathways of general somatic sensibility. Brain stem motor pathways. Basal ganglia. Cerebrospinal fluid spaces. The meninges and blood vessels in the cranial cavity and in the spinal channel. Auditory system. Visual system.
Elective courses: Selected chapters of radiological anatomy, selected chapters of neuroanatomy, dissections of the thorax and the abdomen.

## Biochemistry 2 (11 ECTS)

### Aims

The student will get to know the basics of life processes and their regulation on the molecular level. The subject's goal is to provide students with knowledge of basic biochemical processes that allow living organisms to function normally, maintaining optimal concentration of cell compounds and of body fluids, and with knowledge of the processes involved in growth and reproduction.

### Contents

General introduction: General importance of biochemistry for diagnosis and treatment of diseases, general information on the intermediary metabolism, general information about the regulation of metabolic pathways, oxidative processes in a cell in conjunction with acquiring energy.
Carbohydrates: Digestion of carbohydrates, degradation and biosynthesis of carbohydrates, regulation of carbohydrate metabolism, diseases associated with dysfunctional carbohydrate metabolism.
Lipids: Digestion of lipids, cellular degradation and biosynthesis of simple and complex lipids, metabolism of cholesterol and bile acids, lipoprotein metabolism, metabolism of eicosanoids, regulation of lipid metabolism, diseases associated with dysfunctional lipid metabolism.
Amino acids: Digestion of proteins, intracellular protein degradation, degradation of amino acids, biosynthesis of unsaturated amino acids, regulation of amino acid turnover, amino acids as starting compounds in the biosynthetic processes, diseases associated with dysfunctional metabolism of amino acids.
Nucleotides: Biosynthesis and degradation of nucleotides, regulation of nucleotide metabolism, diseases associated with dysfunctional metabolism of nucleotides.
Nucleic acids: The structure and properties of DNA, replication and DNA repair, biosynthesis of RNA, co- and post-transcriptional modifications, regulation of biosynthesis of RNA, degradation of nucleic acids, genetic code, genetic diseases.
Proteins: Protein biosynthesis, post-translational modifications, regulation of velocity of protein biosynthesis, biosynthesis of some selected proteins.

Basics of genetic engineering: Recombinant DNA technology, DNA sequencing, using recombinant DNA technology in medicine.
Hormones: Biosynthesis of hormones, release of hormones, degradation of hormones, mechanisms of hormone functioning, cell signalling, the role of hormones in the regulation of metabolic processes, the role of hormones in homeostasis.
Metabolic characteristics of particular tissues and organs: liver, fat, skeletal muscle, heart muscle, kidney, other tissues, interdependence and the role of organs in metabolic processes of human organism.

## Physiology (12 ECTS)

### Aims

Lessons in physiology are based on the previous lectures of biophysics, biochemistry, biology and normal morphology. The aim of this subject is to include prior knowledge in the understanding of physiological processes. The student will get the knowledge about the function of a normal organism and will master basic concepts in physiology. He will become familiar with the principles of measurement of physiological phenomena, he will learn how to perform measurements of some physiological parameters and will get used to interpreting the results of measurements in accordance with concepts. The ability to self-reliantly 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.

## Physiology of the Nervous System (5 ECTS)

### Aims

The student will learn about the function of a normal nervous system. He will master fundamental concepts in neurophysiology. 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

neurophysiology will be based on the knowledge gained from the lessons of biophysics, biochemistry, biology and normal morphology. The ability to self-reliantly solve problems and critical thinking will be developed. The habit of self-education will be encouraged.

### Contents

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 behaviours, the principles of structure and function of the cerebral cortex, the physiology of emotions, speech control, specialization of brain hemispheres, the physiological basis of learning and remembering.

## Histology and Embryology (10 ECTS)

### Aims

In the 3rd semester the student will be acquainted with basic (pre-clinical) and clinical characteristics of histology. Histology will be discussed from a functional perspective, with particular emphasis on normal histology.
In the 4th semester the student will get familiar with the most important features of human evolution. Embryology will be discussed from a functional perspective, with particular emphasis on normal development and anomalies in development. Congenital developmental abnormalities and their genetic and environmental causes will be presented.
In seminar class-rooms and at electives the student will deepen his knowledge in important areas of functional histology, human evolution and teratology.
At practical course he will get familiar with microscopy, the histological structure of tissues and organs and the histological peculiarities of embryonic development in early stages. At this subject, Latin terminology will be used (in accordance with international conventions), beside that the student will have to learn existing Slovene terms.

### Contents

Histology. Connective tissue. Cells of the connective tissue. Ground substance and fibres. Embryonic connective tissue (mesenchyma), jelly-like ground substance, loose and dense connective tissue. Cartilage. Adipose tissue. White and brown adipose tissue. Osseous tissue. Types of ossification. Muscle tissue. Histophysiology of muscle contraction. The peripheral and central nervous system. Neurons, neuroglia. Peripheral nerves, ganglia. Spinal cord. Cerebellum. Brain stem. Cerebrum. Synapses. Nerve endings. Epithelia. Classification of epithelia. Glandular epithelium. Skin – structure and functional histology. Hair, nails, skin glands. Mammary gland. Endocrine glands and functional histology of several glands. Thyroid. Parathyroids. Adrenal glands. The pituitary gland. The pineal gland. The diffuse endocrine system. Paraganglia. Blood and functional histology of blood cells. Haematopoiesis and stages of haematopoiesis. The lymphatic system. Lymph nodes. The spleen. Thymus. Tonsils. Circulatory system. Arteries. Veins. Lymphatic vessels. The heart. The digestive system. The digestive tube. The liver. The pancreas. The respiratory system and the respiratory pathway. The lungs. Urinary system. The kidney. Ureter, urinary bladder, urethra. Male genitals. Testicles. Seminal accessory glands and excretory ducts. The penis. Female genitals. Ovaries. Fallopian tubes. The uterus. The vagina. The organs of senses. The eye. The ear.
Embryology. The embryo. The foetus. Development of the cardiovascular system. Development of the urogenital system. Development of the nervous system. Development of branchial organs. Development of the

digestive tract. Development of the eye. The placenta. Teratology. Congenital developmental abnormalities. Teratogenic substances. Genetic causes of congenital developmental abnormalities.

## Health and the Environment (4 ECTS)

### Aims

Two most important aims are to understand the concept of the health determinant and to recognize the effect of health determinants on human health. The student will become acquainted with the importance of a healthy natural and social environment for the health of an individual and population as a whole, he will recognize the importance of a rational and ethical health care system for individual and population health.

### Contents

Health and the natural environment, risk factors in the natural environment, the basic conditions for a healthy environment. Health and the social environment: socio-economic factors, social values and beliefs, social networking and social exclusion, inequality in health, health-risk behaviors, stress, health care as a determinant of health of particular importance.

## Contact With a Patient (3 ECTS)

### Aims

To familiarize with the basics of patient care and learning of daily activities which are necessary for personal life as independent as possible. Acquaintance with various impairments and reduced capabilities due to injury or illness.

### Contents

Close work with patients who have reduced capabilities due to injury or illness in the middle and late age of life, such as movement problems, communication problems, and hearing and vision problems.

## Basics of Biostatics (4 ECTS)

### Aims

To know the purpose and types of statistical methods; to understand the basics of statistical reasoning; to be able to properly reflect the massive data and results of statistical analyses; to be able to properly interpret the results of statistical analyses; to be able to adequately plan the collection of empirical data and choose appropriate methods of statistical analyses for them, to be able to understand and critically evaluate the statistical analyses described in professional and scientific literature.

### Contents

Basic statistical concepts. Fundamentals of probability: normal and binominal distribution, the principles and methods of data presentation, basics of parameter evaluation and statistical hypothesis testing, confidence intervals, univariate analysis of numerical variables, univariate analysis of descriptive variables, linear regression and correlation, non-parametric statistical methods, experiment design and introduction to the analysis of variance, basics of survival analysis

## General Pharmacology and Toxicology (3 ECTS)

### Aims

The student will recognize the importance of pharmacology in the context of therapy and of prevention of diseases, he will get to know and to understand the mechanisms of action of drugs, the effects of drugs on the organism and will get to know about the fate of drugs in the organism. The acquired knowledge will represent an upgrade of the knowledge of physiological and pathological processes on which therapeutic drugs have an effect.

### Contents

General pharmacology: Definition of pharmacology, its relationship to other disciplines, drugs and drug target molecules, mechanisms of drug action, concentration – effect relationship analysis, drug receptors, pharmacokinetic processes and the fate of drugs in the organism, pharmacokinetic parameters, non-clinical drug testing.
Basics of toxicology: Mechanisms of toxic effects of exogenous substances, toxicokinetics.

## Methods of Public Health (4 ECTS)

### Aims

To understand the importance of studying the health of the population as a whole: in general and as the basis for public health approaches and control of public health problems. The student will learn basic methods for studying public health and will understand the importance of public health study. He will become acquainted with the epidemiological methods as the most important methods for study of public health, with specific methods for study of environmental health, with the demographic and econometric methods for study of population health, with basic public health approaches and measures for managing population health problems.

### Contents

Epidemiological methods: Measurement of phenomena in epidemiology, measurement and measures of frequency of epidemiological phenomena, measures of connections between phenomena, measures of potential influence of phenomena on human health, types of epidemiological studies, interpretation of results of epidemiological studies, the course of epidemiological researches, instruments for epidemiological research, ethical aspects of epidemiological research studies.
Study methods of environmental health: Monitoring indicators of environmental conditions, identification of specific influences on health, methods of displaying health data on geographic maps.
Other methods of studying population health: Demographic methods, methods of evaluation of screening procedures, econometric methods, holistic measures of disease burden.
Methods of public health measures: Strategies, policies, action plans, providing a healthy living environment (natural and social) with regulations, health promotion, health education, management of environmental risks to health, vaccinations, screenings.

## Emergency Medical Care 2 (3 ECTS)

### Aims

The student will renew basic resuscitation procedures and will upgrade his knowledge and skills with additional procedures of cardiopulmonary resuscitation (CPR).
At the end of course, the student will be theoretically familiar with emergency medical conditions and injuries, for which urgent action is required and he will have practical know how on implementing the appropriate procedures in such situations. He will know the tools, appliances and some drugs that are necessary for successfully helping accident victims and patients in urgent situations and he will also know how to properly use them.

### Contents

Renewal of basic CPR procedures, additional CPR procedures, use of the tools. Defibrillation, the establishment of venous channels, respiratory path care, acute strokes, acute coronary syndromes, dysrhythmias, use of an automatic defibrillator, reanimation medicine, shock, respiratory distress.
Introductory lecture, first aid and emergency medical help (legal and ethical aspects, mechanisms of injuring), loss of consciousness, approach to the injured or suddenly ill, establishment of respiration, establishment of blood circulation (automated external defibrillator use), use of video records (emergency medical care), sequence of operations, bleeding, polytrauma and traumatic shock, urgent situations in internal medicine 1 and 2, acute poisoning, pediatric emergencies, emergencies in neurology, head and brain injuries, emergencies in ophthalmology, facial and dental injuries, spine and spinal cord injuries, chest injuries, abdominal injuries, wounds, procedures with amputated body parts, comprehensive treatment of burn injuries, injuries due to cold, injuries of bones and joints 1 and 2, rescue in the mountains and in other hard to reach places, organ donation and transplantation activity, reporting bad news.

## Basic Microbiology and Immunology (6 ECTS)

### Aims

The student will get acquainted with the basic characteristics of human microbiology, immunology and parasitology. In seminar classes, he will deepen his knowledge in specific areas that are particularly important for epidemiology of infectious diseases in Slovenia. At laboratory practical course the student will get familiar with basic microbiological techniques and he will get familiar with the duration and the importance of microbiological investigations.

### Contents

Structure of the bacterial cell, metabolism, reproduction of bacteria, bacterial genetics, naming, classification and dissemination of microbes. Normal bacterial flora, diagnostics of bacterial infections, collection and transport of samples for bacteriological examination.
Disinfection and sterilization, antibiotics and chemotherapeutics, use of antibiotics, mechanisms of bacterial resistance to antibiotics, current problems of bacterial resistance, antibiogram.
General characteristics of viruses, viral replication, viral genetics and origin of viruses, direct and indirect testing for viruses, molecular proofing of viruses, pathogenesis of viral infections, viral oncogenesis, natural antiviral resistance and antiviral immune response, chemotherapy of viral diseases.
Characteristics of fungi and molds, dimorphism, inducers of dermatomycoses, dermatophytes. Inducers of subcutaneous and systemic fungal infections.
Characteristics of human and animal parasites with emphasis on diagnostic procedures.
Natural resistance, complement system, the immune system, antigens, antibodies, T-cell receptor and MHC molecules, lymphocyte activation, tolerance, regulation of immune response, immune response to microbial infections, infections due to compromised immunity, immunosuppression, microbiological and immunological diagnostics in organ transplantation, vaccines and routine vaccination programs, a historical outline of microbiology.

## Pathology (9 ECTS)

### Aims

General pathology: Learning about elementary pathological processes with help of microscopic analysis of tissues and organs. The student will get acquainted with etiology and pathogenesis of diseases, with functional and especially morphological changes in cells, tissues and organs which are typical for particular disease processes. He will get acquainted with general work and diagnostic methods in pathology, he will understand the role of pathology in the diagnostic process.

Special pathology: The student will become familiar with the specific pathology of individual organs and organ systems, with the etiology and pathogenesis of diseases and their possible complications, on macroscopic and microscopic level. He will get knowledge about etiologically targeted rational therapy and diagnostics (understanding of clinical symptoms and of rationales for laboratory diagnostics). He will also get qualified for the correlation of clinical and pathological findings and will become acquainted with the role of pathology in the patient treatment process.
At autopsy practical course, the student will have an unique opportunity to study the synchronous occurrence of different diseases in different organ systems of the same patient and to deliberate on the integrity of a patient.

### Contents

General pathology: Cell injury and cell adaptation, inflammation, regeneration and reparation, circulation disorders, immunopathology, neoplasia, genetically conditioned and pediatric diseases, infectious diseases, nutritional and environmental diseases. The most common pathologic processes will be presented with microscopic preparations.
Special pathology: Cardiovascular pathology, gastrointestinal pathology, respiratory pathology, urological and nephrological pathology, pathology of the liver, pancreas, gallbladder and bile ducts, pathology of the central and peripheral nervous system; gynaecological pathology and breast pathology; pathology of the locomotory apparatus and hematopathology. The most common pathological entities will be presented with macroscopic preparations.

## Pathophysiology (10 ECTS)

### Aims

Student will acquire knowledge about the causes and mechanisms of diseases and pathological processes in a human on the basis of disturbed physiological and biochemical events in the body.
At practical course, seminars and problem-oriented lessons the student will learn how to use acquired knowledge for recognition of signs and symptoms of diseases, for understanding the course and the complications of the disease and for elaboration of the rational basis for prevention and treatment of diseases.

### Contents

The subject deals with pathophysiology of the following diseases and processes:
Pathophysiology and medicine as a science. Changes in body temperature. Starvation. Adiposity. Diabetes mellitus. Hypoglycaemia. Thyroid diseases.
Inherited metabolic disorders. Electrical injuries. Burns. Radiation sickness. Disorders of homeostasis. Cell death and diseases. Action of toxins.
Inflammation. Response to stress. Free radicals and disease. Carcinogenesis and cancer cell properties. Aging. Changes in the composition of body fluids. Dehydration. Acidosis, alkalosis. Disorders of calcium and phosphorus metabolism. Renal failure and renal function tests. Diseases of adrenal gland.
Anemias. Disorders in blood clotting. Thrombosis. Changes in plasma proteins.
Disorders of external respiration. Disorders of internal respiration and mitochondrial disorders. Hypoxias and cyanosis. Disorders due to changes in air pressure. Coughs. Dyspnoea. Asthma and obstructive pulmonary diseases. Pneumothorax. Respiratory distress.
Bleeding and shock. Hypertension. Hypotension. Cardiac failure. Cardiac dysrhythmias. Heart valve diseases and cardiac shunts. Edemas. Atherosclerosis and plasma lipid disorders. Risks of transfusion. Ischemic necrosis of skeletal muscles.
Liver diseases and liver tests. Biochemical disturbances in alcoholism. Peptic ulcer disease. Eating and digestion disorders.
Neuromuscular disorders. Organophosphate poisoning. Disorders of consciousness. Pathophysiology of locomotion and paralysis. Pathophysiology of addictions. Pathological pain. Headache. Increased intracranial pressure. Disorders of basal ganglia. Psychotic disorders. Psychosomatic disorders. Dementia. Stroke.

## Special Pharmacology and Toxicology (3 ECTS)

### Aims

The student will acquire knowledge about classes of drugs according to their pharmacodynamic profile and indication fields. He will gain the ability to connect the expected effects of drugs with therapeutic indications and contraindications and the ability to predict the emergence of severe unwanted effects while taking certain medications. He will also get familiar with the special properties of particular drugs of the same pharmacodynamic group that are important for differential prescribing and safe use. He will get familiar with signs of drug toxicity and with measures of first aid in poisonings with drugs. He will get to know the signs and symptoms of most common poisonings by the environmental poisons and he will know to take appropriate actions. He will learn the basic principles of writing prescriptions. Knowledge gained by the student will represent an upgrade of knowledge on physiological and pathological processes which are affected by pharmacotherapy.

### Contents

Review of drugs by pharmacodynamic groups: The mechanism of action and drug effects, indications and contraindications, pharmacokinetic properties, dosing and clinical use of drugs, poisonings with certain drugs. Toxicology: Intoxications with different poisons from the environment and their treatment.

## Fundamentals of Investigative Methods (5 ECTS)

### Aims

The subject will help the student to comprehend the extent and the importance of genomics and acquire knowledge for confident decision-making for new medical tests and for competent evaluation of their results (diagnostic findings).
He will get familiar with clinical biochemistry. In seminar class-rooms the student will deepen the particular knowledge which is important for laboratory diagnostics and at research seminars he will get insight onto laboratory diagnostic procedures and their importance.

The student will learn the basics and importance of radiological diagnostic techniques. He will get familiar with the use of contrast media in radiology. He will learn basic radiological anatomy and basic principles of image analysis and the interpretation of results of various radiological examinations. He will get to know about the basics of interventional radiology. He will learn the basics of protection against ionizing radiation.

### Contents

The human genome, its regulation and expression. Polymorphisms and mutations. Genetic diseases and defects. Basic methods of genomics. The investigation of polymorphisms and mutations in DNA. The use of genomic methods in direct and indirect molecular diagnostics. Methods for examination of gene expressions. Basics of functional genomics and systemic biology. Basic approaches of bioinformatics. Modern analysis of proteins and their interactions. Classification of data of metabolic and signal pathways, the search for crucial regulators for a new diagnostics or development of new drugs with new molecular targets. Post-genomic molecular diagnostics, personal (personalized) medicine, the prospects of genetic treatment. Ethical aspects. Clinical biochemistry as a part of laboratory diagnostics (historical development of clinical chemistry , clinical chemistry in Slovenia and abroad; the organization of the profession, institutions, human resources, ethics). Review of chemical and biochemical parameters, overview of biological samples, non-analytical factors (biological rhythms, collection of samples, transportation, therapy), analytical factors (reagents, conditions, analyses, interferences), quality control, units, analytical specificity, analytical sensitivity. Analyzers and automation, management and organization of work. Quality assurance throughout the entire process of laboratory diagnostics, from preparing the patient for collection of biological samples, collection of samples, sending material to the laboratory and acquaintance with processes in the laboratory.

Interpretation of results of laboratory reports. The student will learn the interpretation of numeric results, he will get familiar with the concept of referential values and with the concept of diagnostic sensitivity and diagnostic specificity.

## Propaedeutics (11 ECTS)

### Aims

The student will learn the basics of a clinical examination, which consists of medical history (anamnesis) and physical examination. In both semesters the student will upgrade his knowledge about the technique of taking anamnesis and of its proper recording. In the first semester the student will learn the basic techniques of physical examination, in the second semester he will continue with learning directed anamnesis and directed physical examination and elaboration of a working diagnosis.

### Contents

Introduction to propedeutics (presentation of the subject; approach to the patient, the first contact with a patient). Anamnesis (demonstration of some tools that do not require any special background knowledge: the ability to listen to a patient and raising reasonable questions; inductive and deductive anamnesis; recognition and description of the main symptom; family anamnesis; anamnesis about medications, about vegetative functions, bad habits and social anamnesis). Physical examination. General status. Head examination. Neck examination. Examination of the chest, breasts and lungs. Heart examination (inspection, palpation, pulse evaluation, blood pressure measurement). Auscultation: heart sounds and murmurs. Abdominal examination. Examination of kidneys and male genital organs. Blood vessel examination. Examination of joints, muscles and skeleton.
A patient with chest pain, a patient with acute abdominal pain, a patient with breathing difficulties, a patient with cyanosis, a patient with oedema, a patient with heart failure, a patient with jaundice, a patient with ascites, a patient with difficulty urinating , a patient with fever, a patient with enlarged lymph nodes, a patient with enlarged thyroid, a patient with disorder of consciousness, a patient with acute/chronic joint pain, a patient with bleeding, a patient with limb pain.

## Nervous System (10 ECTS)

### Aims

The student will develop the ability to gradually make a diagnosis of neurological disease on the basis of anamnestic data, physical examination, laboratory investigation, imaging data and other methods. He will become able to autonomously provide the emergency medical aid in neurological patients. He will master current methods of treatment and rehabilitation. He will get acquainted with possible future development of treatment and rehabilitation methods. He will acquire holistic understanding of neurological diseases and will become able to recognize the influence of these diseases on the entire organism, also in the psychosocial terms. On the other hand, he will understand the impact of other diseases on the nervous system and on the neurological disease.

### Contents

Functional units of the nervous system, symptoms and signs of nervous system diseases, classification of neurological diseases, ways to neurological diagnoses, emergency situations in neurology, chronic neurological diseases, borderline areas between neurology and psychiatry, infectious diseases which have an effect on the nervous system, operable neural diseases, neurological complications of diseases of other systems, treatment of neurological diseases and of pain (pharmacological and other treatments). Rehabilitation in neurology.

## Mental Health (8 ECTS)

### Aims

Understanding the psychological, social and somatic factors in the etiology of mental disorders. Psychiatric examination. Diagnostics and classification of mental disorders. Knowledge of the clinical picture and therapeutic treatment of individual disorders. The role of a family physician in treatment of patients with mental disorders. Autonomous action in emergency situations. Holistic treatment in the community. Public health aspects of mental health.

### Contents

Symptoms and signs of particular categories of mental disorders. Classification and diagnostic procedure. Mental disorders in neurological and other somatic diseases. Treatment: psychopharmacotherapy and psychotherapy. Rehabilitation and preventive measures.

## Musculoskeletal System (7 ECTS)

### Aims

The student will get acquainted with the most common diseases and injuries of the skeleton, musculoskeletal system and skin.
He will develop the ability to gradually make a diagnosis of musculoskeletal disease or injury on the basis of anamnestic data, physical examination, laboratory investigation, imaging data and other methods. He will become able to autonomously provide the emergency medical aid in musculoskeletal patients. He will master current methods of treatment and rehabilitation. He will get acquainted with possible future development of treatment and rehabilitation methods. He will acquire holistic understanding of musculoskeletal diseases and injuries and will become able to recognize the influence of these disorders on the entire organism, also in the psychosocial terms. On the other hand, he will understand the impact of other diseases on the condition of the musculoskeletal system and skin and on the musculoskeletal disease or injury.

### Contents

The subject is substantially divided into modules: Musculoskeletal system diseases, injuries of the musculoskeletal system, diseases and injuries of arms, locomotor physical medicine and rehabilitation.
This section encompasses the topographical anatomy of the musculoskeletal system, physical and physiological basics of musculoskeletal system kinematics, descriptions of musculoskeletal diseases and injuries, ways of determining musculoskeletal diseases and injuries, treatment and rehabilitation methods for diseases and injuries of the musculoskeletal systems, instruction for determining the final state (disability) after the disease or injury of the musculoskeletal system and methods for preventing injuries and diseases of the musculoskeletal system.

## Gastrointestinal Tract (5 ECTS)

### Aims

The student will be acquainted with the epidemiology, diagnostics and clinical features of gastrointestinal diseases and imaging diagnostics of mentioned diseases. The student will become familiar with preparation of the patient prior to surgical procedure, with general and regional anaesthesia, and with pain management and resuscitation. After finishing this section, a medical student will be able to treat a patient with the clinical picture of an acute abdomen, with hidden and evident signs of gastrointestinal disease. He will be able to consult other specialists before deciding indication for surgical treatment. He will be able to make a diagnosis with a clinical examination and diagnostic investigations . He will be familiar with differential diagnostics and the principles and methods of treatment and prevention of gastrointestinal diseases.

### Contents

The student will become familiar with epidemiology, etiology, pathogenesis, clinical picture, complications, differential diagnostics, gradual diagnostics of these diseases and with interdisciplinary cooperation. He will get familiar with the most common causes of the acute abdomen and he knows the methods of treatment. He will become acquainted with the basic principles of the surgical treatment of benign and malignant gastrointestinal tract diseases. Students become familiar with the influence of concomitant diseases on the perioperative management, with procedures to improve the patient's general condition prior to surgical procedure, with general, regional and combined anaesthesia, with prevention and management of major complications, and with pain management and resuscitation. The student gets familiar with the principles of radiological diagnostics and interventional radiology.

## Skin and Venereal Diseases (6 ECTS)

### Aims

The student will get to know the most common skin diseases and venereal diseases and will become aware how to make a stepwise diagnosis of skin diseases from the anamnestic data and examinations. The current ways of treatment of skin and venereal diseases and possible advances in the treatment will be presented. The students will be directed towards the holistic comprehension of the skin and venereal diseases, the influence of the skin diseases on the whole organism,also in psycho-social respect will be stressed. The manifestations and influences of non-dermatological non-musculoskeletal diseases on the status of the skin and musculoskeletal system will be emphasized.

### Contents

In the subject, topographic anatomy, physiology and histology of the skin will be resumed. Skin diseases and venereal diseases, the possibilities to state the diagnosis of skin and venereal diseases and the ways of the treatment of skin and venereal diseases, instructions for determining the final state (disability) after the skin and venereal disease and methods for preventing injuries and diseases of the musculoskeletal system and skin and venereal diseases will be presented.

## Infectious Diseases (12 ECTS)

### Aims

The student will get acquainted with the epidemiology, diagnostics and clinical picture of infectious diseases. He will acquire knowledge about internal and surgical diseases of the gastrointestinal tract, diseases of the blood and blood forming organs, imaging diagnostics of these diseases, pharmacodynamic and pharmacokinetic properties of antimicrobial substances, cytostatics and immunosuppressive medications. The student will become familiar with preparation of the patient prior to surgical procedure, with general and regional anaesthesia, with pain management and resuscitation. He will be able to make a diagnosis with a clinical examination and diagnostic investigations and will be able to consult other specialists. He will be familiar with differential diagnostics, principles and methods of treatment and prevention of infectious diseases, which are caused by microorganisms, diseases of gastrointestinal tract and diseases of blood and blood forming organs.

### Contents

Epidemiology, pathophysiology, clinical, imaging, laboratory and microbiological diagnostics of diseases which are caused by microbes. The following contents will be presented: infections by organ systems, systemic infections, approaches to a patient with the most common symptoms, infections among people with impaired immunity, infections in all age groups, nosocomial infections, important zoonoses and tropical diseases. The clinical approach to the treatment with antimicrobial drugs, mechanisms of microbial resistance to antimicrobial drugs, methods of detection of microbial resistance.

## Cancer and Blood Diseases (6 ECTS)

### Aims

The student will get acquainted with the etiology, epidemiology, early discovery, diagnostics and treatment of cancer diseases, blood diseases and diseases of blood forming organs. He will learn about general principles of oncology, multidisciplinary methods of patient treatment, focused oncological anamnesis, determination of the state of capability, methods of diagnostics and treatment. In addition he will learn to treat patients with blood diseases. He will be able to set a diagnosis with clinical examination and diagnostic investigations.

### Contents

The student will become acquainted with the following contents: Tumor biology (carcinogenesis, genetics, immunology), epidemiology (cancer epidemiology, risk factors, cancer registries), screening methods and early diagnostics, general principles of oncology (levels of oncology health care, TNM classification, multidisciplinarity, approach to the patient and ethics, statistical methods in oncology), oncological pathology, oncological cytology, laboratory diagnostics (hematological, biochemical, tumor markers, molecular diagnostics), imaging in oncology (x-ray, ultrasound, CT, MRI, PET), radiotherapy (teleradiotherapy, brachyradiotherapy, radiobiology, radiophysics), oncological surgery, systemic therapy, supportive and palliative treatment, clinical images of the most common tumors, emergency situations in cancer diseases, complications of cancer diseases, pain relief treatment. The student will get familiar with epidemiology, etiology, pathogenesis, clinical images, complications, differential diagnostics and gradual diagnostics of blood diseases and diseases of blood forming organs and with interdisciplinary cooperation in this area.

## Diseases of Hearth and Blood Vessels (9 ECTS)

### Aims

The student will develop the ability to gradually make a diagnosis of cardiovascular disease on the basis of anamnestic data, physical examination and laboratory investigation. He will become able to autonomously provide the emergency medical aid in cardiovascular patients. He will master current methods of treatment and rehabilitation. He will get acquainted with possible future development of treatment and rehabilitation methods. He will acquire holistic understanding of cardiovascular diseases and will become able to recognize the influence of these diseases on the entire organism, also in the psychosocial terms. On the other hand, he will understand the impact of other diseases on the condition of the cardiovascular system and on the cardiovascular disease.

### Contents

The following specialties are included in this subject: Internal medicine (cardiology, hypertensiology, vascular diseases, intensive-care internal medicine), surgery (cardiovascular surgery), imaging diagnostics, (clinical) pharmacology.

Contents include: Epidemiology of cardiovascular diseases, pathophysiology and pathomorphology of cardiovascular diseases, symptoms and signs of cardiovascular diseases, causes of cardiovascular diseases (genetic factors, congenital abnormalities, degenerative changes, infections, injuries, etc.), diagnostic procedures, acute diseases of the cardiovascular system, chronic diseases of the cardiovascular system, urgent conditions in cardiovascular diseases, treatment of cardiovascular diseases (non-pharmacological, pharmacological, percutaneous transluminal angioplasty – PTA, stenting, surgical treatment), rehabilitation, prevention of cardiovascular diseases (primary, secondary), principles of treatment after transplantation.

## Forensic Medicine (5 ECTS)

### Aims

The student will get familiar with the mechanisms of injuries, their classification and their evaluation. He will be able to distinguish between most common intoxications, he will master the basics of forensic hematology and he will be able to recognize all those emergency situations where ethical, criminal and indemnifying responsibility of physician is possible. He will be acquainted with basic forensic medical tasks of general practitioner. He will acquire knowledge about the most important forensic rules and ethical principles necessary for efficiently performing his future profession.

### Contents

The student becomes familiar with basics of classical forensic medicine from the mechanisms of natural and violent death to the signs of death. He acquires knowledge about the basics of identification, injury mechanisms and their forensic medical characteristics. He becomes acquainted with physical and gun-shot injuries, suffocations, the basics of forensic toxicology and hematology. He gets familiar with legislation (both health and criminal), with the basics of expert work with special emphasis on assessing body injuries. At the lectures he gets familiar with emergency situations, which may indicate criminal and indemnifying responsibility. He upgrades his knowledge of moral, ethical and deontological principles regarding the work of physician. The student integrates the knowledge of all preclinical and the majority of clinical subjects, consolidates his knowledge about shock, acquires the basics of physician's work in emergency medicine, he becomes familiar with physician's tasks in the case of infanticide as well as with medical error and iatrogenic injuries. He acquires knowledge about interdisciplinary cooperation in forensic medicine.

## Maxillofacial Surgery with Fundamentals of Dental Medicine (3 ECTS)

### Aims

The student will become familiar with facial skeleton diseases, diseases of facial soft tissues and diseases of the oral cavity, including basic dental and parodontal tissue diseases. At clinical practical course he will learn how to perform an oral and maxillofacial examination, basics of differential diagnostics and first medical aid.

### Contents

Characteristics of facial, oral and neck anatomy which are associated with congenital abnormalities, injuries, infections, tumors, degenerative diseases and acquired facial irregularities, pre-prosthetic needs of treatment, temporomandibular joint diseases and dental and parodontal tissue dependent pathology. The student gets familiar with etiology, epidemiology, pathogenesis, clinical picture, diagnostics and interdisciplinary treatment of maxillofacial and oral diseases.

## Otorhinolaryngology (5 ECTS)

### Aims

The student will become familiar with ear diseases, nose and paranasal sinuses diseases, oral cavity diseases, pharyngeal and laryngeal diseases, with diseased changes on the neck, with causes for hearing, sense of smell and taste disorders. At clinical practical course he will learn otorhinolaryngological (ORL) examination techniques, first medical aid, treating an otorhinolaryngological patient and will test his skills in contact with patients.

### Contents

Special features of the anatomy and physiology of ear, nasal organ, oral cavity, pharynx, larynx and neck with special emphasis on disease processes in this area. Physiology of hearing, equlibrium, smell and taste.

Congenital abnormalities, injuries, inflammations, tumors of the ear, nose and paranasal sinuses, oral cavity, pharynx, larynx and neck. Epidemiology, etiology, pathogenesis, patient's signs and symptoms of ORL disease Diagnostic procedures in the determination of mentioned pathological conditions, treatment options and efficiency of treatment. Interdisciplinary cooperation.

## Ophthalmology (5 ECTS)

### Aims

The student will become familiar with eye and ocular appendages diseases and diseases of other organ systems which reflect on eyes or vision. At clinical practical course he will learn ophthalmological examination techniques and will test his skills in contact with patients.
He will acquire knowledge about orbital diseases, intracranial processes that result in loss of vision and with diseases and injuries of the orbit and paranasal sinuses which affect vision. He will also get familiar with specifics of eye diseases among children and with systemic and genetic diseases that affect vision. At clinical practical course he will learn ophthalmological and oriented neuro-ophthalmological examination, basics of differential diagnostics and first medical aid.

### Contents

Specialties of anatomy and physiology of eyes, ocular appendages and orbit with special emphasis on disease processes in this area. Physiology of vision and ocular movements. Congenital abnormalities, injuries, inflammations, eye tumors and tumors of the orbit and paranasal sinuses. Epidemiology, etiology, pathogenesis, patient's signs and symptoms. Diagnostic procedures in determining mentioned pathological conditions, possibilities and efficiency of treatment. Interdisciplinary cooperation.

## Gynaecology and Obstetrics (10 ECTS)

### Aims

The student will become familiar with the physiology of the menstrual cycle, pregnancy, menstrual cycle disorders, with abnormalities in development of female genitals and with gynaecological endocrinopathies. He will get familiar with inflammatory diseases, benign and malignant tumors of the reproductive system and static disorders of the pelvic floor. He will acquire knowledge about reproductive health, hormone treatment, infertility diagnostics and treatment in particular.
At clinical practical course in gynecology the student will acquire knowledge about targeted anamnesis, he will learn to identify irregularities of the menstrual cycle and will become familiar with characteristics of other pathological processes of reproductive organs. He will get acquainted with gynecological examination techniques including Papanicolaou test and bimanual palpation. He will gain fundamental information on non-invasive imaging investigations for identification of basic pathological processes in gynecology. He will monitor basic invasive diagnostic and therapeutic procedures of reproductive system diseases.
The student will become familiar with the physiology of pregnancy, with the course and supervision of a healthy and diseased pregnant woman and her foetus, with the normal course of labour and with irregularities during labour and postpartum period. He will get acquainted with invasive and non-invasive screening tests and genetic counseling. He will get familiar with different pathological conditions of pregnancy (pre-eclampsia, deep venous thrombosis, diabetes, etc.), with premature birth and with basic problems of neonatal medicine.
At clinical practical course in obstetrics the student will acquire knowledge about targeted anamnesis of a pregnant woman, about clinical examination of a pregnant woman and external obstetric investigations. He will get familiar with mandatory examinations during pregnancy and with reproductive health care. He will participate in non-invasive imaging examinations during pregnancy and at genetic counseling. He will monitor the course of a normal labor, instrumental labor and postpartum period. He will participate in the care of a healthy newborn and will get familiar with the treatment of prematurely born infants.

### Contents

Specialties of anatomy and physiology of the female reproductive organs, pregnancy and labour with special emphasis on disease processes in this area. Physiology of menstrual cycle. Abnormalities in development of the reproductive system, irregularities in menstrual cycle, gynecological endocrinopathies, different periods of hormonal activity. Reproductive organs injuries, inflammation of reproductive organs, benign and malignant tumors of reproductive organs, static disorders, etiology, epidemiology, pathogenesis, patient's symptoms and signs. Diagnostic procedures, treatments and interdisciplinary treatment. Physiology of pregnancy, infertility, types of treatment and treatment options for infertility. Legal and ethical aspects of reproductive medicine. Reproduction health, treatment with hormones, contraception. Physiology of pregnancy, the normal course of pregnancy and types of control, mandatory pregnancy examinations, monitoring of foetus development, normal childbirth and postpartum period. Non-invasive imaging tests, clinical monitoring of normal and pathological pregnancy. Pathological pregnancy, etiology, epidemiology, pathogenesis, patient's signs and symptoms. Diagnostic procedures, types of treatment and interdisciplinary treatment. Adaptation of a newborn, prematurely born child. Physiology of lactation and lactation disorders, benign and malignant breast diseases; etiology, epidemiology, pathogenesis, patient's symptoms and signs. Diagnostic procedures, types of treatment and interdisciplinary treatment.

## Pediatrics 1 (3 ECTS)

### Aims

Knowledge of pathophysiological, biochemical, electrophysiological and genetic basics of the most common diseases and syndromes during childhood, adolescence and young adulthood. Knowledge of pediatric propedeutics and a holistic approach to the treatment of a child, adolescent and young adult, knowledge and the assessment of growth- and development-dependent changes of the organism. Knowledge of frequency of occurrence, clinical picture and differential diagnostics of pediatric diseases. Classification of diseases by etiology in different age periods. Knowledge of modern diagnostic procedures and their adaptation for the pediatric population, with emphasis on laboratory diagnostics, screening laboratory diagnostics, electrophysiological diagnostics, comprehensive imaging diagnostics, molecular-genetic and cytogenetic diagnostics, morphological and pathohistological diagnostics, psychosocial definition, nutritional analysis, functional diagnostics, invasive cardiodiagnostics, prenatal diagnostics. Knowledge of modern approaches to a holistic treatment, treatment of diseases with emphasis on age and developmental stages, treatment with basic types of medications including biological medications, nutritional treatment, physiotherapy and rehabilitation, logopedic treatment, pediatric and adolescent psychotherapy, genetic counseling, monitoring, tracking assessment of the treatment. Knowledge of basics of preventive pediatrics with vaccination, dispensary work, social pediatrics, monitoring and assessment of work quality.
Specific competences: Knowledge of practical approaches to a holistic treatment of a newborn, child, adolescent and a young adult, together with his family and specific adaptations of individual procedures and processes with regards to age and development level. Special emphasis is placed on monitoring of a chronically ill child or adolescent and his family.

### Contents

Pediatric propedeutics, general pediatrics, social pediatrics, preventive and dispensary treatment of children, adolescents and young adults, normal growth and development, neonatology, pediatric cardiology, pediatric haematology and oncology, pediatric neurology, pediatric nephrology, pediatric pulmonology, pediatric infectology, pediatric immunology and rheumatology, pediatric gastroenterology, pediatric endocrinology, diabetology and metabolic diseases, clinical genetics, pediatric intensive therapy, pediatric surgery and anesthesiology, pediatric psychiatry, pediatric nutritional sciences, pediatric imaging diagnostics, laboratory diagnostics, the psychology of a child, adolescent and young adult person and the ethics in pediatrics. Knowledge about comprehensive treatment of a pediatric patient and his family, knowledge about etiology, pathophysiology, patohistology, treatments, including the treatment with the use of medical technologies, monitoring and reintegration into original environment.

## Respiratory System (4 ECTS)

### Aims

The student will get acquainted with the most common diseases of the respiratory system. He will develop the ability to gradually make a diagnosis of respiratory system disease on the basis of anamnestic data, physical examination and laboratory investigation. He will become able to autonomously provide the emergency medical aid in respiratory patients. He will master current methods of treatment and rehabilitation. He will get acquainted with possible future development of treatment and rehabilitation methods. He will acquire holistic understanding of respiratory diseases and will become able to recognize the influence of these disorders on the entire organism, also in the psychosocial terms.

### Contents

The following specialties are included in this subject: Internal medicine (pulmonology), surgery (thoracic), microbiology, imaging diagnostics.
Detailed contents: Epidemiology of respiratory diseases, pathophysiology, pathomorphology, genetics of respiratory diseases; signs and symptoms of respiratory diseases; etiology of respiratory diseases (congenital abnormalities, hereditary factors, infections, degenerative changes, injuries, cancer), prevention of respiratory diseases, diagnostic procedures for respiratory diseases, principles of laboratory diagnostics; acute respiratory diseases (infections, including tuberculosis, ischemia, vasculopathy), chronic respiratory diseases (degenerative, malignant), emergency situations in respiratory diseases (respiratory failure, bleeding, asphyxia); treatment of respiratory diseases (non-pharmacological, pharmacological, rehabilitation); principles of diagnostics; treatment of pulmonary complications of an immunocompromised patient, guiding the patient before and after lung transplantation; principles of radiological diagnostics, interventional radiology procedures.

## Urinary Tract (3 ECTS)

### Aims

The student will get acquainted with the most common diseases of the kidneys and of the urinary tract. He will develop the ability to gradually make a diagnosis of kidney and urinary tract disorder on the basis of anamnestic data, physical examination and laboratory investigation. He will become able to autonomously provide the emergency medical aid in patients. He will master current methods of treatment and rehabilitation. He will get acquainted with possible future development of treatment and rehabilitation methods. He will acquire holistic understanding of kidney and urinary tract disorders and will become able to recognize the influence of these disorders on the entire organism, also in the psychosocial terms.

### Contents

The following specialties are included in this subject: Internal medicine (nephrology, nuclear medicine), surgery (urology), imaging diagnostics.
Detailed contents: Epidemiology of kidney and urinary tract diseases, pathophysiology, pathomorphology, genetics of kidney and urinary tract diseases; symptoms and signs of kidney and urinary tract diseases; etiology of kidney and urinary tract diseases (congenital abnormalities, hereditary factors, infections, degenerative changes, injuries, cancer); prevention of kidney and urinary tract diseases; diagnostic procedures for kidney and urinary tract diseases; principles of laboratory medicine; acute diseases of kidneys and urinary tract (infections, ischemia, vasculopathy); chronic diseases of kidneys and urinary tract (degenerative, malignant); emergency situations in kidney and urinary tract diseases (acute renal failure); kidney and urinary tract disease treatment (non-pharmacological, pharmacological, rehabilitation); principles of diagnostics and treatment in an immunocompromised patient; guiding the patient before and after transplantation; principles of radiological diagnostics, interventional radiology procedures.

## Metabolic Diseases (4 ECTS)

### Aims

The student will get acquainted with the most common metabolic diseases. He will develop the ability to gradually make a diagnosis of metabolic disease on the basis of anamnestic data, physical examination and laboratory investigation. He will become able to autonomously provide the emergency medical aid in metabolically ill patients. He will master current methods of treatment and rehabilitation. He will get acquainted with possible future development of treatment and rehabilitation methods. He will acquire holistic understanding of metabolic diseases and will become able to recognize the influence of these disorders on the entire organism, also in the psychosocial terms.

### Contents

The following specialties are included in this subject: Internal medicine (endocrinology, nuclear medicine), surgery (thoracic).
Detailed contents: Epidemiology of endocrine diseases, pathophysiology, pathomorphology, genetics of endocrine diseases, symptoms and signs of endocrine diseases, etiology of endocrine diseases (congenital abnormalities, hereditary factors, infections, degenerative changes, injuries, cancer), prevention of endocrine diseases, diagnostic procedures in endocrine disorders, principles of laboratory medicine in endocrinology, acute and chronic endocrine diseases, complications on other organs in endocrine diseases, emergency situations in endocrine disorders, treatment of endocrine diseases (non-pharmacological, pharmacological, surgical, rehabilitation), principles of imaging diagnostics in endocrine diseases.

## Immune Diseases (3 ECTS)

### Aims

The student will develop the ability to gradually make a diagnosis of the disease on the basis of anamnestic data, physical examination and laboratory investigation. He will become able to autonomously provide the emergency medical aid in rheumatologic, allergic and other immune-diseased patients.
He will get acquainted with current therapeutic and rehabilitation methods and with their possible future development. He will acquire holistic understanding of rheumatic, allergic and other immune disorders and will become able to recognize the influence of these disorders on the entire organism, also in the psychosocial terms. He will become acquainted with clinical immunology as a modern interdisciplinary science that deals with immune-dependent diseases. He will get familiar with clinical characteristics of immune disorders, with diagnostic immunological techniques, with duration and importance of immunological examinations.

### Contents

The following specialties are included in this subject: Internal medicine (rheumatology, allergology), surgery (thoracic), microbiology and immunology (clinical immunology).
The subject is substantially divided into modules: Rheumatic diseases, allergology, clinical immunology, other immune-dependent diseases.
Detailed contents: Epidemiology of rheumatic and allergic diseases; pathophysiology, pathomorphology, genetics of rheumatic and allergic diseases; symptoms and signs of rheumatic and allergic diseases; etiology of rheumatic and allergic diseases (congenital abnormalities, hereditary factors, infections, degenerative changes); prevention of rheumatic and allergic diseases; diagnostic procedures of rheumatic and allergic diseases; principles of laboratory medicine in rheumatic and allergic diseases; acute rheumatic and allergic diseases; chronic rheumatic and allergic diseases; emergency situations in rheumatic and allergic diseases (anaphylaxis, temporal arteritis and other systemic vasculitides, septic arthritides); treatment of rheumatic and allergic diseases (non-pharmacological, pharmacological, rehabilitation); principles of diagnostics and treatment of an immunocompromised patient, guiding the patient before and after transplantation.

## Internal Medicine (19 ECTS)

### Aims

Student trainees guided by clinical practice supervisors will be introduced to professional practice on the wards of internal medicine specialties.

### Contents

Practice in the reception clinic, practice in internal medicine departments, practice in internal medicine ambulatory clinic, monitoring functional diagnostics and evaluating laboratory reports, writing records of ambulatory patients, writing records of hospitalized patients, treatment planning, participation at consilium, duty service in internal medicine departments, review of patients at ward meetings and seminars.

## Pediatrics 2 (8 ECTS)

### Aims

Knowledge of pathophysiological, biochemical, electrophysiological and genetic basics of the most common diseases and syndromes during childhood, adolescence and young adulthood. Knowledge of pediatric propedeutics and a holistic approach to the treatment of a child, adolescent and young adult, knowledge and the assessment of growth- and development-dependent changes of the organism. Knowledge of frequency of occurrence, clinical picture and differential diagnostics of pediatric diseases. Classification of diseases by etiology in different age periods. Knowledge of modern diagnostic procedures and their adaptation for the pediatric population, with emphasis on laboratory diagnostics, screening laboratory diagnostics, electrophysiological diagnostics, comprehensive imaging diagnostics, molecular-genetic and cytogenetic diagnostics, morphological and pathohistological diagnostics, psychosocial definition, nutritional analysis, functional diagnostics, invasive cardiodiagnostics, prenatal diagnostics. Knowledge of modern approaches to a holistic treatment, treatment of diseases with emphasis on age and developmental stages, treatment with basic types of medications including biological medications, nutritional treatment, physiotherapy and rehabilitation, logopedic treatment, pediatric and adolescent psychotherapy, genetic counseling, monitoring, tracking assessment of the treatment. Knowledge of basics of preventive pediatrics with vaccination, dispensary work, social pediatrics, monitoring and assessment of work quality.
Specific competences: Knowledge of practical approaches to a holistic treatment of a newborn, child, adolescent and a young adult, together with his family and specific adaptations of individual procedures and processes with regards to age and development level. Special emphasis is placed on monitoring of a chronically ill child or adolescent and his family.

### Contents

Pediatric propedeutics, general pediatrics, social pediatrics, preventive and dispensary treatment of children, adolescents and young adults, normal growth and development, neonatology, pediatric cardiology, pediatric haematology and oncology, pediatric neurology, pediatric nephrology, pediatric pulmonology, pediatric infectology, pediatric immunology and rheumatology, pediatric gastroenterology, pediatric endocrinology, diabetology and metabolic diseases, clinical genetics, pediatric intensive therapy, pediatric surgery, pediatric psychiatry, pediatric nutritional sciences, pediatric imaging diagnostics, laboratory diagnostics, the psychology of a child, adolescent and young adult person and the ethics in pediatrics. Knowledge about comprehensive treatment of a pediatric patient and his family, knowledge about etiology, pathophysiology, patohistology, treatments, including the treatment with the use of medical technologies, monitoring and reintegration into original environment.

## Surgery (15 ECTS)

### Aims

Under mentor's supervision student will perform all the medical procedures on working positions of all surgical specialties.

### Contents

Practice in admission departments, practice in the emergency department, practice in check up departments, assistance at large surgeries, outpatients' surgery, writing of medical records for inpatients and outpatients, treatment planning, participation at consilliary meetings, being on duty in emergency departments, review of patients at ward meetings and at multimedia conferences.

## Primary Health Care (12 ECTS)

### Aims

Comprehensive understanding of individual and working population health care.
Subject-specific competences: Clinical skills, focused on the problems of the first contact of a patient with a medical service, communication and relationship between a patient and a physician, cooperation with the environment in which the physician works, basics of economics and business, knowledge of the forms, methods and ways of studying risks at work, knowledge of the effects of work environment on the capacity of individual organs, organ systems and of the human as a whole, knowledge of the effects of the work environment on health and working ability, knowledge of work burdens and early effects of work burdens on health and working ability, knowledge of influences of work environment on specific negative health indicators of an individual or a group, knowledge of the basic principles of evaluation of temporary and permanent inability to work, knowledge of principles of vocational orientation, selection and rehabilitation, knowledge of basics of health promotion in the work environment.

### Contents

The following specialties are included in this subject: family medicine and occupational medicine. The subject contents are therefore divided into two parts, each part lasts six weeks. Student trainee guided by supervisor will be introduced to professional practice in the ambulatory care units of both specialties. Part of training activities is organized for small groups of students.